Mort, Sandra L

From: Risotto, Steve <Steve_Risotto@americanchemistry.com>
Sent: Wednesday, November 21, 2018 1:05 PM
To: Comments.SABReport
Cc: Mort, Sandra L; Bateson, James
Subject: [External] ACC comment on TCE action levels and response guidance
Attachments: ACC-CPTD comment to NC SAB on TCE action levels and response guidance.pdf; 00459506 RAD 13Nov2018 with cover letter.pdf; Wikoff et al 2018 - Risk of bias.pdf

I have attached herewith the comments of the Chemical Products and Technology Division of the American Chemistry Council on the action levels and response guidance for trichloroethylene (TCE). Please let me know if you have difficulty accessing the attached documents or have questions about the attached information.

Steve

Stephen P. Risotto
srisotto@americanchemistry.com
(202) 249-6727 (voice)
(571) 255-0381 (mobile)

From: Risotto, Steve
To: Mort, Sandra L
Cc: Bateson, James
Subject: RE: [External] comments on TCE guidance
Date: Friday, November 16, 2018 10:16:04 AM
Attachments: image001.png

Dr. Mort -

Apologies for the multiple contacts, but I neglected to mention in my voice mail that ACC and the Halogenated Solvents Industry Alliance sponsored a fetal cardiac defect study in drinking water that was recently completed. The results of the study have been submitted to EPA just this week and should be of interest to DEQ and the SAB.

I am hopeful that we can get a little more time to place these new results in the context of the DEQ TCE policy.

Thanks,

Steve

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From: Bateson, James [mailto:james.bateson@ncdenr.gov]
Sent: Wednesday, November 14, 2018 3:28 PM
To: Risotto, Steve
Cc: Mort, Sandra L
Subject: RE: [External] comments on TCE guidance

Steve,

Sandy Mort, senior DEQ toxicologist, and our Department's liaison with the SAB, will field your request.

Thanks,

Jim Bateson
Section Chief
Division of Waste Management, Superfund Section
North Carolina Department of Environmental Quality

(919) 707-8329 phone and fax
james.bateson@ncdenr.gov

1646 Mail Service Center
Raleigh, NC 27699-1646

cid:image003.png@01D35D63.6168A5F0

From: Risotto, Steve [mailto:Steve_Risotto@americanchemistry.com]
Sent: Tuesday, November 13, 2018 2:40 PM
To: Bateson, James <james.bateson@ncdenr.gov>
Subject: RE: [External] comments on TCE guidance

Jim –

Do you have a contact at the SAB that I can talk to about an extension of the deadline?

Thanks,

Steve

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From: Bateson, James [mailto:james.bateson@ncdenr.gov]
Sent: Tuesday, November 13, 2018 12:31 PM
To: Risotto, Steve
Subject: RE: [External] comments on TCE guidance

Steve,

"From the notes pages of my June 18, 2018 presentation to the NC DEQ SAB:

About 700 North Carolina sites had vapor intrusion investigations over the past 15 years, with much of that work done in the past five years. Assessments led to risk abatement measures at more than

half of those sites. Vapor intrusion risk demands a growing share of resources for federal, state, and County programs that address contaminated sites in North Carolina.

In your information packet, you can read later a notes page printout of this slide with a program by program tabulation of vapor intrusion-related work at sites statewide"

(Note, these stats are through June 2017)

NC Drycleaning Solvent Cleanup Program
- 397 sites in progress
- VI work is part of every investigation
- 68 sites closed out; 80% with VI-related land use restrictions
- 51 active and closed sites with sub-slab vapor extraction/depressurization systems

NC Brownfields Program
- 400 sites with completed BF agreements
- 50% have VI-related land use restrictions
- 25% needed significant VI sampling
- 10% have engineered barriers or active systems in place

NC Voluntary Cleanup Program (IHSB)
- $400K Orphan Sites Cleanup Fund
- 2014-2017 – 73 VI Investigations/Actions
- VI work now demands 80% of the Fund
- VI work by RP's at about half as many other sites

EPA Region 4 Superfund Emergency Response and Removal Branch
2015-2018 - Emergency Actions at four "big" sites referred by IHSB

EPA Region 4 Superfund National Priorities List (NPL) Sites
- 9 of 39 NC NPL Sites have VI work so far; emergency action needed at four sites.
- Department of Defense conducting cutting-edge VI work at NC Military Bases

Thanks,

Jim Bateson
Section Chief
Division of Waste Management, Superfund Section
North Carolina Department of Environmental Quality

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From: Risotto, Steve [mailto:Steve_Risotto@americanchemistry.com]
Sent: Tuesday, November 13, 2018 10:58 AM
To: Comments.SABReport <Comments.SABReport@ncdenr.gov>
Cc: Bateson, James <james.bateson@ncdenr.gov>
Subject: [External] comments on TCE guidance

The American Chemistry Council requests that the deadline for public comments on the Department's TCE indoor air action level report be extended for 30 days to allow more time to develop comprehensive comments.

Thank you - we appreciate your prompt response to our request.

Steve

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BY ELECTRONIC MAIL

November 21, 2018

Jamie Bertram, Ph.D.
Chair
Secretaries' Science Advisory Board
North Carolina Department of Environmental Quality
1601 Mail Service Center
Raleigh, North Carolina 27699-1601

Re: Trichloroethylene (TCE) Inhalation Immediate Action Levels and Response Guidance for Indoor Air Protective of Cardiac Developmental Defects, Report of the Secretaries' Science Advisory Board (October 15, 2018)

Dear Dr. Bertram:

The Chemical Products and Technology Division of the American Chemistry Council (ACC/CPTD) submits the following comments on the report from the Department of Environmental Quality (DEQ) on immediate action levels and response guidance for trichloroethylene (TCE). ACC/CPTD represents a number of companies interested in ensuring that regulatory and policy approaches to address indoor air exposures to TCE, like the DEQ proposal, incorporate the best available science.

The Board has the opportunity to be among the first to evaluate the results of a recently completed drinking water study of the effects of TCE on fetal heart development in rats. The attached laboratory report was submitted to the Environmental Protection Agency within the last few days and includes significant new information that furthers our understanding of developmental effects resulting from TCE exposure. As noted in the cover letter from the study sponsor, Halogenated Solvents Industry Alliance, there are now EPA guideline studies by all three exposure routes that have found no relationship between *in-utero* TCE exposure and cardiac malformations. We urge the Board to consider the attached results as part of its review of the DEQ guidance on TCE.

The Department's report relies heavily on the Environmental Protection Agency's (EPA) 2011 Integrated Risk Information System (IRIS) assessment of TCE[1] for its immediate action

[1] EPA. Toxicological review of trichloroethylene (CAS No. 79-01-6) – in support of summary information on the Integrated Risk Information System. EPA/635/R-09/011F. USEPA. Washington, DC (2011).

level of 2.0 micrograms per cubic meter (µg/m^3) in indoor air. Although the report acknowledges the significant controversy surrounding the laboratory study by Johnson *et al.*[2] which is the sole basis for the proposed action levels and response guidance, DEQ points to more recent information that it contends provides additional support for its proposal. This information includes reviews conducted by the Massachusetts Department of Environmental Protection (MADEP), the Agency for Toxic Substances and Disease Registry (ATSDR), and EPA scientists (Makris *et al.* 2016). Unlike the enclosed developmental toxicity study, these reviews generally do not provide new information that can help further our understanding. Nevertheless, we provide the following comments on the information provided by these groups.

Avian Studies Do Not Reflect Relevant Exposure Pathways and Have Not Been Validated for Identifying Human Developmental Hazards

The DEQ report quotes the 2014 MADEP review that, while acknowledging that the rodent cardiac studies have had mixed results, suggests that "[t]he avian studies are the most convincing." While the chick embryo techniques employed in these studies may be valuable tools for investigating fundamental developmental processes, [3] they are not validated tools for identifying human developmental hazards (USEPA Risk Assessment Forum 1991; Schardein 2000).[4] Despite similarities in avian and mammalian heart development,[5] there are no data that establish the predictive value of these assays for human development, or the possibility for the generation of false-positives and false-negatives (Hardin 2005).[6] These isolated results with TCE cannot be interpreted with respect to implications for human exposures.

Additionally, the route and magnitude of exposure in the chick *in vitro* and embryo assays are not representative of how pregnant women are likely to be exposed to TCE.[7] One

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2 Johnson PD *et al*. Threshold of trichloroethylene contamination in maternal drinking waters affecting fetal heart development in the rat. *Environ Health Perspect* 111(3):289–292 (2003).

3 The lack of data to support the predictive value for human development is also true for the cardiac development studies in zebrafish cited by DEQ.

4 USEPA Risk Assessment Forum. Guidelines for developmental toxicity risk assessment. *Fed Reg* 56:63789–63826 (1991); Schardein JL. Principles of teratogenesis applicable to drug and chemical exposure. In Chemically induced birth defects. New York: Marcel Dekker. 1–65 3rd Edition, Revised and Expanded (2000).

5 Avian developmental models differ significantly due to the absence of a maternal influence and a placenta.

6 Hardin B *et al.* Trichloroethylene and dichloroethylene: a critical review of teratogenicity. *Birth Defects Res A Clin Mol Teratol* 73(12):931–955 (2005).

7 In discussing the avian data, DEQ repeat the claim by Makwana *et al.* (2013) that a metabolite of TCE, trichloroacetic acid (TCA), "has been shown to elicit greater cardiac toxicity than TCE." In fact, a high quality study conducted by Fisher et al (2001) reported no association between high levels of TCA and cardiac defects.

comparison concludes that the dose of 250 parts per million (ppm) used in the atrioventricular canal assay equates to an inhalation exposure of 180,000 ppm and that even the lowest dose of 50 ppm corresponds to a concentration that is much higher than what is likely to reach the embryo based on amounts of TCE found in the water supply (Dugard 2000).[8] Considering the doses used in the assay, in fact, it is a wonder that the cultures survived at all. Despite the relatively high dose, Boyer *et al.* (2000) observed only a very modest (~5%) loss in mesenchymal cells at 50 ppm.[9]

Neither the Animal nor Human Evidence Suggest Any Particular Type of Cardiac Defect

The MADEP review also suggests a similarity in the type of cardiac defects in the animal studies (interventricular septal defects or VSDs) are the same as those found in epidemiology studies. This is a misrepresentation of both the limited and conflicting animal and epidemiological data. The USEPA (2011) characterizes the cardiac defects in TCE-exposed rats observed by Johnson *et al.* as follows --

> There was a broad representation of various types of cardiac abnormalities identified, notably including multiple transposition, great artery, septal, and valve defects . . . No particular combination of defects or syndrome predominated . . . Weaknesses in the evidence include lack of a clear dose-related response in the incidence of cardiac defects, and the broad variety of cardiac defects observed, such that they cannot all be grouped easily by type or etiology.[10]

In addition to the lack of any predominant cardiac defect, Johnson *et al.* failed to observe VSDs in either of the low dose TCE groups tested (per Table 2 in publication), and it is unclear if the VSDs identified in the two high dose TCE groups were significantly different from the VSDs observed in the pooled controls since these results were not statistically analyzed.

Likewise, the limited epidemiology evidence indicates a variety of cardiac effects including alternations in the structure of the heart as well as in the arrangement of the large blood vessels. Of the several notable shortcomings in these studies, perhaps the most consequential are the paucity of TCE exposure data and failure to account for confounding environmental exposures (described in detail in the section that follows). Thus, drawing

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Fisher JW *et al.* Trichloroethylene, trichloroacetic acid, and dichloroacetic acid: do they affect fetal rat heart development? *Int J Toxicol* 20(5):257–267 (2001).

[8] Dugard PH. Comment on Boyer *et al*. 2000 [Letter]. *Toxicol Sci* 56(2):437 (2000).

[9] Boyer AS *et al.* Trichloroethylene inhibits development of embryonic heart valve precursors *in vitro*. *Toxicol Sci* 53(1):109–117 (2000).

[10] EPA IRIS 2011, at 4-544.

conclusions about *in utero* TCE exposures and these specific cardiac defects in humans is a tenuous effort at best. Interpretation is further complicated by the fact that VSDs are the most common form of cardiac defect found in humans – occurring in 1 in every 240 babies born in the United States each year.[11]

Epidemiology Studies Reporting a Positive Association with Fetal Cardiac Defects Lack Exposure Information and Do Not Control For Confounders

The DEQ report also points to the draft 2014 Toxicological Profile for Trichloroethylene developed by ATSDR which reviews the reported association between TCE and cardiac defects reported in studies conducted in residential populations in Milwaukee, WI and Endicott, NY. Each of these studies contains substantial design or analytic limitations that likely explain the elevated results (Bukowski 2014).[12]

Milwaukee, WI

Yauck *et al.* (2004)[13] used a case-control approach to investigate potential health effects among infants born to mothers living near facilities that reported TCE emissions in Milwaukee, WI during a 2-year period. According to the authors, the study was specifically conducted to investigate the hypothesis that TCE is a cardiac teratogen in humans. TCE levels were not measured; rather, distance from an emitting facility (within 1.32 miles) was used as a surrogate for exposure. In addition to the arbitrary nature of the specific distance chosen for the analysis, the use of proximity data as a surrogate for human exposure is fraught with limitations (further discussed below).

The authors reported a statistically significant association between cardiac defects and preexisting diabetes, chronic hypertension, and alcohol use during pregnancy. Proximity (<1.32 miles) to a facility reported to emit TCE was not associated with an increase in cardiac effects, except among infants born to mothers 38 years or older. Cardiac defects also were increased among older mothers in the control group.

The number of mothers 38 years or older was too small (8 - exposed, 19 - control) to support a link with TCE exposure. In addition, the proportion of older mothers was greater in

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11 https://www.cdc.gov/ncbddd/heartdefects/ventricularseptaldefect.html. Most VSDs observed in humans are generally small and close by themselves after birth.

12 Bukowski J. Critical review of the epidemiologic literature regarding the association between congenital heart defects and exposure to trichloroethylene. *Crit Rev Toxicol* 44(7): 581-89 (2014).

13 Yauck JS *et al*. Proximity of residence to trichloroethylene-emitting sites and increased risk of offspring congenital heart defects among older women. *Birth Defects Res Part A Clin Mol Teratol* 70(10):808–814 (2004).

the exposed group than the control group (9.0 % versus 3.5%). The observation of an association between advanced maternal age and cardiac effects absent chemical exposures is consistent with previous reports (Wilson *et al.* 1998).[14] The report of a statistically significant increase in cardiac defects among older women living within 1.32 miles of purported TCE emitting facilities, despite no evidence of risk overall and evidence of a decreased risk for younger exposed women, is highly suggestive of a chance or spurious result (Bukowski 2014).

Endicott, NY

Both ATSDR[15] and the NY State Health Department[16] investigated the potential for adverse birth outcomes in a population exposed to TCE and perchloroethylene (PCE) through soil vapor intrusion in Endicott, NY. The researchers identified 15 cases of cardiac defects among about 1,000 births within the contaminated area over a 17-year period and reported a significant risk of effects when compared to rates in the rest of the state, excluding New York City.

The authors were not able to control for alcohol consumption or several other potential confounding factors and did not adjust for socioeconomic status (SES), despite noting that the area had a substantially lower SES than the rest of the state, including much higher rates of poverty. It also is likely that the number of cardiac defects was too small for the more than 200 statistical comparisons conducted, causing ATSDR to express caution about interpretation of the results. The analyses presented by both ATSDR and New York State suggest that the modeling had not adequately controlled for confounding and corrected for the multiple comparisons made. The New York State analysis, moreover, suggests that the incidence of adverse birth outcomes may have actually been lower before remediation efforts began, when exposures would have been highest.

Brender *et al.* (2014)

DEQ also cites the findings of a study of Brender *et al.* (2014) which reports a statistically significant increase in obstructive heart defects -- but not VSDs -- in children born to mothers 35 years of age or older. As noted previously, an association between advanced maternal age and cardiac effects, absent TCE exposure, has been reported previously.

---

[14] Wilson PD *et al.* Attributable fraction for cardiac malformations. *Am J Epidemiol* 148:414–23 (1998).

[15] ATSDR. Health Consultation: Health Statistics Review Follow-Up. Cancer and Birth Outcome Analysis: Endicott Area Investigation, Endicott Area, Town of Union, Broome County, New York. ATSDR. Atlanta, GA (2008). http://www.atsdr.cdc.gov/hac/pha//EndicottAreaInvestigationFollowUp/EndicottAreaHC051508.pdf

[16] Forand SP *et al.* Adverse birth outcomes and maternal exposure to trichloroethylene and tetrachloroethylene through soil vapor intrusion in New York State. *Environ Health Perspect* 120(4):616–621 (2012).

The use of proximity as a surrogate for exposure by Brender *et al.* rather than using analytical data to model exposure estimates, can produce biased results.[17] The utilization of proximity to exposure sources greatly reduces the available information and introduces sources of bias, both mathematically and with respect to researchers' judgment. In the absence of an analysis of the various distances that comprise a study's data set, this also suggests some significant relations could only be detected using the selected bands of distance (e.g., use of a an undefined "threshold distance" by Brender *et al.*), which casts doubt on the validity of the findings.

Makris *et al.* (2016) Is an Inconsistent and Selective Review of the Available Data

DEQ further cites the review by EPA scientists (Makris *et al.* 2016) as new evidence that supports the potential for short-term exposure to TCE to cause cardiac defects. The review purports to be a weight-of-evidence (WOE) evaluation of the available *in vitro*, animal, and human information, but overstates the limited positive findings and fails to integrate those studies that did not report an association between TCE and cardiac defects. After describing the strengths and weaknesses of the available *in vitro* studies, moreover, the authors fail to factor this information into their WOE determination.

Makris *et al*. also review the available mechanistic data and suggest that it is sufficient for developing a "preliminary conceptual model of an adverse outcome pathway (AOP) for [VSD] resulting from TCE exposures."[18] This is a key assertion used by these authors to support their argument that the mechanistic data "supports the biological plausibility of an effect on cardiac development with exposure to TCE." However, an AOP describing the complete process from initial biomolecular perturbations to the various and diverse types of cardiac malformations that were reported in the TCE-exposed rats in the Johnson *et al.* study has not been proposed to date. To this point, Makris *et al*. admit that one of the critical shortcomings of their proposed AOP is that "[m]echanistic data for alterations in cardiac development are limited and do not identify initiating events for the putative AOP."

Reviewing the AOP proposed by Makris *et al.*, however, it is clear that none of the biomolecular mechanistic data that had been published concerning cardiac defects and potential associations with TCE exposure play a role in their thesis. Rather, the authors identify pathways associated with the disruption of endothelial–mesenchyme transition (EMT) in developing atrioventricular tissue but that have not been observed to be disrupted/effected in any microarray study published to date, regardless of species model. Furthermore, since

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[17] Cox LA *et al.* Causal versus spurious spatial exposure-response associations in health risk analysis. *Crit Rev Toxicol* 43(suppl 1):26-38 (2013).

[18] Makris SL *et al.* A systematic evaluation of the potential effects of trichloroethylene on cardiac development. *Repro Tox* 65:321-358 (2016).

proposing their AOP nearly three years ago, there is no evidence that it has been peer-reviewed or further supported in the published literature or publicly-registered AOP websites[19]. Thus, the proposed AOP in and of itself is purely hypothetical and does not provide mechanistic evidence in support of an association between *in utero* exposure to TCE and development of cardiac defects. This further calls into question the plausibility of the TCE-cardiac defect hypothesis.

A far better assessment of the TCE-cardiac defect relationship is available from Wikoff *et al.* (2018) and is enclosed with this comment. [20] This review notes that "the inconsistent findings of a single animal study were likely explained by the limitations in study design assessed via [risk of bias] (e.g., lack of concurrent controls, unvalidated method for assessing outcome, unreliable statistical methods, etc)" and concludes that "[s]uch limitations considered in the context of the body of evidence render the study not sufficiently reliable for the development of toxicity reference values."

ACC/CPTD urges the Board to consider the DEQ TCE action levels and response guidance in the context of the enclosed drinking water study reporting no treatment related effects, the recent risk-of-bias analysis enclosed, and the other information provided in this letter. Please do not hesitate to contact me at 202-249-6727 or srisotto@americanchemistry.com if you have any questions.

Sincerely,

Steve Risotto

Stephen P. Risotto
Senior Director

Enclosures

[19] For example, https://aopwiki.org/.

[20] Wikoff D *et al.* Role of Risk of Bias in Systematic Review for Chemical Risk Assessment: A Case Study in Understanding the Relationship between Congenital Heart Defects and Exposures to Trichloroethylene. Intl J Toxicology 37(2):125-143 (2018).

Original Article

International Journal of Toxicology
1-19

DOI: 10.1177/1091581818754330
journals.sagepub.com/home/ijt
SAGE

Role of Risk of Bias in Systematic Review for Chemical Risk Assessment: A Case Study in Understanding the Relationship Between Congenital Heart Defects and Exposures to Trichloroethylene

Daniele Wikoff[1], Jon D. Urban[2], Seneca Harvey[3], and Laurie C. Haws[2]

Abstract

The National Academy of Science has recommended that a risk of bias (RoB; credibility of the link between exposure and outcome) assessment be conducted on studies that are used as primary data sources for hazard identification and dose–response assessment. Few applications of such have been conducted. Using trichloroethylene and congenital heart defects (CHDs) as a case study, we explore the role of RoB in chemical risk assessment using the National Toxicology Program's Office of Health Assessment and Translation RoB tool. Selected questions were tailored to evaluation of CHD and then applied to 12 experimental animal studies and 9 epidemiological studies. Results demonstrated that the inconsistent findings of a single animal study were likely explained by the limitations in study design assessed via RoB (eg, lack of concurrent controls, unvalidated method for assessing outcome, unreliable statistical methods, etc). Such limitations considered in the context of the body of evidence render the study not sufficiently reliable for the development of toxicity reference values. The case study highlights the utility of RoB as part of a robust risk assessment process and specifically demonstrates the role RoB can play in objectively selecting candidate data sets to develop toxicity values.

Keywords

risk of bias, systematic review, internal validity, data quality, trichloroethylene

Introduction

In recent years, there has been significant interest in integrating systematic review (SR) into toxicology and risk assessment, as doing so will aid in modernization of evidence-based decision-making.[1-5] In their recent reviews of the United States Environmental Protection Agency's (USEPA's) Integrated Risk Information System (IRIS), the National Academy of Science (NAS) recommended using SR as a means to substantially strengthen the IRIS process.[5,6] Further, the NAS[5] specifically addressed the importance of assessing the risk of bias (RoB), stating that "an ROB assessment should be conducted on studies that are used by USEPA as primary data sources for the hazard identification and dose–response assessment." That is, RoB should be evaluated for all studies used to draw conclusions regarding a potential hazard, as well as all studies used to develop toxicity values such as an oral reference dose (RfD) or reference concentration (RfC).

Numerous other investigators have identified the evaluation of "RoB" as a critical element of SR.[1,5,7,8] Assessment of the RoB involves critically appraising studies using a formal process that assesses specific aspects of quality associated with study design.[8] This process provides a measure of whether the design and conduct of a study compromised the credibility of the link between exposure and outcome.[2,7] More specifically, RoB relates to the internal validity of a study—that is, evaluation of the potential for a systematic error (ie, deviation from true effect)—that can impact the direction and magnitude of the results.[5] Assessment of RoB in SR has long been applied in the fields of medicine and other scientific disciplines; as such, many tools and frameworks exist for evaluation of RoB in clinical medicine.[7]

However, owing to both the recent application of SR in the field of toxicology[9] and the high level of heterogeneity of toxicological data sets (ie, evidence from observational human

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studies, experimental animal studies, and in vitro studies) relative to clinical medicine (ie, evidence primarily from controlled human trials), only 2 tools exist for the evaluation of RoB in toxicological data sets. One of the tools, which is the most relevant for chemical risk assessment, was developed by the National Toxicology Program's (NTPs) Office of Health Assessment and Translation (OHAT) and represents an RoB rating tool for both human and animal studies.[10,11] The OHAT RoB rating tool was developed for use as part of their handbook for conducting SRs. The other RoB tool that includes evaluation of animal data was developed by the SYstematic Review Centre for Laboratory animal Experimentation,[12] developed in the context of preclinical research. Both tools are based on well-established RoB guidelines developed for clinical medicine and use criteria similar to those applied to human randomized control trials, as experimental animal studies are similar in their ability to control for exposure and dose, as well as to measure outcomes. The use of the OHAT tool, which includes both human and animal studies, allows for comparison of RoB across a body of evidence, thus facilitating comparisons of data from respective evidence streams (ie, human, animal).[2] It has been recognized, however, that application of RoB tools to toxicological data sets and generation of empirical data will likely result in refinement of RoB tools and approaches as applied to toxicological data sets.

Although the conduct of RoB is clearly established as an integral component of an SR, the actual utilization of an RoB assessment in an SR supporting chemical risk assessment is less well established. Available guidance describes how to use RoB in assessing the quality in a body of evidence, but this is generally limited to evaluation of potential hazard.[1,13,14] However, it is reasonable to carry forward the concepts of study quality when selecting candidate studies (and thus carrying out the recommendations from the NAS described above). No applications of utilizing the RoB assessment to inform selection of candidate studies for development of toxicological values (such as an RfD or RfC) are available. Given the NAS recommendation to do so, and the anticipated future use of RoB in chemical risk assessment, practical applications are needed to begin establishing best practices. The need for such is highlighted by anticipated future efforts such as the USEPA's recently released *Procedures for Prioritization of Chemicals for Risk Evaluation Under the Toxic Substances Control Act, Final Rule.*[15] In the Agency's guidance document (a document designed to assist in the development of risk evaluations submitted to the USEPA under the Toxic Substances Control Act), it is recommended that a data quality system be utilized, but no additional guidance or definitions are provided.

The evidence base for trichloroethylene (TCE) provides an opportunity to explore the impact of assessing RoB in risk assessment and specifically impact on characterizing hazard and developing toxicity reference values. Although there are a number of issues that have been raised related to the evidence base related to the potential for development of congenital heart defects (CHDs) following in utero exposures to TCE,[16-19] the most notable issue concerns the selection of 1 study in particular (ie, Johnson et al[20]) for hazard characterization and development of noncancer toxicity values. This study is one of the co-candidate studies supporting the current USEPA RfD and RfC values.[21] A number of investigators have identified specific shortcomings of the Johnson et al's[20] study including issues with study design, conduct, and reporting.[16-19,22-25] Additionally, the findings reported by Johnson et al[20] are inconsistent with others in the evidence base.[17-19,22-24] However, to date, this evidence base has not been subject to a formal assessment of the RoB, nor has there been a formal assessment and integration of data quality as it pertains to developing conclusions.

Given (1) the NAS recommendations that an RoB assessment be conducted on studies used as primary data sources for the hazard identification and dose–response assessment, (2) the need for case studies and empirical evidence in testing RoB schemes for toxicological data sets, and (3) the suitability of the TCE evidence base as a case study, the objective of this current evaluation was to evaluate the RoB, as well as other data quality elements, in the evidence base considered by Makris et al[25] and to integrate such into the development of conclusions. The process implemented in this assessment followed that developed by NTP OHAT. This case study provides a demonstration as to how study quality (as evaluated by internal validity [RoB]) and external validity can be integrated into the risk assessment process, supporting both hazard characterization and the selection of candidate studies in the development of toxicity reference values.

Materials and Methods

Selection of a Case Study and Development of Evidence Base

The evidence base established by Makris et al[25] provides a readily available data set upon which to evaluate the role of RoB, as well as other elements of data quality, in chemical risk assessment. To ensure that all currently available literature was included in this RoB assessment, the evidence base developed by Makris et al[25] was combined with findings of an updated literature search (January 1, 2015, to August 15, 2017; see Supplemental Materials). The syntax was developed by an informational specialist, who also executed the PubMed and Embase searches and subsequent screening. The search strategy also involved hand searching of key primary studies as well as reviews (eg, Bukowski[26]). Additionally, while not an SR, in order to evaluate the RoB, a population, exposure, comparator, outcome (PECO) statement is required as the RoB criteria and rating instructions must be tailored to specific research questions. For the purposes of this RoB assessment, the following PECO was developed:

In humans and experimental animals, is in utero exposure to TCE associated with CHDs?. The population was defined as human and experimental animals. The exposure in question was specific to TCE, the comparator being the absence of TCE exposure (eg, control). The outcome was defined as CHDs,

including defects of the valves (mitral, tricuspid, pulmonary, and aortic), arteries (aorta and pulmonary, including the transposition of major arteries), chambers (atria and ventricular), and septa (atrial, ventricular, and atrioventricular).

Critical Appraisal via RoB (Internal Validity)

A research team was assembled with expertise and experience consistent with standards for conducting RoB evaluations. Data extraction and RoB assessments were performed by 2 reviewers; conflicts were resolved by a third. Risk of bias was evaluated using the OHAT RoB tool.[11] Further, RoB was evaluated on the outcome level (vs study level) per OHAT guidance. The OHAT RoB tool is comprised of 11 questions (also known as domains) that are designed to account for different type of bias within a study that, collectively, allow reviewers to consider "the extent to which results of included studies should be relied on."[1] Each question is assigned a rating based on the following: "–" definitely low RoB (dark green shading), "-" probably low RoB (light green shading), "+" probably high RoB or not reported (light red shading), or "++" definitely high RoB (dark red shading). The lower the RoB, the higher the methodological quality of a study/outcome.

Per guidance in using the OHAT RoB tool, it is noted that the core question of each SR is unique and therefore necessitates that investigators tailor the questions to the specific research hypothesis for a given review.[1,11] Following this guidance, 4 of the RoB questions (questions 1, 5, 8, and 9) for the experimental animal studies were evaluated by component (referred to as subdomains). That is, as written in the tool, a single question covered multiple elements of internal validity. Recognizing that part of the current objective was to evaluate RoB schemes for toxicological data sets and that some of the studies in the TCE evidence base were associated with study design limitations, it was important to be able to assess these elements separately, as well as overall. The OHAT questions differentiated by subdomain were questions 1, 5, 8, and 9 (dose randomization, identical experimental, confidence in exposure, and confidence in outcome assessment, respectively). Questions 7 and 10 were not divided into subdomains. Thus, RoB questions were evaluated as follows (see Supplemental Materials for further descriptions and rating categorizations):

Question 1a—Adequate randomization of animals to control or exposure/dose groups?

Question 1b—Were all study groups (control and exposed) investigated concurrently?

Question 5a—Was the same vehicle used for all study groups (control and exposed)?

Question 5b—Were non-treatment-related experimental conditions the same for all study groups (control and exposed)?

Question 7—Were outcome data complete without attrition or exclusion from analysis?

Question 8a—Is there confidence in test article purity?

Question 8b—Is there confidence in test agent solution concentration and stability?

Question 8c—Is there confidence that all study groups were administered doses or experienced exposures in a consistent manner?

Question 9a—Is there confidence in the outcome assessment method?

Question 9b—Is there confidence that the outcome assessors were adequately blinded to the animal/tissue study group identity?

Question 10—Were all measured outcomes reported?

Question 11—Were appropriate statistical units evaluated and reported?

In addition to customization of the criteria, OHAT also recommends that rating instructions be tailored to the specific research question. Although largely similar to that provided by OHAT, rating descriptions were refined for human and experimental animal studies, a summary of refinements are described here and details provided in the Supplemental Materials. With respect to outcome characterization for experimental animal studies, the methodology for dissection and evaluation of CHDs (question 9a) was rated for bias based on validation and reliability. Given the minute size of the fetal heart in rodents and other small animal species, and the sensitivity of this organ tissue, CHDs have been commonly identified by using 1 of 2 common and acceptable fetal dissection techniques (reviewed in Tyl and Marr[27]): the fresh in situ microdissection technique[28,29] and the fixation, serial sectioning technique.[30] Organisation for Economic Co-operation and Development (OECD) guidelines for developmental toxicity studies approve of either technique, and so both were associated with a "low" RoB for the current evaluation. There are advantages and disadvantages specific to the conduct and outcome of each method, and there is overlap in the sensitivity of each to identify certain CHDs.[31] The distinction between "definitely low" and "probably low" RoB was made based on the available evidence that indicated the "Staples technique" is overall more sensitive to the identification of malformations of the heart and major blood vessels.[27,32] Other techniques were rated based on similarity to these methods and demonstrated validation in the literature.

The 11th question, described by OHAT as "other bias," allows for additional questions for other potential threats to internal validity (eg, statistical methods) that can be added and applied as appropriate. For the experimental animal studies, the "other bias" was included, defined as, "were appropriate statistical units evaluated and reported?" For the human studies, no major modifications or subdomains were implemented. Consistent with experimental animal studies, the "other bias" question was used to account for the conduct and reporting of statistical analyses. The rating definitions were largely predicated on the appropriate use of statistical units and the handling of control groups. Because fetuses exposed in utero are wholly dependent upon the mother, and it is only the mothers who are

independently sorted into study dose groups, it is a tenet of developmental toxicology that the litter—not the fetus—is the appropriate unit for statistical analysis.[27,33,34] As such, studies that reported statistical results on a per-litter basis were defined as "low" RoB for statistical analysis. Studies in which the statistical unit was not evident or was based on the fetus were defined as "high" RoB studies for this question. Further, analyses that used a single concurrent control were also considered to have lower RoB than studies that relied on pooled controls; reporting from original study reports was relied upon in assignment of rankings.

When evaluating the epidemiological literature for evidence of associations between a particular exposure birth defects, it is important to control for a number of confounding factors.[35-38] Herein, confounders considered to be important when rating epidemiological studies included maternal cigarette smoking, alcohol use, advanced maternal age, diabetes, hypertension, poor nutrition (eg, folic acid deficiency), exposure to infectious agents, and use of certain medications.[37,39-42] Particular emphasis was placed on maternal smoking, alcohol use, and hypertension, as these are factors that alone have been associated with birth defects, including CHDs.[43-47] In order to achieve a low RoB rating, epidemiology studies had to account for maternal smoking and alcohol use during pregnancy (probably low) in addition to other variables (definitely low).

Following appraisal of internal validity via RoB, studies were assigned to tiers as a means of characterizing the overall RoB for each outcome/study, thus allowing for comparison between studies and across evidence streams. Per OHAT guidance[1], a 3-tier approach was implemented, where tier 1 studies represent those studies that generally have a "low" RoB (higher level of confidence) and tier 3 studies generally have a "high" RoB (lower level of confidence). Tier 2 studies are those that met neither of the criteria for first or third tiers. Similar to that described by the OHAT guidance, the tiering approach implemented here placed emphasis on key questions. Due to the nature of experimental versus observational study types, the key questions identified for animal versus human studies differed. For the experimental animal studies, questions 5b (same nontreatment environmental conditions across groups) and 9a (method used to identify CHD) were identified as key. For the human studies, the questions identified by OHAT (4, 8, and 9) were used as key RoB domains. Tiers were defined as follows:

- Tier 1: A study must be rated as "definitely low" or "probably low" RoB for key elements and have most other applicable items answered "definitely low" or "probably low" RoB.
- Tier 2: A study that neither meets the criteria of tier 1 or tier 3.
- Tier 3: A study must be rated as "definitely high" or "probably high" RoB for key elements and have most other applicable items answered "definitely high" or "probably high" RoB.

Data Integration and Overall Evaluation of Confidence in the Body of Evidence

Data were synthesized and integrated by study type (eg, case–control/cross-sectional, and oral/inhalation), evidence stream, and overall. Confidence (also referred to as the quality of evidence) was determined per OHAT. In brief, in accordance with this guidance, an initial confidence rating is assigned based on 4 study design elements (controlled exposure, exposure prior to outcome, individual outcome data, and comparison group used). The initial confidence can then be increased based on large magnitude of effect, evidence of a dose–response, residual confounding, and consistency of results across studies. Confidence can be decreased by inconsistent results among studies, indirectness (external validity or generalizability, evaluated both on an individual study basis as well as on body of evidence basis), and imprecision. Publication bias and residual confounding were not evaluated here. Final confidence ratings were assigned by stream and overall. It should be noted, however, that the confidence ratings in the OHAT guidance reflect confidence that study findings accurately reflect the true association between exposure to a substance and effect. Thus, the framework—by default—is designed to describe confidence in observation of an effect (the alternative hypothesis) versus the lack of an effect (the null hypothesis); as such, additional narrative is required to describe confidence when data support the null hypothesis.

Evaluation of the Role and Impact of RoB on Developing Conclusions

Continuing with the OHAT process,[1,2] the confidence ratings for the body of evidence (which included consideration of RoB) were translated into evidence of health effects (step 6 in the OHAT process) and then conclusions developed based on the integration of evidence (step 7 in the OHAT process). To evaluate the potential impact of RoB, the key elements of data evaluation, including the process to do so, were considered in the context of the risk assessment process, specifically the conclusions regarding hazard and the data quality assessment relative to selection of candidate data sets, thus addressing the NAS recommendations regarding RoB assessment for studies used in dose–response assessment.

Results

Evidence Base for TCE and CHD

The literature search yielded 35 unique references published since 2015. None of the references examined the potential association of in utero exposure to TCE and development of CHDs in fetuses or neonates. Three additional epidemiological studies—Tola et al,[48] Brender et al,[49] and Gilboa et al[50]—were identified via hand searching of USEPA,[51,52] Makris et al,[25] and Bukowski.[26]

Of the 11 experimental animal studies identified, 2 reported multiple experiments (ie, evaluation of CHD in 2 different

animal species).[53,54] Here, these were treated as separate studies. In addition, there were 2 publications from the same laboratory that reported on the same animal experiment conducted over a 6-year period,[20,55] as well as related correspondence and errata from the authors.[56-58] Because, collectively, these publications report on a single data set, this was treated as a single experimental animal study here and only the more recent paper[20] was included in the current RoB analysis. Similarly, for the epidemiological literature, 2 publications reported on the same investigation,[59,60] so they were evaluated as a single study. Lagakos et al[61] and Massachusetts Department of Public Health[62] also reported on the same investigation, with the latter report (published by a state government agency) presenting an updated and upgraded (cross-sectional vs cohort study) analysis of the earlier study. However, only a summary of the updated/upgraded analysis was readily available; because details were not available in such, only the earlier publication (which contained details of methods and findings) was included here.

Overall, the evidence base for TCE-CHD contained 12 experimental animal studies (Cosby and Dukelow,[63] Fisher et al,[64] Johnson et al,[20] Narotsky et al,[65] Narotsky and Kavlock,[66] Carney et al,[67] Dorfmuller et al,[68] Healy et al,[69] and 2 studies each in Hardin et al[54] and Schwetz et al[53]) and 9 epidemiology studies (Tola et al,[48] Brender et al,[49] Gilboa et al,[50] Yauck et al,[70] Bove et al[60]/Bove,[59] Forand et al,[71] Goldberg et al,[72] Ruckart et al,[73] and Lagakos et al[61]). Here, the term study refers to a unique experiment or evaluation rather than to a publication as a whole, though the author/year of a publication is used (along with a description where needed) to identify a study.

Synthesis and RoB Evaluation of Experimental Animal Studies

The TCE-CHD animal evidence base was comprised of rat (9), mouse (2), and rabbit (1) studies; these were divided into 2 groups based on route of maternal exposure (oral or inhalation; Table 1). Across the 7 inhalation studies, daily exposures to TCE ranged from 50 to 1,800 parts per million, with the exposures varying between 4 and 7 h/d over a 10- to 22-day period during gestation. With the exception of the Healy et al's[69] study (exposures in rats on gestation days 8-21), all other inhalation studies involved exposures during the critical window for fetal cardiac development (ie, gestation days 7-15, 8-13, and 8-16 for rats, mice, and rabbits, respectively).[74] No CHDs were reported in any of the TCE exposure groups in the inhalation studies, the relevant route of exposure for development of inhalation toxicity values (eg, RfC). The RoB across these studies was low to moderate; 4 studies were classified as tier 1 studies, the remaining 3 as tier 2 (Figure 1). The outcome assessment method (question 9a) is an important element of the RoB evaluation for developmental toxicity studies, given the small size and delicate nature of the fetal heart. The outcome assessments used as part of the study design for the inhalation experiments reflect common guideline methods (Staples[28] method and the close variant published by Stuckhardt and Poppe[29]; the Wilson[30] method) long recognized as appropriate for evaluating teratogenic effects in the fetuses of species used in these studies (ie, rat, mouse, rabbit), and thus, studies that used these methods were rated as "definitely" or "probably" low RoB, respectively, for question 9a. The exception was Healy et al's[69] inhalation study, which provided insufficient information on the outcome assessment methodology.

The other 5 studies involved oral exposures of pregnant mice or rats to TCE via gavage or drinking water during gestation. With the exception of the Cosby and Dukelow's[63] study (variable 5-day exposures occurring at early and mid-gestation), the windows of exposure for the oral studies ranged from 10 to 22 days and included the critical period of development for the fetal heart in rats (gestation days 7-15) and mice (gestation days 8-13).[74] Of the oral studies, only one[20] reported a statistically significant increase in CHDs in rats exposed to TCE throughout pregnancy (Table 1). Only 2 of these 5 oral studies utilized an outcome assessment recognized as a guideline method[65,66] and therefore rated a low RoB for question 9a. The remaining oral studies either provided insufficient information on the outcome methodology[63] or used a fetal heart dissection and assessment technique[20,64] that has not been validated in the scientific literature. None of the oral experimental animal studies were rated as a tier 1 study for RoB: 4 of the 5 were rated as tier 2 studies, while Johnson et al's[20] study was the only experimental animal study in the TCE-CHD evidence base to be rated as a tier 3 study (Figure 1). The Johnson et al's[20] study also had the highest RoB related to exposure characterization (question 8a-c) due to lack of information on TCE purity, failure to analytically confirm TCE concentration in daily drinking water, and exposure in a group housing setting (3 animals per cage vs individual exposures). In addition, there were a few experimental studies that had high RoB for statistical analysis (question 11) due to limitations on statistical reporting (Cosby and Dukelow,[63] Narotsky and Kavlock,[66] and Healy et al[69]) or pooling of nonconcurrent control groups (Johnson et al[20]).

Across the experimental animal evidence base, most studies had low RoB ratings for selection bias (questions 1a and b) and performance bias (ie, questions 5a and b and 7). The exception was the study by Johnson et al[20] (the only study across the evidence base to report effects), which rated high RoB for most of these subdomains. Many studies rated probably/definitely high RoB for study group concealment and blinding criteria (questions 2, 6, and 9b), as information on these elements were not reported.

Synthesis and RoB Evaluation of Epidemiological Studies

The 9 observational human studies evaluating TCE-CHDs were separated into 2 broad groups based on their level of directness (ie, external validity): (1) those that directly evaluated and reported findings specific to TCE and CHD (ie, design and report of study was "fit for purpose")[48-50,60,70,71] and (2) studies that did not evaluate or report TCE-specific exposures

Table 1. Summary of Evidence Synthesis and Confidence in the Experimental Animal Studies.

Study	Study type	Finding[a]	Included in evaluation by Makris et al (2016)?[b]	Initial confidence rating[c]	Risk of bias tier	Risk of bias	Unexplained inconsistency	Indirectness	Imprecision	Magnitude	Dose–response	Consistency across study types	Final confidence rating
Oral studies													
Cosby and Dukelow[63]	Mouse; oral gavage administered during gestation (GD 1-5, 6-10, and 11-15)	Negative: no CHDs reported in animals versus controls	Yes	High	2	–/↓ Serious (all information is from tiers 2 and 3 studies)	–Single inconsistency (1 of 5 oral study) likely explained by study design limitations. Inconsistent study could not be validated	–Not serious; direct evaluation of TCE-CHD	–/↓The single study to report effect did not report any measure of variability (SD or SE) on CHD findings	–No effects observed in 4 of 5 oral studies; single study reporting effect had low magnitude	–No TCE-CHD effects observed in 4 of 5 oral studies; single study reporting effect demonstrated poor dose–response	↑No TCE-CHD effects observed in 4 of 5 oral studies. Increases confidence in negative findings	High (+++) confidence in the animal database demonstrating null hypothesis
Fisher et al[64]	Rat; oral gavage administered during gestation (GD 6-15)	Negative: no statistically significant increase in % fetus or litter with CHDs versus controls. Positive control resulted in statistically significant increase in CHDs versus controls, validating model. Study designed to verify Dawson/Johnson positive results	Yes		2								
Johnson et al[20,d]	Rat; gestational exposure via drinking water (GD 1-22)	Positive: statistically significant increase in % fetuses with CHDs at 2 of 3 highest doses; reported a dose–response relationship	Yes		3								
Narotsky and Kavlock[66]	Rat; oral gavage administered during gestation (GD 6-19)	Negative: no CHDs reported in animals versus controls	Yes		2								
Narotsky et al[65]	Rat; oral gavage administered during gestation (GD 6-15)	Negative: no CHDs reported in animals versus controls	Yes		2								

(continued)

Table 1. (continued)

Study	Study type	Finding[a]	Included in evaluation by Makris et al (2016)?[b]	Initial confidence rating[c]	Risk of bias tier	Risk of bias	Unexplained inconsistency	Indirectness	Imprecision	Magnitude	Dose–response	Consistency across study types	Final confidence rating
Inhalation studies													
Carney et al[67]	Rat; inhalation exposure (GD 6-20, 6 h/d)	Negative: no CHDs reported in animals versus controls	Yes		1	–Not likely (Most information is from tier 1 studies)	–No inconsistency between inhalation studies to explain	–Not serious; direct evaluation of TCE-CHD	–No CHDs reported in any of the 7 inhalation studies	–No effects observed in 7 of 7 inhalation studies	–No TCE-CHD response reported in 7 of 7 inhalation studies	↑No TCE-CHD response reported in 7 of 7 inhalation studies. Increases confidence in negative findings	High (+++) confidence in the animal database demonstrating null hypothesis
Dorfmueller et al[68]	Rat; inhalation exposure (GD 1-20, 6 h/d)	Negative: no CHDs reported in animals versus controls	Yes		1								
Hardin et al[54,e]—(1) rat experiment	Rat; inhalation exposure (GD 0-18, 7 h/d)	Negative: no CHDs reported in animals versus controls	Yes		2								
Hardin et al[54,e]—(2) rabbit experiment	Rabbit; inhalation exposure (GD 0-21, 7 h/d)	Negative: no CHDs reported in animals versus controls	Yes		2								
Healy et al[69]	Rat; inhalation exposure (GD 8-21, 4 h/d)	Negative: no CHDs reported in animals versus controls	Yes		2								
Schwetz et al[53]—(1) rat experiment	Rat; inhalation exposure (GD 6-15, 7 h/d)	Negative: no CHDs reported in animals versus controls	Yes		1								
Schwetz et al[53]—(2) mouse experiment	Mouse; inhalation exposure (GD 6-15, 7 h/d)	Negative: no CHDs reported in animals versus controls	Yes		1								

Abbreviations: CHD, congenital heart defect; OHAT, Office of Health Assessment and Translation; TCE, trichloroethylene; GD, gestation day; SE, standard error; SD, standard deviation.

[a]Based on assessor classification; unless the study authors reported a statistically significant increase in CHDs relative to control group, finding is negative for TCE-CHD.

[b]Classification based on inclusion in evaluation of hazard (ie, inclusion of tables, etc).

[c]Based on OHAT[1]: Table 8—Study design features for initial confidence rating.

[d]As ultimately acknowledged by the original study authors, Johnson et al[20] represents multiple experiments conducted over a 6-year period.[57,58] Data presented in an earlier publication represent the results of 2 of 4 total exposure groups of this study and were republished by Johnson et al.[20] Although previous reviewers have referred to these publications as 2 distinct efforts, it is more accurate to treat these articles as a single study unit. Since the data for all 4 exposure groups were published by Johnson et al,[20] this is the citation used in this study to represent this study. However, there are certain inconsistencies between the 2 publications (vehicle used, number of controls, CHD classification) that are important to characterizing study quality, and therefore, we include selective references to the earlier publication.

[e]Hardin et al's[54] study is a general summary of a series of teratogenicity studies on several workplace chemicals performed in multiple animal species by a contract research laboratory (Litton Bionetics) on behalf of the National Institute of for Occupational Safety and Health (NIOSH). Critical study design and results information were not reported by Hardin et al[54] but were found in the publically available laboratory report furnished to NIOSH by Litton Bionetics.[92]

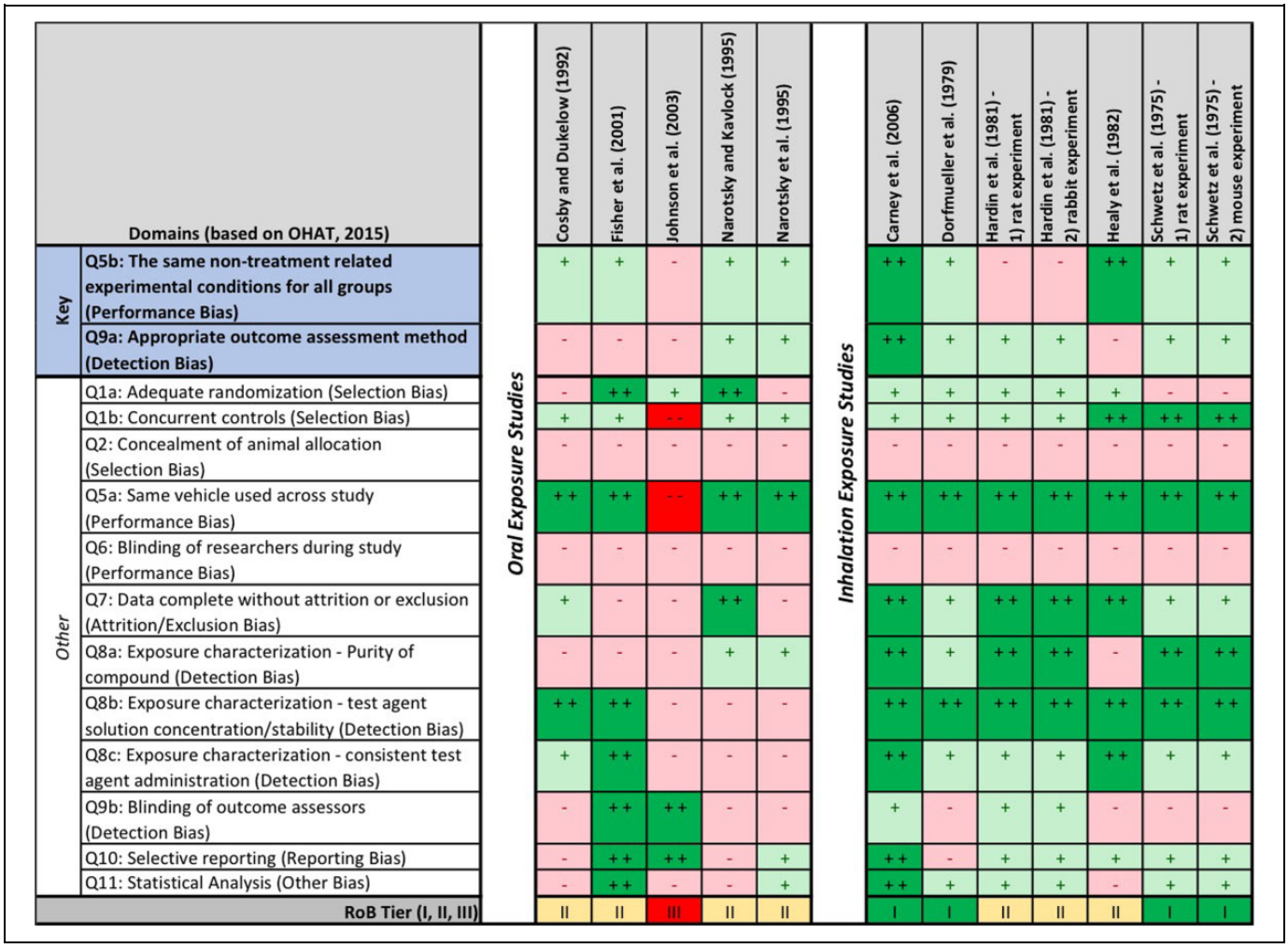

Figure 1. Risk of bias (RoB) heat map for experimental animal studies. The question-based validity was evaluated using the Office of Health Assessment and Translation (OHAT) RoB tool. Risk of bias for each question is indicated by color: "definitely low RoB" (dark green, –), "probably low RoB" (light green, -), "probably high RoB" (light red, +), and "definitely high RoB" (dark red, ++).

or effects but were included in the evidence base by Makris et al[25] or Bukowski[26] (Table 2). These latter studies involved exposure to media that may have contained TCE or a mixture of TCE and other compounds, but authors did not attempt, or did not attribute, exposures and/or effects to TCE specifically.[61,72,73] Additionally, the information presented in the study by Goldberg et al,[72] Lagakos et al,[61] and Ruckart et al[73] showed evidence of coexposures to other chemicals (some of which, such as lead, are known to be associated with CHDs[75]). And while coexposure is evaluated in RoB, these studies were substantially different than the studies determined to be more "fit for purpose." As such, these studies were also evaluated for RoB, but as a second group, and integrated separately from the first group of studies.

The first group of studies was selected as the primary evidence base evaluating associations between TCE exposure and CHDs in humans and was comprised of 6 studies: a single cohort study (Tola et al[48]), 2 cross-sectional studies (Bove[59]/Bove et al,[60] Forand et al[71]), and 3 case–control studies (Yauck et al,[70] Gilboa et al,[50] and Brender et al,[49]). The findings from these are mixed; several of the studies report a lack of association, whereas others report weak findings for some types of malformations (but not others; Table 2). Interpretation of these data is difficult, given the heterogeneity of study design and conduct and seriousness of RoB (Figure 2). For example, Bove[59]/Bove et al[60] report an odds ratio (OR) of 1.24 for the association between TCE concentrations of >10 parts per billion (ppb) in residential wells and major cardiac effects. Interpretation is severely limited by (1) no confidence interval (CI) derived/provided by the authors, (2) lack of confidence in exposure (based on a series of assumptions relating biannual measurements of TCE in public water systems to residential status), and (3) lack of adjustment for critical confounding variables. The largest magnitude of effect was reported by Forand et al,[71] reporting an RR of 4.91 (95% CI: 1.58-15.24); however, this risk ratio estimate lacked precision, nor did it reflect an adjusted value that accounted for confounding. Additionally, this study utilized population-based exposure estimates of exposure, as opposed to exposure estimates for the individuals in the study.

Table 2. Summary of Evidence Synthesis and Confidence in Human Studies.

Study	Study type	Finding[a]	Included in evaluation by Makris et al?[b]	Initial confidence rating[c]	Risk of bias tier	Risk of bias	Unexplained inconsistency	Indirectness	Imprecision	Magnitude	Consistency across study types	Final confidence rating
Analyses involving direct assessment of TCE and CHD (ie, offered evaluation and results specific to TCE and CHD)												
Tola et al[48]	Cohort	Negative: no malformed baby was found to have been born to any mother exposed occupationally	No	Moderate	2	–/↓Serious (all information is from tier 2 studies)	–Inconsistencies assumed to be inherent to study design elements	–Not serious; direct evaluation of TCE and CHD	–When provided, confidence interval ranges varied, some were large	–When effect observed, magnitude was not large	–Results are not consistent between study types	Low (++) to very low (+) confidence in the human database demonstrating either null or alternative hypothesis
Gilboa et al[50]	Case–control	Negative: no significant increase in CHDs in mothers occupationally exposed to TCE between cases and controls ($P = 0.67$).	No	Low to moderate	2							
Yauck et al[70]	Case–control	Negative: no significant increase in CHDs between cases and controls when only distance from TCE emitters is evaluated.Positive: significant increase in CHDs between cases and controls when distance from TCE emitters is adjusted by age (adjusted OR, 3.2; 95% CI, 1.2-8.7)	Yes	Low to very low	2							
Brender et al[49]	Case–control	Negative: no increase in conotruncal heart defects (OR = 0.98; 95% CI 0.87-1.10) or obstructive heart defects (OR = 1.03; 95% CI 0.92-1.15) for cases where maternal residence was proximal to TCE source.Positive: small increase in septal heart defects (OR = 1.06; 95% CI 1.02-1.10) for cases where maternal residence was proximal to TCE air emissions (based on TRI data)	No		2							
Bove et al[59,60,d]	Cross-sectional	Weak/unclear (estimated OR with no CI): increase in major cardiac effects for TCE >10 ppb (OR = 1.24) and increase in ventral septal defects (VSDs; OR for TCE >5 ppb = 1.30), but no CI provided in either case, so significance is unclear	Yes (also combined)		2							
Forand et al[71]	Cross-sectional	Positive: increase for all CHDs (RR = 2.15; 95% CI: 1.27-3.62); major cardiac defects (n = 6) were of borderline statistical significance (RR = 2.40; 95% CI: 1.00-5.77), but significant increase in conotruncal defects (RR = 4.91; 95% CI: 1.58-15.24; authors note that although statistically significant, these RRs were	Yes		2							

(continued)

Table 2. (continued)

Study	Study type	Finding[a]	Included in evaluation by Makris et al?[b]	Initial confidence rating[c]	Risk of bias tier	Risk of bias	Unexplained inconsistency	Indirectness	Imprecision	Magnitude	Consistency across study types	Final confidence rating
		based on 3 and 4 exposed cases, respectively										
Analyses involving assessment of exposure to media with multiple contaminants including TCE (ie, no evaluation and results specific to TCE)[e]												
Goldberg et al[72]	Case–control (pseudo)	Weak/unclear (estimated OR with no CI): CHDs for exposure to water contaminated with TCE and other chemicals	Yes	Low (was not a true case–control study)	3	↓Very serious: plausible bias that seriously weakens confidence in the results (2 of 3 studies rated tier 3)	–Inconsistencies assumed to be inherent to study design elements	↓Serious: CHD not directly assessed with potential TCE exposure, but more general contaminated water source	↓Precision cannot be evaluated since no measures of variability were provided	–Two of 3 studies reported no effect; when effect observed, magnitude was not large	–Results not adequately analyzed or reported to evaluate consistency across studies	Very low (+) confidence in the human database demonstrating either null or alternative hypothesis
Ruckart et al[73]	Case–control	Negative: CHDs in TCE-contaminated area of Camp Lejeune reported only one-third expected number. Authors did not analyze CHD data further	Yes	Low to moderate	3							
Lagakos et al[61]	Cross-sectional	Negative: No results for TCE specifically; negative CHDs for exposure to well water contaminated with TCE and other chemicals	Yes	Low to very low	2							

Abbreviations: CHD, congenital heart defect; CI, confidence interval; OR, odds ratio; TCE, trichloroethylene; TRI, USEPA's Toxic Release Inventory program; RR, relative risk.

[a]Based on assessor classification; OR with CIs overlapping were not considered to be positive.

[b]Classification based on inclusion in evaluation of hazard (ie, inclusion of tables, etc); Gilboa et al[50] and Brender et al[49] are cited in the narrative but not formally included in the evaluation.

[c]Based on Office of Health Assessment and Translation[1]: Table 8—Study design features for initial confidence rating.

[d]Both studies report on the same assessment and provide similar information and thus are regarded as a single line of evidence.

[e]Studies that were included by Makris et al[25] as part of the evaluation of TCE, but authors do not provide TCE-specific analyses; other studies characterizing CHD from media containing chlorinated contaminants or other agents are available but not included in this study (ie, the scope involved TCE and CHD, based on evaluation by Makris et al[25]).

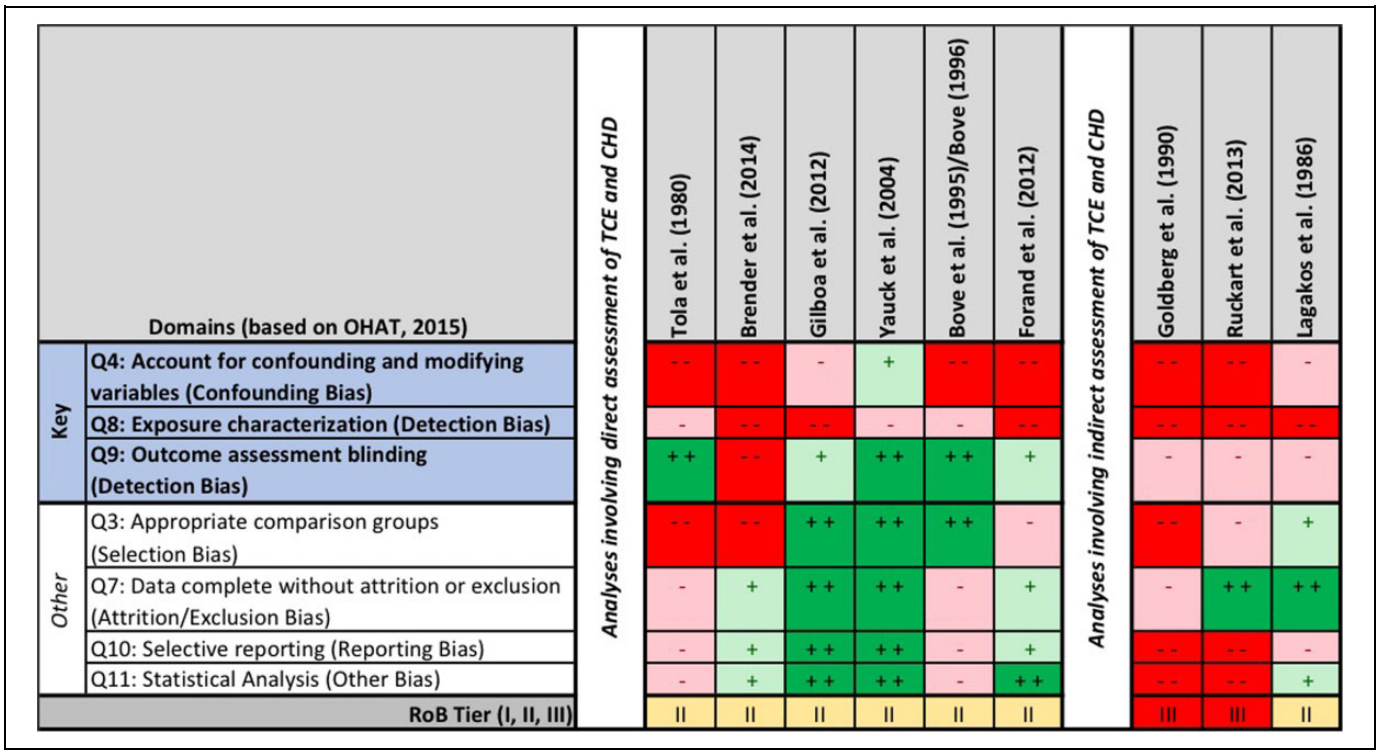

Figure 2. Risk of bias (RoB) heat map for epidemiological studies. The question-based validity was evaluated using the Office of Health Assessment and Translation (OHAT) RoB tool. Risk of bias for each question is indicated by color: "definitely low RoB" (dark green, –), "probably low RoB" (light green, -), "probably high RoB" (light red, +), and "definitely high RoB" (dark red, ++).

The study with the lowest overall RoB, Yauck et al,[70] reported a lack of association for TCE when unadjusted for potential confounders but reported an increased OR when adjusted for certain risk factors (3.2; 95% CI: 1.2-8.7). This case–control study was the only study in the evidence base that adjusted for both maternal smoking and alcohol consumption—variables that the authors found to be significant on their own,[70] thus highlighting the critical nature of evaluating such. The study by Gilboa et al,[50] a case–control study that evaluated occupational exposures to TCE (and other solvents) in women from the National Birth Defects Prevention Study, did not find a significant increase in CHDs between cases and controls ($P = 0.67$). Notably, the study by Gilboa et al[50] was the only study in the evidence base to adjust for folic acid supplementation, although the authors did not adjust for alcohol consumption or smoking patterns. As demonstrated in Figure 2, adjustment for confounding was a significant limitation across the evidence base.

More significant than confounding, however, are the limitations in evaluation of exposure across the evidence base. None of the studies directly measured exposure in subjects; this is a critical limitation as such studies are likely to have less RoB than studies involving indirect measures. Two studies utilized proximity to a TCE source as a measure of exposure,[49,70] 2 used group-level categorical classifications based on residential location,[59,71] and 2 used occupational status, either via job exposure matrix (nonvalidated and based on self-reporting, thus introducing the potential for recall bias)[50] or via biomonitoring data (urinary trichloroacetic acid).[48] Using proximity as a surrogate for exposure, rather than using analytical data to model exposure estimates, is known to produce biased results.[76] The utilization of proximity to exposure sources greatly reduces the available information and introduces sources of bias, both mathematically and with respect to researchers' judgment. In the absence of an analysis of the various distances that comprise a study's data set, this also suggests some significant relations could only be detected using the selected bands of distance (eg, living within 1.32 miles of at least 1 site, as was categorically evaluated by Yauck et al[70]; use of a "threshold distance" (undefined) by Brender et al[49]), which casts doubt on the validity of the findings. If living near these sites were associated with higher risk, using the continuous number of sites nearby or several continuous variables documenting continuous distance to the nearest 3 sites or simply using the geographical coordinates of the households versus exposed/nonexposed categorization based on a specific distance (eg, 1.32 miles) would also eliminate some of the bias and lend credibility to the findings.

Additionally, OHAT includes verification of the compound over the course of the test period as an element in determining exposure misclassification, underscoring the importance of accounting for changes in media levels of volatile compounds during the course of the study.[11] Only 1 study in the human evidence base involved direct measurement of TCE in any form—Bove[59]/Bove et al[60] The authors of this study utilized data from biannual measurements of TCE in drinking water.

Given the volatility of TCE, there is low confidence that biannual measurements represented an accurate characterization of exposures to TCE via the public water supply.

Moreover, with the exceptions of the studies by Brender et al[49] and Bove[59]/Bove et al,[60] none of the studies adjusted risk estimates for the potential impact of coexposure to other chemicals on the TCE-CHD association data. This limitation is of particular relevance to 3 of the studies that were categorized separately due to lack of TCE-specific evaluation and reporting. The studies Lagakos et al,[61] Goldberg et al,[72] and Ruckart et al,[73] all involve exposure to media with multiple contaminants (eg, dichloroethylene, tetrachloroethylene, chloroform, lead, chromium, etc; direct evidence of such provided by study authors). Two of these studies reported a lack of CHD response in their respective study populations: Lagakos et al,[61] using a space–time distribution from wells and survey data of adverse pregnancy outcomes, and Ruckart et al,[73] in an evaluation of birth defects in babies born to women who lived on Camp Lejeune during their pregnancy. The CHD findings in the latter study are only presented as part of the methods, with the authors reporting that less than the expected number of cases of conotruncal heart defects were observed in the Camp Lejeune population, which the authors provide as justification for excluding CHDs from their agent-specific assessments. Additionally, both of these studies relied upon self-reporting of outcome (and thus the potential for recall bias exists). It should be noted that Lagakos et al[61] attempted to check the accuracy of the outcomes via medical confirmation, findings of which suggested a low rate of false positives, and that overreporting was infrequent and not more common among exposed respondents. The third study—a nontraditional case–control study published by Goldberg et al[72]—reported a relative OR that was "3 times greater" (actual OR not provided) based on comparisons of exposed and unexposed cases (a comparison associated with a high RoB). As a group, these 3 studies had a high RoB for most questions relevant to human studies, including all 3 of the key questions (ie, confounding [eg, no evaluation of confounding], exposure [eg, residence and/or estimation of the fraction of water from selected wells], and outcome evaluation [eg, self-report from telephone survey]; Figure 2).

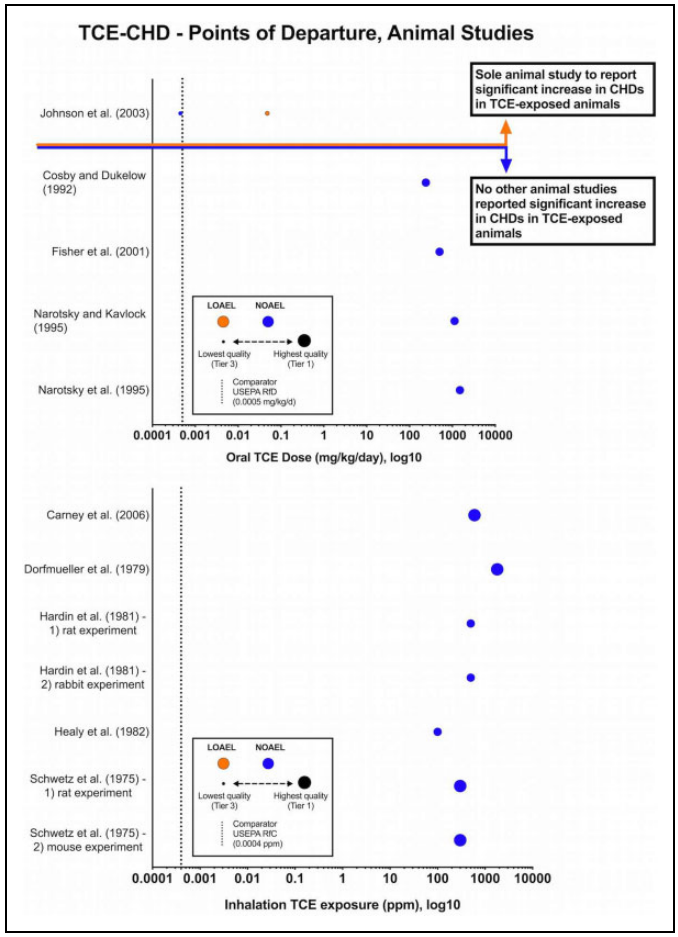

Figure 3. Summary diagram of exposure–response data for trichloroethylene (TCE) exposure via oral (A) or via an inhalation route (B) and congenital heart defects in experimental animal studies. Symbols represent intake dose as reported by original study authors. The color of the symbol indicates the type of effect: no observed adverse effect level (NOAEL; blue symbols) or the lowest observed adverse effect level (LOAEL; orange symbols). The size of the symbol indicates the overall risk of bias (ie, larger symbols indicate a lower risk of bias—or higher methodological quality, and vice versa). The dashed vertical line marks current United States Environmental Protection Agency (USEPA) reference concentration (RfC, A) and RfC (B).

Evidence Integration and Confidence in Body of Evidence

Tables 1 and 2 summarize the elements of evidence integration and resulting confidence in the body of evidence for TCE and CHDs as evaluated per NTP[1] for the animal and human evidence streams, respectively. The experimental animal studies had an overall lower RoB (mostly tier 1/2 and a single tier 3) than the human data (mostly tier 2 of 3 studies). For the experimental animal data, both oral and inhalation studies were assigned initial confidence ratings of "high," per NTP.[1] Findings of the inhalation studies were consistent (all 7 studies resulted in the same result, lack of effects). Collectively, these inhalation studies were considered "not likely" to have significant RoB, a low level of indirectness (ie, high-level confidence in the external validity or generalizability of these data), and no unexplained inconsistencies. And thus, the final level confidence in the studies was very high, that is, there is a very high level of confidence in the evidence base supporting a lack of association between inhalation of TCE and CHDs in experimental animal studies.

A similar final level of confidence was determined for the experimental animal studies involving oral exposure. Only 1 of the 5 oral studies reported CHDs following in utero exposure to TCE (Figure 3). This finding, which is inconsistent with all other oral studies, is explained by high risk of performance, detection, selection, and other (statistical) bias, specifically the lack of concurrent controls, lack of consistent vehicles across control and dose groups, uncertainty in exposures, use of unique and unvalidated outcome assessment method, and

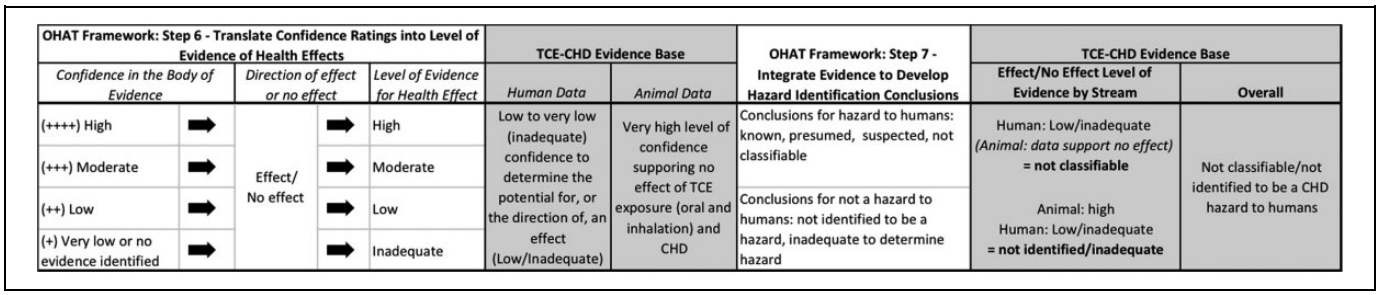

Figure 4. Application of the Office of Health Assessment and Translation (OHAT) framework for systematic review and evidence integration for developing hazard identification conclusions (steps 6 and 7).

pooling of nonconcurrent control group data. When compared to other studies with lower RoB (ie, concurrent controls, consistent vehicle across groups, analytical certainty of exposure dose/exposure levels, common and validated outcome assessment methods, and appropriate statistical analyses) that evaluated similar and higher exposure doses and exposure paradigms, it is apparent that the Johnson et al's[20] study is not sufficiently reliable for hazard characterization or for development of noncancer toxicity values. This is further supported by the lack of ability to replicate the study's findings in a study designed specifically to do so (Fisher et al[64]; particularly notable given that the first author of the Johnson et al's[20] study was also as a member of the cardiac dissection and assessment team in the study by Fisher et al[64]).

For the human studies, initial confidence ratings based on study type ranged from moderate to very low. When the "serious" and/or "very serious" RoB was considered along with inconsistent findings, imprecision, and low magnitude of effects, there was an overall decrease in confidence. That is, there is a very low to low level of confidence in the body of evidence. That is, there are no data of sufficient quality (available data have low to very low level of confidence) to determine the direction of an effect (consistent with OHAT methodology, evidence receiving "very low" confidence ratings should not be used to develop conclusions regarding the potential for health effects; OHAT and Rooney et al[2]).

Integrated Conclusions Considering RoB

Per the OHAT framework, the RoB assessment and level of confidence ratings (steps 4 and 5 in the OHAT framework) were carried forward to the development of conclusions. This involved translating confidence ratings into levels of evidence for health effects (step 6) and classification of overall conclusions (step 7). For the human evidence base, the confidence ratings translated into a "low to inadequate" level of evidence, that is, there is a low to very low (inadequate/insufficient) confidence to determine the potential for, or the direction of, an effect of TCE exposure and CHDs. For the animal evidence base, recognizing that the single inconsistency can be explained by study design, conduct, and reporting limitations, it was determined that the final confidence rating for the oral studies was "high." That is, there was a high level of confidence supporting a lack of association between oral or inhalation exposure to TCE and CHDs in experimental animal studies. In making this determination, contextual (confirmatory) efforts related to the sensitivity of the experimental animal studies were also considered; unlike known cardioteratogens (eg, alcohol, retinoic acid), the animal and human in utero exposure studies provide no evidence of any particular CHD pattern or predominant CHD associated with TCE exposure.

The translated levels of evidence for each stream were then integrated using the matrix provided by OHAT. Per OHAT methodology, data receiving a "very low" level of confidence rating or an "inadequate" level of evidence do not move forward to the development of conclusions; in such cases, it is recommended that conclusions are based on the remaining evidence stream alone. The TCE-CHD evidence base is difficult to integrate, given the lack of confidence to determine the potential for, or direction of, an effect in the human data. Using a conservative approach, and assuming a low (vs inadequate) level of effect for the human data, combined with the high level of confidence that TCE is not associated with CHDs in animals, the overall conclusion ranges from classification of TCE as "not classifiable" to "not identified" to be a CHD hazard (Figure 4).

Impact of RoB

In the context of risk assessment, the resulting impact of the RoB assessment on TCE-CHD is the determination that CHDs are not the most suitable end point upon which to base a quantitative assessment and that the Johnson et al's[20] study is not sufficiently reliable for hazard characterization or development of noncancer toxicity values.

Discussion

The RoB assessment described here provided a systematic, transparent approach to evaluating methodological quality. Following NAS recommendations to conduct an RoB assessment on studies used as primary data sources for dose–response assessment, we have demonstrated that one of the co-candidate studies used to develop the current RfD and RfC values for TCE has the highest RoB in the evidence base. Further, this

case study demonstrates that the inconsistent finding of this study (Johnson et al[20]) could be explained by bias in selection, performance, detection, exposure, and statistics (eg, lack of concurrent controls, lack of consistent vehicle between control and exposure groups, uncertain exposure levels in TCE-exposed animals, unvalidated method for assessing outcome, unreliable statistics, etc). Due to the high RoB (tier 3), inconsistent findings with all other animal studies (n = 11, all of which had lower RoB ratings) and inability to replicate study findings, results of this case study demonstrated that the Johnson et al's[20] study is not sufficiently reliable for hazard characterization or development of noncancer toxicity values. And thus, using the process described here regarding the role of RoB in selecting reliable candidate studies to serve as the basis of toxicity values, the literature characterizing other end points (including alternative developmental effects) could be evaluated and a more reliable and representative data set (or data sets) selected.

The RoB evaluation conducted here demonstrates the importance of evaluating and integrating RoB both in developing hazard conclusions and in candidate data selection for dose–response assessment and development of toxicity values. It also highlights the significant utility of implementing an SR process (such as that described by OHAT process) in risk assessment. Based on decades of experience from the fields of toxicological and clinical medicine, the OHAT approach provides a transparent, objective process for characterizing the validity of the evidence, rating confidence in the evidence, translating confidence in the body of evidence to level of evidence in health effects, and finally to integrating the evidence in developing hazard identification conclusions. Thus, individual study quality is inherent to the synthesis and development of conclusions. Moreover, the OHAT approach guides the user to make conclusions on reliable data, and if such are not available, to be transparent in classifications, utilizing terms such as "insufficient," "inadequate," or "not classifiable" (ie, weak or low levels of evidence between streams do not relate to a high level of evidence of effect).

The OHAT approach, however, is limited to hazard classifications. As demonstrated here, the output of an SR can readily be utilized in subsequent steps in a risk assessment. The particular utility of carrying the output forward is demonstrated via comparison of this case study with a review on a similar body of evidence that did not include an assessment of the RoB,[25] which resulted in an opposite conclusion regarding the suitability of the Johnson et al's[20] study for development of noncancer toxicity . Differences in the conclusions can be explained by elements of the RoB assessment. For example, an RoB assessment is conducted at the outcome (vs study) level. As such, the publications by Dawson et al[55] and Johnson et al[20] (and associated errata) were handled as a single experimental study in this case study, since the data set in Johnson et al[20] includes all the TCE-CHD data from the earlier paper. In contrast, Makris et al[25] treats these studies inconsistently, considering them separate and independent studies for much of their assessment (which gives the perception of a greater volume of evidence than is actually available), but as a single study for the dose–response evaluation. The question-based evaluation of RoB conducted here provided an objective rationale for assessment of internal validity—the output of which transparently provides rationale for the lack of reproducibility, low magnitude of response, and the likely reasons for the inconsistency in findings (ie, performance, detection, and selection biases). In this case study, both the findings and the study quality (as assessed by internal and external validity) of all of the evidence were integrated, whereas Makris et al[25] did not formally integrate the studies reporting a lack of TCE-CHD association in rats, mice, and rabbits.[54,63,65,66,68,69]

In making these comparisons, it is notable that evaluation and integration of RoB did not result in significantly different conclusions from Makris et al[25] regarding the human studies despite differences in overall approach. It is likely that similar conclusions were reached for the human evidence because (1) some aspects of bias were considered (though not formally evaluated) by Makris et al[25] and (2) there is overlap in the weight of the evidence approach used by Makris et al[25] and the elements that also form the basis of Grading of Recommendations Assessment, Development, and Evaluation (GRADE)and OHAT evidence integration frameworks. For example, Makris et al[25] informally considered confounding variables, approach for evaluation exposure, and classification of outcomes. The general conclusion on the lack of reliability of the available human evidence is consistent with that of prior reviews of this literature (eg, Hardin et al,[54] Watson et al,[18] and Makris et al[25]). The RoB conducted here also contributes to an additional need identified by Makris et al[25] regarding interpretation of the epidemiological database for cardiac defects associated with TCE exposures. Presently, the high level of heterogeneity in study design and the lack of information within individual studies (ie, no OR developed, no CIs reported) preclude meta-analyses.

The findings of the case study reinforce the OHAT recommendation regarding a priori project-specific customization of the RoB approach to rigorously evaluate and differentiate study quality for a given PECO. For example, here, we identified and categorized outcome assessment methods associated with the lowest RoB for cardiac heart defects in experimental animal studies. This was based on the classification of dissection methods used in OECD guidelines (or similar) as having a low RoB. Doing so allowed for further differentiation of study quality (an objective of the assessment). The majority of TCE-CHD studies used guideline-approved dissection methods. Two studies used a dissection technique that was not considered to be reliable here: Johnson et al[20] and Fisher et al,[64] the latter of which was explicitly designed to attempt to replicate the CHD findings from Johnson et al.[20] Dawson et al[55] described this alternative dissection technique and alleged that it was sensitive to the detection of particular defects (eg, adhered valve cusps) and abnormal valve dimensions (Johnson et al[77]). It should be noted that the controls in these 2 studies also had considerably higher background levels of CHDs relative to the Staples technique (Carney et al[67]). This suggests that the combination of the

fixing and unique tissue cuts on such minute tissues may be introducing artifacts. As such, the dissection method used in these 2 studies (Fisher et al[64] and Johnson et al[20]) was not considered to be reliable. It is also recognized, however, that the types of CHDs reported in these studies were diverse and inconsistent among TCE treatment groups, with no evidence of a predominant defect or set of defects in any TCE exposure group in these studies.[18,19,51] A similar situation arises when evaluating the CHD data presented in the TCE metabolite studies.[78-81]

Implementation of the case study also reinforced that an RoB assessment does not eliminate subjectivity and expert judgment, though highlighting the complimentary nature of utilizing a transparent, formal system to evaluate RoB and integration of such in decision-making. For example, when evaluating the potential for bias, this current evaluation differed from Makris et al[25] as to what would constitute bias selection and performance bias, specifically with respect to what constitutes an appropriate control group. Makris et al[25] considered the pooling of 5 groups of nonconcurrent control animals that received different vehicles to be analogous to a historical control group and thus suitable for use as a control in the statistical analyses. Makris et al[25] further characterized this heterogeneous combination of data across studies as a strength. In contrast, here, these factors were viewed as shortcomings in methodological quality, relating to a high RoB in several questions. It is also notable that in recognizing some of these aspects as potential shortcomings, Makris et al[25] contacted the original study authors for clarification and cite personal communications in which unpublished study data were made available to Makris et al.[25] These unpublished data were not made publically available and thus not available for evaluation here. However, even if such information were made publicly available, use of such clarifying information from this study without attempts to contact other study authors to clarify uncertainties in other studies is a direct form of bias in the conduct of an SR and thus is viewed as unfavorable here.

Additional challenges in the integration of RoB are associated with use of RoB alone as a measure of data quality. Often regarded as an ambiguous term, OHAT addressed the role of RoB as part of an evaluation of data quality, noting that internal validity (RoB), external validity (directness), and completeness in reporting are all important elements of assessing the credibility of individual studies.[2] Historically, in practice, other systems such as Klimisch scoring[82] have been implemented. In such systems, guideline-based studies conducted via good laboratory practice (GLP) are regarded as the top quality or "gold standard" studies. A commonly discussed challenge in the uptake of a question-based RoB approach is that these "gold standard" studies do not automatically rank highest. In the context of SR, the elements of a guideline-based or GLP study are not all addressed by RoB, but rather by integration of other components. Many aspects of these "fit for purpose" studies are evaluated as directness or external validity and/or are addressed at the level of inclusion/exclusion (ie, only direct or "fit for purpose" studies would be included in a review). Here, each study was evaluated both for internal and external validity. The guideline/GLP study (Carney et al[67]) and guideline-type studies (ie, experiments conducted following protocols similar to guideline studies, as opposed to hypothesis generating, research-oriented protocols; Schwetz et al,[53] Hardin et al,[54] Healy et al[69]) received more favorable RoB ratings and also higher ratings for directness—the combination of which increase confidence in the outcomes of these higher quality studies.

An example of the challenge in using RoB to critically appraise guideline-based studies (and a recognized shortcoming of this assessment) is accounting for the number of animals in each study (ie, "n"). One of the many components addressed in any given study guideline is that the "n" per dose group should be large enough to capture a potential effect. The OHAT RoB questions do not directly address this. For example, in the TCE-CHD case study, most of the experimental animal studies involving oral exposure (including Johnson et al[20]) did not include adequate animal numbers based on the OECD guideline protocol for developmental toxicology[34] (most included $n < 20$), whereas the majority of the inhalation studies met or exceeded this guideline standard ($n \geq 20$). Although this aspect would indirectly relate to selection, performance, detection, and other (statistical) bias, it was not directly accounted for in the RoB here. Rather than a reflection of study quality per se, this element relates to study sensitivity; high potency chemical effects may still be detected in studies with less than optimal "n" and are more of a design limitation for studies reporting negative data (ie, Were there enough animals per group to capture low potency chemical effects?). This study design element would have further differentiated the oral and inhalation evidence streams within the experimental animal evidence base. In future refinements of critical appraisal tools, this aspect could be added as a subdomain or as a completely separate RoB question. It is thus notable, and commendable, that initial information available regarding updates to the IRIS program suggest that in the future, individual studies will be evaluated for study sensitivity, that is, the ability of the study to detect the potential effect in question[83]; assessment of such would likely cover the study "n" as well as other study design elements that may be unique to a given end point.

Additionally, although the NTP OHAT RoB tool has a clear application to human and experimental animal studies, it does not provide guidance on the evaluation of mechanistic data. As such, we did not evaluate RoB in the avian or in vitro studies included by Makris et al.[25] Although this could be regarded as a shortcoming in the context of hazard assessment, it does not detract from integration of study quality relative to selection of candidate data sets. Although the avian and in vitro studies in the TCE evidence base could potentially be useful information for characterizing biological mechanisms underlying cardiac defects,[84-86] they are very indirect in the context of developing toxicity values, particularly when considering the nature of these models relative to the exposure of concern (via pregnant mothers). These studies do not accommodate for the complexity in biological responses versus the human and experimental

animal studies, which notably utilized lower exposures (avian and in vitro studies utilized TCE concentrations several orders of magnitude higher than the human and animal studies). In addition, such studies utilize exposure routes that are not relevant (eg, avian models directly injected TCE into the chorioallantoic membrane of the egg[87-92]). Thus, the human and experimental animal studies are more generalizable to population exposures and thus preferred over in vitro and avian data for risk assessment.

In conclusion, we have demonstrated the importance of carrying out the NAS recommendations to assess RoB on studies used as primary data sources for hazard identification and dose–response assessment—a critical element in determining how confidently conclusions can be drawn. This exercise also demonstrates a need for further development and refinement of frameworks to evaluate both internal and external validity for nonhuman studies. It is anticipated that results presented here both (1) provide important information to risk managers regarding the confidence (and uncertainty) in the TCE-CHD evidence base and (2) provide a demonstration of the role of RoB in the development of toxicity values.

Author Contributions

D. Wikoff contributed to conception and design, contributed to analysis and interpretation, drafted the manuscript, and critically revised manuscript. J. D. Urban contributed to design, contributed to acquisition, analysis, and interpretation, drafted the manuscript, and critically revised the manuscript. S. Harvey contributed to design, contributed to acquisition, analysis, and interpretation, drafted the manuscript, and critically revised the manuscript. L. C. Haws contributed to conception and design, contributed to analysis and interpretation, and critically revised the manuscript. All authors gave final approval and agree to be accountable for all aspects of work ensuring integrity and accuracy.

Declaration of Conflicting Interests

The author(s) declared the following potential conflicts of interest with respect to the research, authorship, and/or publication of this article: The authors are employed by ToxStrategies, Inc, which is a consulting firm providing services to private and public organizations on toxicology and risk assessment issues. ToxStrategies received consulting fees for research and preparation of the manuscript. L. H. has consulted and given presentations to regulatory agencies and at scientific conferences regarding TCE risk assessment issues.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This work was funded by ENTEK International. The funders were given the opportunity to review the draft findings; the purpose of such review was to allow input on the clarity of the science presented but not on interpretation of the research findings. The researchers' scientific conclusions and professional judgments were not subject to the funders' control; the contents of this manuscript reflect solely the view of the authors.

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Supplemental Material

Supplementary material for this article is available online

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HSIA halogenated solvents industry alliance, inc.

November 14, 2018

Toni Krasnic
Office of Pollution Prevention and Toxics
Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Dear Mr. Krasnic:

Enclosed is the audited draft report titled "An Oral (Drinking Water) Study of the Effects of Trichloroethylene (TCE) on Fetal Heart Development in Sprague Dawley Rats." This study was sponsored by the Halogenated Solvents Industry Alliance, Inc. (HSIA) in order to try to replicate the findings of Johnson *et al.* (2003).[1] We will submit a final report when it is completed but wanted EPA to be able to see the results as soon as they were available. Please add this to EPA-HQ-OPPT-2016-0737 if appropriate.

Pregnant SD rats were given in their drinking water 0, 0.25, 1.5, 500, or 1,000 ppm TCE from Gestational Day (GD) 1 through GD 21. The mean daily intakes of TCE were 0, 0.04, 0.21, 58.03, and 113.45 mg TCE/kg-day for the respective dose groups, based on the analytically measured concentrations of TCE in the water formulations. There were no deaths or treatment-related clinical signs. Mean water consumption for the 500 and 1,000 ppm groups was significantly lower than the control groups throughout the exposure period. However, maternal body weights, body weight gain, and feed consumption were similar between the TCE-treated and control groups. There were no significant maternal macroscopic findings in the TCE-treated groups, and fetal growth and survival were unaffected by treatment. There was no evidence of an increased incidence of cardiac malformations in the TCE-treated groups compared to the control group. The incidences of membranous interventricular septal defects (VSDs) were not statistically significantly different between the TCE-treated and control groups, with the incidence values for all groups being within the range of spontaneous background occurrences for rats reported in the published literature.

There are several aspects of the study findings that we would like to highlight. First, as noted above, this study is a hypothesis-driven investigation to determine the potential adverse effect on the prenatal development of the hearts in offspring of rat dams given TCE in their drinking water

[1] Johnson, P.D., Goldberg, S.J., Mays, M.Z., and Dawson, B.V. (2003). Threshold of trichloroethylene contamination in maternal drinking waters affecting fetal heart development in the rat. Environ. Health Perspect. 111: 289-292.

throughout the entire gestational period. As such, skeletal examinations were not performed, and fetal visceral examinations were limited to detailed inspection of the heart and great vessels. This investigation had a narrow focus for the fetal visceral examination such that considerably more attention was paid to the internal anatomy of the heart relative to cardiac examinations in typical Embryo Fetal Development studies. All potential alterations in cardiac anatomy were examined closely under a dissecting microscope, verified by a supervisor, measured and photographed. Due to the enhanced cardiac evaluations, findings that likely would have been missed in a standard fetal evaluation in an Embryo-Fetal Development study were noted in all groups, including controls. As a result, the incidences of VSDs in the control and all TCE groups in this study are outside the CRL Ashland historical control range, which is based on typical Embryo Fetal Development protocols. Consequently, the best comparator for cardiac anomalies is the concurrent control group. In addition, the scientific literature was searched to identify other studies that meticulously examined fetal hearts of Sprague Dawley rats. The results from these studies provide a range of incidences for VSDs of 2.8% - 5.2%. The incidences of VSDs in all TCE-treated and control groups were within the range of these studies. By way of further comparison, Johnson *et al.* (2003) found VSDs in 3.0% of their controls and values of 1.7% at 1.5 ppm (compared to 1.5% in the present study) and 3.8% at 1100 ppm (compared 3.7% at 1000 ppm in the present study). These data show remarkable consistency across the studies and indicate that the apparent increase in VSDs is likely due to the enhanced examination techniques employed in these studies.

Second, it is important to note that all of the cardiac defects in fetuses from the TCE-treated groups and all but one of the control fetuses in this study were VSDs located in the membranous portion of the septum and that measured <1 mm. Small VSDs in fetal rats have been shown to close spontaneously during the lactation period.[2] Consequently, the small (<1 mm) VSDs are considered to be developmental delays and are not adverse findings.

The concentrations of TCE in the drinking water formulations were within the acceptable target range or exceeding it (range: 90 - 166% of target) and were generally consistent throughout the exposure period. There was, however, a loss of approximately 30 - 50% TCE from the water bottles in the animal cages over the 24-hour exposure period. Similar losses of TCE from the water bottles were also reported in the rat drinking water studies by Fisher *et al.* (1989)[3] and Johnson *et al.* (2003). This loss of TCE occurred even though the water bottles were filled from the

[2] Fleeman, T. L., Cappon, G.D., and Hurtt, M.E. (2004). Postnatal closure of membranous ventricular septal defects in Sprague-Dawley rat pups after maternal exposure with trimethadione. Birth Defects Res. B Dev. Reprod. Toxicol. 71: 185-190; Solomon, H.M., Wier, P.J., Fish, C.J., Hart, T.K., Johnson, C.M., Prosobiec, L.M., Gowan, C.C., Maleeff, B.E., and Kerns, W.D. (1997). Spontaneous and Induced Alterations in the Cardiac Membranous Ventricular Septum of Fetal, Weanling, and Adult Rats. Teratology 55: 185-194.

[3] Fisher, J.W., Whittaker, T.A., Taylor, D.H., Clewell, III, H.J., and Andersen, M.E. (1989). Physiologically based pharmacokinetic modeling of the pregnant rat: a multiroute exposure model for trichloroethylene and its metabolite, trichloroacetic acid. Toxicol. Appl. Pharmacol. 99: 395-414.

formulation bottles by a specialized transfer system to avoid splashing, bubbling and volatilization of TCE, as well as filled to capacity to minimize the headspace.

In closing, we believe these new data will be invaluable for addressing criticisms raised in the published literature, by other regulatory agencies, and in comments concerning the use of the Johnson *et al*. cardiac malformation data as a basis for establishing a non-cancer toxicity value as part of the Toxic Substances Control Act § 6 risk evaluation that is underway. With these results, there are now EPA guideline studies by all three exposure routes that have found no relationship between *in-utero* TCE exposure and cardiac malformations. The absence of a sound scientific foundation to support a causal relationship between cardiac malformations and TCE exposure has recently been examined with a systematic review approach and published in the peer-review literature.[4] The weight of the scientific evidence does not support *in-utero* TCE exposure as a cause of cardiac malformations.

Respectfully submitted,

Christopher Bevan, PhD, DABT
Director, Scientific Programs

Enclosure

[4] Wikoff, D., Urban, J.D., Harvey, S., and Haws, L.C. (2018). Role of risk of bias in systematic review for chemical risk assessment: a case study in understanding the relationship between congenital heart defects and exposures to trichloroethylene. Intl. J. Toxicol. 37: 125-143.

charles river

REVISED AUDITED DRAFT REPORT

Laboratory Project ID 00459506

An Oral (Drinking Water) Study of the Effects of Trichloroethylene (TCE) on Fetal Heart Development in Sprague Dawley Rats

Author: Prägati S. Coder, PhD, DABT

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DD Month YYYY

Total Number of Pages: 721

COMPLIANCE STATEMENT AND REPORT APPROVAL

The following is a detailed description of all differences between the practices used in this study and those required by the United States Code of Federal Regulations, Title 40, Part 792: Good Laboratory Practice Standards and as accepted by Regulatory Authorities throughout the European Union (OECD Principles of Good Laboratory Practice), Japan, and other countries that are signatories to the OECD Mutual Acceptance of Data Agreement:

- Test substance characterization was not conducted according to GLP standards.
- Based on information provided by the Supplier (Shelf Life and Product Dating Policy), the test substance was considered suitable for use 1 year from the date of purchase.

Typed Name of Signer: Prägati S. Coder, PhD, DABT

Typed Name of Laboratory: Charles River Laboratories Ashland, LLC

Sponsor: _____ Date: _____
Signature

Typed Name of Signer: _____
Typed Name of Company: _____

Submitter: _____ Date: _____
Signature

Typed Name of Signer: _____
Typed Name of Company: _____

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QUALITY ASSURANCE STATEMENT

Date(s) of Inspection(s)	Phase Inspected	Date(s) Findings Reported to Study Director and Management
11-Jul-2018	Protocol	11-Jul-2018
27-Jul-2018	Bottle Filling	27-Jul-2018
06-Aug-2018	Protocol Amendment 1	06-Aug-2018
14-Aug-2018, 15-Aug-2018	Toxicokinetic Blood Collection	15-Aug-2018
11-Oct-2018, 18-Oct-2018	Study Record (B-1)	18-Oct-2018
17-Oct-2018, 18-Oct-2018	Study Records (A-1)	18-Oct-2018
18-Oct-2018	Analytical Report Tables	18-Oct-2018
18-Oct-2018, 19-Oct-2018	Analytical Report	19-Oct-2018
19-Oct-2018, 22-Oct-2018	Bioanalytical Report	22-Oct-2018
19-Oct-2018, 20-Oct-2018, 25-Oct-2018, 26-Oct-2018	Study Records (I-1)	26-Oct-2018
20-Oct-2018, 24-Oct-2018, 26-Oct-2018	Study Records (I-2)	26-Oct-2018
22-Oct-2018, 24-Oct-2018, 26-Oct-2018	Study Records (I-3)	26-Oct-2018
23-Oct-2018	Study Records (Rx-1)	23-Oct-2018
23-Oct-2018	Study Records (Tk-1)	23-Oct-2018
26-Oct-2018	Study Records (N-1)	26-Oct-2018
31-Oct-2018, 01-Nov-2018, 02-Nov-2018	Draft Report (without Analyses of Dosing Formulations and Bioanalytical Report Appendices)	02-Nov-2018
12-Nov-2018	Revised Audited Draft Report	12-Nov-2018

In addition to the above-mentioned audits, process-based and/or routine facility inspections were also conducted during the course of this study. Inspection findings, if any, specific to this study were reported by Quality Assurance to the Study Director and Management and listed as a Phase Audit on this Quality Assurance Statement.

The Final Report has been reviewed to assure that it accurately describes the materials and methods, and that the reported results accurately reflect the raw data.

Name, credentials
Quality Assurance Representative

1. RESPONSIBLE PERSONNEL

1.1. Testing Facility

Study Director	Prägati S. Coder, PhD, DABT
Site Director	Erica L. Lashley, MBA, BS, LAT
Scientific Report Review	Donald G. Stump, PhD, DABT, ATS
Archivist and Manager, Archives	Jennifer L. Starkey, AS, LAT
Attending Veterinarian, Laboratory Animal Medicine	Jessica N. Keen, MS, DVM, DACLAM
Director, Operations	Tammye L. Edwards, BS
Senior Director, Laboratory Sciences	Elizabeth A. Groeber, PhD, MBA
Senior Manager, Laboratory Sciences, Formulations	Bryan P. Fennell, BS
Group Manager, Reporting & Technical Support Services	Misty R. Lee, BA

1.2. Individual Scientists (IS) at Testing Facility

Dose Formulation Analysis	Shiladitya Sen, PhD
Plasma Analysis	Joelle M. Lucarell, BS

2. SUMMARY

The objective of this study was to determine the potential of trichloroethylene (TCE) to induce cardiac defects in the offspring after maternal exposure from the day after copulation through euthanasia, to characterize maternal toxicity at the exposure levels tested, and to determine a no-observed-adverse-effect level (NOAEL) for maternal and cardiac developmental toxicity.

In addition, plasma concentrations of TCA (trichloroacetic acid, the primary metabolite of trichloroethylene) was assessed in maternal and fetal plasma.

The study design was as follows:

Text Table 1
Experimental Design – Main Study

Group Number	Treatment	Target Concentration[a]	Dose Volume (mL/kg)	Route of Administration	Number of Females
1	Vehicle	0 ppm	NA	Drinking Water	25
2	RA[b]	3 mg/mL	5	Gavage	25
3	TCE	0.25 ppm	NA	Drinking Water	25
4	TCE	1.5 ppm	NA	Drinking Water	25
5	TCE	500 ppm	NA	Drinking Water	25
6	TCE	1000 ppm	NA	Drinking Water	25

NA = Not applicable.
[a] Calculated upon completion of the study based on the analyzed concentration of the test substance in water formulations.
[b] all-*trans* Retinoic Acid (Positive Control)

Text Table 2
Experimental Design – Exposure Assessment Phase

Group Number	Treatment	Target Concentration[a]	Dose Volume (mL/kg)	Route of Administration	Number of Females
1	Vehicle	0 ppm	NA	Drinking Water	4
2	RA[b]	3 mg/mL	5	Gavage	0
3	TCE	0.25 ppm	NA	Drinking Water	4
4	TCE	1.5 ppm	NA	Drinking Water	4
5	TCE	500 ppm	NA	Drinking Water	4
6	TCE	1000 ppm	NA	Drinking Water	4

NA = Not applicable.
[a] Calculated upon completion of the study based on the analyzed concentration of the test substance in water formulations.
[b] all-*trans* Retinoic Acid (Positive Control)

Animals in the main study and exposure assessment phases (Groups 3–6), were administered the test substance continuously in the drinking water from Gestation Day 1 through euthanasia (Gestation Day 21). For the main study, the positive control substance (retinoic acid in soybean oil) was administered to animals in Group 2 once daily by oral gavage from Gestation Days 6-15. Groups 1 and 2 received water vehicle throughout the study.

The following parameters and end points were evaluated in this study: clinical signs, body weights, body weight gains, gravid uterine weights, food consumption, bioanalysis and exposure assessment, gross necropsy, intrauterine growth and survival, and fetal external and cardiovascular morphology.

Trichloroethylene (TCE):

Mean test substance consumption in the TCE-treated groups during Gestation Days 1–21, based on analytically measured concentrations of TCE in water formulations was 0.04, 0.21, 58.03, and 113.45 mg/kg/day in the 0.25, 1.5, 500, and 1000 ppm groups, respectively.

There were no test substance-related effects on survival or clinical observations at 0.25, 1.5, 500, and 1000 ppm TCE. Mean body weights, body weight gains, food consumption, net body weights, and gravid uterine weights in the 0.25, 1.5, 500, and 1000 ppm TCE groups and net body weight gains in the 0.25 and 1.5 ppm TCE groups were unaffected by test substance administration. Mean net body weight change in the 500 and 1000 ppm TCE groups was lower than the control group. In the absence of an effect on terminal body weight, mean gravid uterine weight or mean fetal weight in these groups, these differences were considered incidental. Test substance-related lower mean water consumption was noted in the 500 and 1000 ppm TCE groups throughout the gestation treatment period (Gestation Days 1–6, 6–9, 9–12, 12–16, and 16–21) and when the entire gestation treatment period (Gestation Days 1–21) was evaluated. These differences were attributed to the palatability of the test substance in the drinking water and were not considered adverse given the lack of any corresponding effects on mean absolute body weights or food consumption. Mean water consumption in the 0.25 and 1.5 ppm TCE groups was unaffected by test substance administration. At the scheduled necropsy on Gestation Day 21, no test substance-related internal findings were observed at dosage levels of 0.25, 1.5, 500, and 1000 ppm TCE. Intrauterine growth and survival were unaffected by test substance administration at dosage levels of 0.25, 1.5, 500, and 1000 ppm TCE.

The only cardiac anomaly observed in the TCE treated groups was interventricular septal defect in 4(4), 5(3), 13(8), and 12(6) fetuses (litters) in the 0.25, 1.5, 500, and 1000 ppm groups, respectively. Interventricular septal defect was also observed in 7(5) fetuses (litters) in the vehicle control group. With the exception of 1 fetus in the vehicle control group, all openings in the interventricular septum were less than 1 mm in diameter, and all of the openings were observed in the membranous portion of the septum.

The mean litter proportion of interventricular septal defect observed in the control group (2.4% per litter) exceeded the maximum mean value in the Charles River Ashland historical control data (0.26% per litter). This difference in control incidence was attributed to the current study design, where the singular focus on the heart and great and major blood vessels likely resulted in heightened observer sensitivity to the presence of interventricular septal defects. Thus, the Charles River Ashland historical control data was not utilized as a basis for comparison of background control incidence of this finding. Previously published studies, with similar focus on cardiovascular development have reported incidence rates between 2.8 to 5.2% for spontaneous membranous interventricular septal defects in rats.[1-4] Furthermore, interventricular septal defects, especially where the nature of the defect is small (≤ 1 mm in diameter) have been shown to resolve postnatally, without adverse effects on postnatal survival of the animals.[5,6] These reports suggest that similar to humans,[7] small spontaneous interventricular septal defects in rats close postnatally and hence should not be considered adverse. Based on these data, the interventricular septal defects observed in the TCE-treated groups were considered to be spontaneous background occurrences and unrelated to TCE exposure.

Positive Control all-*trans* Retinoic Acid (RA):

Administration of the positive control substance, RA, elicited clinical observations of dilated pupils (at approximately 1 hour postdosing), lower mean body weights, mean body weight gains, mean food consumption, mean net body weight, and mean net body weight change. At the scheduled necropsy, increased incidences of red fluid in the amniotic sac and dark red uterine contents were noted, which correlated with a higher mean litter proportion of postimplantation loss and correspondingly lower mean number and litter proportion of viable fetuses in comparison with the vehicle control group. In addition, mean fetal body weights (males, females, and combined) in the RA group were lower (21.3%, 25.4%, and 23.3%, respectively) than the vehicle control group. Fetal malformations noted for the positive control substance included a wide spectrum of craniofacial and digit anomalies (including exencephaly with or without open eyelids, cleft palate, microphthalmia and/or anophthalmia, hydrocephaly with or without domed head, ectrodactyly, meningocele, syndactyly, spina bifida, bent tail, and microstomia). In addition, a significantly increased incidence of the visceral malformation, interventricular septal defect, was observed for fetuses in this group (112 fetuses in 23 litters) compared to the control group (7 fetuses in 5 litters). With the exception of 1 fetus in this group that had an opening >2 mm in diameter in the membranous and muscular portions of the septum, the remaining fetuses with interventricular septal defects were observed with openings ≤ 1 mm in diameter, in the membranous (anterior) portion of the septum. Other heart and great vessel anomalies noted in this group included retroesophageal aortic arch, transposition of the great vessels, an interrupted aortic arch and major blood vessel variation (an elongated brachiocephalic trunk or a missing brachiocephalic trunk due to right carotid and right subclavian arising independently from the aortic arch, or due to a retroesophageal right subclavian). These findings were consistent with previously published effects of gestational retinoic acid exposure.

Based on the absence of adverse maternal or developmental effects following administration of trichloroethylene via drinking water to time-mated Crl:CD(SD) rats, a dosage level of 1000 ppm was considered to be the no-observed-adverse-effect level (NOAEL) for maternal and cardiac developmental toxicity.

3. INTRODUCTION

The objective of this study was to determine the potential of trichloroethylene (TCE) to induce cardiac defects in the offspring after maternal exposure from the day after copulation through euthanasia, to characterize maternal toxicity at the exposure levels tested, and to determine a no-observed-adverse-effect level (NOAEL) for maternal and cardiac developmental toxicity.

In addition, plasma concentrations of TCA (trichloroacetic acid, the primary metabolite of trichloroethylene) was assessed in maternal and fetal plasma.

The design of this study is based on general accordance with the OPPTS 870.3700 and the OECD Test Guideline 414.

The study protocol, the last amended study protocol, and deviations are presented in Appendix 1.

Due to software spacing constraints, the study title appears as “An Oral Study of the Effects of TCE on Fetal Heart Dev in Rats" on the WTDMS report tables.

For the data collection process, the data were collected as follows:

Study Number/ Computer Protocol	**Type of Data Collected**
00459506	Main study data
00459506T	Exposure assessment phase data

Study Initiation Date:	05 Jul 2018
Experimental Starting Date (OECD):	17 Jul 2018
Experimental Start Date (EPA):	25 Jul 2018
Initiation of Dosing:	25 Jul 2018 (drinking water) 30 Jul 2018 (oral gavage)
Completion of In-life:	18 Aug 2018
Experimental Completion Date:	18 Aug 2018
Experimental Termination Date:	18 Aug 2018

4. MATERIALS AND METHODS

4.1. Test and Positive Control Substances and Vehicle

4.1.1. Test Substance

Identification:	Trichloroethylene (TCE), ACS (CAS No. 79-01-6)
Lot No.:	2GJ0003
Receipt Date:	27 Nov 2017
Expiration Date:	27 Nov 2018
Physical Description:	Clear, colorless liquid
Purity:	99.98%

Water Content:	0.0028%
Storage Conditions:	Kept in a controlled temperature area set to maintain 18°C to 24°C, protected from light
Supplier:	Spectrum Chemical Manufacturing Corporation

4.1.2. Positive Control Substance

Identification:	all-*trans* Retinoic acid (CAS No. 302-79-4)
Batch No.:	SLBS1643V
Receipt Date:	03 Jul 2018
Retest Date:	Jun 2020
Physical Description:	Yellow powder
Purity:	100.0%
Storage Conditions:	Kept in a freezer set to maintain a target of -20°C, protected from light
Supplier:	Sigma Aldrich

4.1.3. Vehicle (for Test Substance Formulations)

Identification: Reverse osmosis-purified water

4.1.4. Vehicle (for Positive Control Substance)

Identification:	Soybean oil
Batch No.:	MKCB3218V
Physical Description:	Clear, light yellow liquid
Storage Conditions:	Kept in a controlled temperature area set to maintain 18°C to 24°C, protected from light

4.2. Test Substance Characterization

The Sponsor provided to the Testing Facility documentation of the identity, strength, purity, composition, and stability for the test substance. A Certificate of Analysis was provided to the Testing Facility and is presented in Appendix 2.

4.3. Reserve Samples

For each batch or lot of test and positive control substance, a reserve sample was collected and maintained under the appropriate storage conditions by the Testing Facility.

4.4. Test Substance Inventory and Disposition

Records of the receipt, distribution, and storage of test substance were maintained. With the exception of reserve samples, all unused test substance was discarded at the completion of the study.

4.5. Dose Formulation and Analysis

4.5.1. Preparation of Vehicles

The vehicle, reverse osmosis-purified water, was dispensed daily for administration to Group 1 and Group 2 control animals and preparation of the test substance formulations. Details of the dispensing of the vehicle have been retained in the Study Records.

The vehicle, soybean oil, was dispensed approximately weekly for preparation of the positive control formulation. Details of the dispensing of the vehicle have been retained in the Study Records.

4.5.2. Preparation of Test Substance

Test substance dosing formulations were prepared using previously established procedures at appropriate concentrations to meet dose level requirements. Test substance dosing formulations were prepared daily, in a closed (nitrogen purged) system, under amber light, without sonication, and stored and transported in the same closed system. All formulation batches were prepared at volumes large enough to minimize headspace. The 500 and 1000 ppm concentrations were prepared on the day prior to dosing and stirred overnight at room temperature for at least 24 hours to ensure dissolution of TCE in water. The 0.25 and 1.5 ppm concentrations were prepared via dilution of higher concentrations on the day of dose administration. Test substance formulations were stored at room temperature (18°C to 24°C) until dispensation and use. Following preparation, and during storage and transfer to drinking water bottles, nitrogen was used to purge any remaining headspace to help reduce volatilization of TCE and to ensure that residual water formulations did not come in contact with ambient air. Details of the preparation and dispensing of the test substance have been retained in the Study Records.

4.5.3. Preparation of Positive Control Substance

Positive control dosing formulations were prepared at appropriate concentrations to meet dose level requirements. The dosing formulations were prepared approximately weekly, and an adequate amount of each formulation was dispensed into daily aliquots, which were stored frozen (target -20°C), purged with nitrogen and protected from light until use. The positive control dosing formulation was thawed for each day of administration and stirred for at least 30 minutes before dosing. The positive control dosing formulation was stirred continuously during dosing. Details of the preparation and dispensing of the positive control substance have been retained in the Study Records.

4.5.4. Sample Collection and Analysis

Dose formulation samples were collected for analysis as indicated in Text Table 3 (see Appendix 1 – Study Protocol and Deviations). Samples collected at the time of preparation (closed system) were collected from the bulk formulation containers, and samples collected at time of dispensation (open system) and at 24-hours post-dispensation were collected from fresh and used water bottles, respectively, in the animal room. All drinking water formulation samples were collected into nitrogen-purged amber glass auto-sampler vials with rubber stoppers, and crimped tops.

Text Table 3
Dose Formulation Sample Collection Schedule

Interval	Concentration	24-Hour Post-Dispensation
24 Jul 2018/25 Jul 2018	Groups 1 and 3–6[a]	Groups 1 and 3–6
25 Jul 2018/26 Jul 2018	Groups 1 and 3–6[a]	N/A
26 Jul 2018/27 Jul 2018	Groups 1 and 3–6[a]	N/A
27 Jul 2018/28 Jul 2018	Groups 1 and 3–6[b]	N/A
28 Jul 2018/29 Jul 2018	Groups 1 and 3–6[b]	N/A
29 Jul 2018/30 Jul 2018	Groups 1 and 3–6[b]	N/A
30 Jul 2018/31 Jul 2018	Groups 1 and 3–6[a]	N/A
31 Jul 2018/01 Aug 2018	Groups 1 and 3–6[b]	N/A
01 Aug 2018/02 Aug 2018	Groups 1 and 3–6[b]	N/A
02 Aug 2018/03 Aug 2018	Groups 1 and 3–6[b]	N/A
03 Aug 2018/04 Aug 2018	Groups 1 and 3–6[b]	N/A
04 Aug 2018/05 Aug 2018	Groups 1 and 3–6[a]	N/A
05 Aug 2018/06 Aug 2018	Groups 1 and 3–6[b]	N/A
06 Aug 2018/07 Aug 2018	Groups 1 and 3–6[b]	N/A
07 Aug 2018/08 Aug 2018	Groups 1 and 3–6[a]	N/A
08 Aug 2018/09 Aug 2018	Groups 1 and 3–6[b]	N/A
09 Aug 2018/10 Aug 2018	Groups 1 and 3–6[b]	N/A
10 Aug 2018/11 Aug 2018	Groups 1 and 3–6[b]	N/A
11 Aug 2018/12 Aug 2018	Groups 1 and 3–6[b]	N/A
12 Aug 2018/13 Aug 2018	Groups 1 and 3–6[b]	N/A
13 Aug 2018/14 Aug 2018	Groups 1 and 3–6[b]	N/A
14 Aug 2018/15 Aug 2018	Groups 1 and 3–6[a]	Groups 1 and 3–6
15 Aug 2018/16 Aug 2018	Groups 1 and 3–6[b]	N/A
16 Aug 2018/17 Aug 2018	Groups 1 and 3–6[a]	Groups 1 and 3–6

N/A = not applicable.
[a] Samples were collected at the time of preparation (closed system) and at the time of dispensation into drinking water bottles (open system).
[b] Samples for possible concentration analysis were collected at the time of preparation (closed system), purged with nitrogen, and stored in a freezer set to maintain a target of -20°C.

Samples to be analyzed were transferred to the Charles River Ashland Analytical Chemistry Department, on the date prepared, for analysis.

4.5.4.1. Analytical Method

Analyses were performed by high performance liquid chromatography using ultraviolet absorbance detection using a validated analytical procedure.[8]

4.5.4.2. Concentration Analysis

Duplicate sets of samples (10.0 mL) for each sampling time point were transferred to the analytical laboratory; concentration of TCE in 'as delivered' dosing formulations, including the vehicle control was assessed on the day of dispensation for the 1st, 2nd, 3rd, 7th, 12th, 15th, 22nd, and last batch of drinking water formulations. Samples were processed and analyzed as soon as possible following collection. All remaining samples were retained at the Testing Facility as backup samples. Concentration results were considered acceptable if mean sample concentration results were within or equal to ± 20% of target concentration. After acceptance of the analytical results, any prior unanalyzed (backup) samples were discarded appropriately.

4.5.4.3. 24-Hour Loss Monitoring Assessments

Duplicate sets of samples (10.0 mL) for each 24-hour post-dispensation time point were transferred to the analytical laboratory; concentration of TCE in 'used' water bottles was assessed for the first, 22nd and last batch (see Appendix 1 – Study Protocol and Deviations). Samples were processed and analyzed as soon as possible following collection. Because of the open system and the volatility of the test substance, measured concentrations were reported as-is, i.e., target acceptance criteria did not apply to 24-hour loss monitoring samples. Loss of TCE at each concentration was calculated by comparing the concentration of TCE in 'used' water bottles against the corresponding Time Zero concentrations (measured concentrations prior to transfer into drinking water bottles) and was reported as a Percent 24-Hour Loss for each concentration.

4.5.4.4. Solubility Analysis

Solubility analyses performed previously in conjunction with 00459506[8] demonstrated that the test substance is soluble in the vehicle when prepared under the same mixing conditions at concentrations bracketing those used in the present study.

4.5.4.5. Stability Analysis

Stability of the test substance in the vehicle following room temperature (18°C to 24°C) storage for at least 24 hours at the range of concentrations used on the current study, was previously established.[8] Therefore, stability of test substance formulations was not assessed on the current study.

4.5.4.6. Concentration, Homogeneity, and Stability of Positive Control Substance

Positive control formulations in the vehicle, soybean oil, were not assessed for solubility, concentration, homogeneity, or stability. All-*trans* retinoic acid (RA) is a commercially available drug substance that was prepared in general accordance with package specifications. Duplicate sets of samples (1.0 mL) for possible future concentration assessments were collected from the first and last aliquots of each formulation. Samples were collected at the time of preparation (first aliquot) and at the time of dispensation (last aliquot), and were purged with nitrogen and stored in a freezer set to maintain -20°C.

4.6. Test System

4.6.1. Receipt

On 17 Jul 2018, nonpregnant female Crl:CD(SD) rats were received from Charles River Laboratories, Inc., Raleigh, NC. The animals were approximately 12 weeks old at receipt and weighed between 221 and 281 g on Gestation Day 0.

4.6.2. Justification for Test System and Number of Animals

The Crl:CD(SD) rat is recognized as appropriate for developmental toxicity studies. Charles River Ashland has historical data on the background incidence of fetal malformations and developmental variations in the Crl:CD(SD) rat. This animal model has been proven to be susceptible to the effects of developmental toxicants.

The purpose of the current study was to replicate the findings of Dawson et al.[9] and Johnson et al.[4] In these studies, it was reported that there was an increase in cardiac malformations in the fetuses of pregnant female Sprague Dawley rats administered TCE in drinking water.

The number of animals selected for this study was based on the United States EPA Health Effects Test Guidelines OPPTS 870.3700, Prenatal Development Toxicity Study, Aug 1998 and the OECD Guidelines for the Testing of Chemicals: Guideline 414, Prenatal Developmental Toxicity Study, Jan 2001, which recommend evaluation of approximately 20 females with implantation sites at necropsy. Given the possibility of nongravid animals, unexpected deaths, or test substance-related moribundity and/or mortality, 25 females/group was an appropriate number of animals to obtain a sample size of 20 females at termination.

The number of animals assigned to the exposure assessment phase (4 females/group) was also based on the possibility of nongravid animals, unexpected deaths, or test substance-related moribundity and/or mortality; this was an appropriate number of animals to obtain at least 3 blood samples per time point.

4.6.3. Animal Identification

Upon receipt, each animal was identified using a subcutaneously implanted electronic identification chip (BMDS system).

4.6.4. Environmental Acclimation

After receipt at the Testing Facility, the Crl:CD(SD) rats were acclimated prior to the initiation of dosing.

4.6.5. Breeding Procedures, Selection, Assignment, and Disposition of Animals

The females were paired on a 1:1 basis with resident males. Positive evidence of mating was confirmed by the presence of a vaginal copulatory plug or the presence of sperm in a vaginal lavage. Vaginal lavages were performed daily during the mating period until evidence of mating was observed.

Animals were assigned to groups by a stratified randomization scheme designed to achieve similar group mean body weights. Animals at extremes of body weight range were not assigned to groups.

The disposition of all animals was documented in the Study Records.

4.6.6. Husbandry

4.6.6.1. Housing

On arrival, animals were group housed (up to 3 animals). During cohabitation, the animals were paired for mating in the home cage of the male. Following the breeding period, females were individually housed (see Appendix 1 – Study Protocol and Deviations). Animals were housed in solid-bottom cages containing appropriate bedding throughout the study.

Each cage was clearly labeled with a color-coded cage card indicating study, group, animal, cage number(s), dosage level, and sex. Cages were arranged on the racks in group order.

Animals were maintained in accordance with the *Guide for the Care and Use of Laboratory Animals*.[10] The animal facilities at Charles River Ashland are accredited by AAALAC International.

4.6.6.2. Environmental Conditions

Target temperatures of 68°F to 78°F (20°C to 26°C) with a relative target humidity of 30% to 70% were maintained. A 12-hour light/12-hour dark cycle was maintained. Ten or greater air changes per hour with 100% fresh air (no air recirculation) were maintained in the animal rooms.

4.6.6.3. Food

PMI Nutrition International, LLC Certified Rodent LabDiet® 5002 was provided ad libitum throughout the study.

The feed was analyzed by the supplier for nutritional components and environmental contaminants. Results of the analysis are provided by the supplier and are on file at the Testing Facility.

It is considered that there are no known contaminants in the feed that would interfere with the objectives of the study.

4.6.6.4. Water

Municipal tap water after treatment by reverse osmosis (with test substance added during the treatment period for animals in Groups 3-6) was available ad libitum via amber glass water bottles with metal sipper tubes. Bottles were checked daily for spillage and supplemented as necessary and the occurrence of spillage was documented. During the treatment period, water bottles were changed daily (see Appendix 1 – Study Protocol and Deviations).

Periodic analysis of the water is performed, and results of these analyses are on file at the Testing Facility.

It is considered that there are no known contaminants in the water that could interfere with the outcome of the study.

4.6.6.5. Animal Enrichment

Enrichment devices were provided to all animals as appropriate throughout the study for environmental enrichment or to aid in maintaining the animals' oral or gastrointestinal health.

4.6.6.6. Veterinary Care

Veterinary care was available throughout the course of the study; however, no examinations or treatments were required.

4.7. Experimental Design

Text Table 4
Experimental Design – Main Study

Group Number	Treatment	Target Concentration[a]	Dose Volume (mL/kg)	Route of Administration	Number of Females
1	Vehicle	0 ppm	NA	Drinking Water	25
2	Retinoic Acid	3 mg/mL	5	Gavage	25
3	TCE	0.25 ppm	NA	Drinking Water	25
4	TCE	1.5 ppm	NA	Drinking Water	25
5	TCE	500 ppm	NA	Drinking Water	25
6	TCE	1000 ppm	NA	Drinking Water	25

NA = Not applicable.
[a] Calculated upon completion of the study based on the analyzed concentration of the test substance in water formulations.

Text Table 5
Experimental Design – Exposure Assessment Phase

Group Number	Treatment	Target Concentration[a]	Dose Volume (mL/kg)	Route of Administration	Number of Females
1	Vehicle	0 ppm	NA	Drinking Water	4
2	Retinoic Acid	3 mg/mL	5	Gavage	0
3	TCE	0.25 ppm	NA	Drinking Water	4
4	TCE	1.5 ppm	NA	Drinking Water	4
5	TCE	500 ppm	NA	Drinking Water	4
6	TCE	1000 ppm	NA	Drinking Water	4

NA = Not applicable.
[a] Calculated upon completion of the study based on the analyzed concentration of the test substance in water formulations.

4.7.1. Administration of Test Materials

Animals (Groups 3–6), were administered the test substance continuously in drinking water from Gestation Day 1 through euthanasia (scheduled for Gestation Day 21). The test substance was administered as a constant concentration in water. Water formulations were supplied fresh on a daily basis, within ± 2–3 hours from the previous day (see Appendix 1 – Study Protocol and Deviations). Groups 1 and 2 received water vehicle throughout the study.

The positive control substance was administered as a single daily oral gavage dose to Group 2 animals from Gestation Days 6 through 15. This dosing regimen for a prenatal developmental toxicity study was expected to elicit a positive response and was selected based on previously published reports.[11] All animals were dosed at approximately the same time each day.

4.7.2. Justification of Route and Dose Levels

The route of administration of the test substance was oral (drinking water) because this is a potential route of exposure for humans. The positive control article, retinoic acid, was administered via oral (gavage) because this route has been demonstrated to elicit a positive response.[11]

The dosage levels were selected based on previous published reports assessing fetal heart development in Sprague Dawley rats[4,11,12] and were provided by the Sponsor after consultation with the Study Director.

The positive control substance is a well-known characterized developmental toxicant that has been previously demonstrated to result in heart malformations in this strain of rat. The dosage level was also selected based on previously published reports.[11]

4.8. In-life Procedures, Observations, and Measurements

The in-life procedures, observations, and measurements listed below were performed for main study animals. Exposure assessment animals were weighed according to Section 4.8.3., had water consumption measured according to Section 4.8.5., and were examined according to Section 4.8.1. and Section 4.8.2.

4.8.1. Viability

Throughout the study, animals were observed for general health/mortality and moribundity twice daily, once in the morning and once in the afternoon. Animals were not removed from cage during observation, unless necessary for identification or confirmation of possible findings.

4.8.2. Observations

The animals were removed from the cage, and a detailed clinical observation was performed once daily, beginning on Gestation Day 0 and lasting through euthanasia. During the dosing period, these observations were performed prior to administration of new water bottles (Groups 1 and 3-6) or dosing (Group 2). For the positive control group (Group 2), clinical observations were also recorded approximately 1 hour postdose on dosing days.

4.8.3. Body Weights

Animals were weighed individually on Gestation Days 0–21 (daily).

Gravid uterine weight was collected and net body weight (the Gestation Day 21 body weight exclusive of the weight of the uterus and contents) and net body weight change (the Gestation Day 0–21 body weight change exclusive of the weight of the uterus and contents) were calculated and presented for each gravid female at the scheduled laparohysterectomy.

4.8.4. Food Consumption

Food consumption was quantitatively measured on Gestation Days 0–21 (daily).

4.8.5. Water Consumption

Water consumption was quantitatively measured on Gestation Days 0–21 (daily) (see Appendix 1 – Study Protocol and Deviations).

4.8.6. Compound Consumption

The mean amounts of TCE consumed (mg/kg/day) per dose group were calculated from the mean water consumed (g/kg/day) and the analyzed concentration of test substance in the water (mg/kg) at the time of dispensation (Time Zero; measured concentrations prior to transfer into

drinking water bottles). The analyzed concentrations from the day of formulation dispensation were applied to the water consumption value for the date of collection. For the intervals in between formulation samples, the mean concentration of the samples immediately previous to and following the interval was applied for the appropriate number of gestation days until the next sample analysis date. Compound consumption for Gestation Days 1-21 was calculated as a grand mean of the daily means.

4.8.7. Bioanalysis

4.8.7.1. Bioanalytical Sample Collection

Maternal blood was collected via a jugular vein of animals assigned to the exposure assessment phase into chilled tubes containing lithium heparin. Samples were collected from each dam between 0830 and 0930 hours on Gestation Days 8 and 12, and just prior to euthanasia on Gestation Day 21. Immediately following maternal blood collection and euthanasia on Gestation Day 21, fetal blood was collected via cardiac puncture under isoflurane inhalation, pooled by litter, and transferred into chilled tubes containing lithium heparin.

4.8.7.2. Bioanalytical Sample Processing

Blood samples were maintained on wet ice, protected from light, during collection and processing. Plasma was isolated in a refrigerated centrifuge and stored in a freezer set to maintain a target of -70°C. The plasma samples to be analyzed were transferred to the Bioanalytical Chemistry Department.

4.8.7.3. Bioanalytical Sample Analysis

Maternal and fetal plasma samples were analyzed for the assessment of TCA concentrations using a method developed and validated on a concurrent study.[13]

4.9. Terminal Procedures

Terminal procedures are summarized in Text Table 6.

Text Table 6
Terminal Procedures

Group No.	No. of Females	Scheduled Euthanasia Day	Necropsy Procedures	
			Necropsy	Tissue Collection[a]
1	25	Gestation Day 21	X	X
2	25			
3	25			
4	25			
5	25			
6	25			

X = Procedure conducted.
[a] Gross lesions only.

4.9.1. Unscheduled Deaths

No animals died during the course of the study.

4.9.2. Scheduled Euthanasia

Main study animals surviving until scheduled euthanasia were weighed and euthanized by carbon dioxide inhalation (including any animals that delivered).

Exposure assessment phase animals surviving until scheduled euthanasia were euthanized by carbon dioxide inhalation. No necropsy was performed, and no tissues were collected. Animals were examined for pregnancy status. Following fetal blood sample collection, fetuses were euthanized by decapitation.

4.9.3. Necropsy

Main study animals were subjected to a complete necropsy examination, which included evaluation of the thoracic, abdominal, and pelvic cavities with their associated organs and tissues.

4.9.4. Tissue Collection and Preservation

Gross lesions were collected and preserved in 10% neutral buffered formalin for possible future histopathologic examination. Representative sections of corresponding organs from a sufficient number of controls were retained for comparison, if possible.

4.9.5. Ovarian and Uterine Examinations

The uterus was weighed, and the ovaries and uterus were examined for number and distribution of corpora lutea, implantation sites, live and dead fetuses, and early and late resorptions. The placentae were also examined. Uteri with no macroscopic evidence of implantation were opened and subsequently placed in 10% ammonium sulfide solution for detection of early implantation loss.[14]

Intrauterine data were summarized using 2 methods of calculation as indicated below.

1. Group Mean Litter Basis:

$$\text{Postimplantation Loss/Litter} = \frac{\text{No. Dead Fetuses, Resorptions (Early/Late)/Group}}{\text{No. Gravid Females/Group}}$$

2. Proportional Litter Basis:

$$\text{Summation Per Group (\%)} = \frac{\text{Sum of Postimplantation Loss/Litter (\%)}}{\text{No. Litters/Group}}$$

Where:

$$\text{Postimplantation Loss/Litter (\%)} = \frac{\text{No. Dead Fetuses, Resorptions (Early/Late)/Litter}}{\text{No. Implantation Sites/Litter}} \times 100$$

4.9.6. Fetal Examinations

Fetal examinations were conducted without knowledge of treatment group. External and internal fetal findings were recorded as developmental variations or malformations. Representative photographs of all malformations, as appropriate, were included in the Study Records. Corresponding low magnification photographs, depicting both the malformed fetus and a comparison vehicle control fetus, or normal littermate, were also included in the Final Report as

needed and as appropriate for comparison, when possible (see Appendix 1 – Study Protocol and Deviations).

The fetal developmental findings were summarized by: 1) presenting the incidence of a given finding both as the number of fetuses and the number of litters available for examination in the group; and 2) considering the litter as the basic unit for comparison and calculating the number of affected fetuses in a litter on a proportional basis as follows:

$$\text{Summation per Group (\%)} = \frac{\text{Sum of Viable Fetuses Affected/Litter (\%)}}{\text{No. Litters/Group}}$$

Where:

$$\text{Viable Fetuses Affected/Litter (\%)} = \frac{\text{No. Viable Fetuses Affected/Litter}}{\text{No. Viable Fetuses/Litter}} \times 100$$

4.9.6.1. External

Each viable fetus was examined in detail, sexed, weighed, and euthanized by a subcutaneous injection of sodium pentobarbital in the scapular region. External findings for delivered pups are included on the fetal tables. The crown-rump length of late resorptions (advanced degree of autolysis) was measured, the degree of autolysis recorded, a gross external examination performed (if possible), and the tissue was discarded.

4.9.6.2. Visceral (Internal)

All fetuses were examined for visceral cardiac anomalies by dissection in the fresh (non-fixed) state. The thoracic cavity was opened and dissected using a technique described by Stuckhardt and Poppe.[15] This examination was limited to a thorough examination of the heart and great and major blood vessels. Any observed ventricular septal defects were categorized by size (<1 mm, 1 to 2 mm, or >2 mm) and location (muscular or membranous). The sex of all fetuses was confirmed by internal examination. All carcasses were discarded following completion of internal examination.

5. STATISTICAL ANALYSES

Each mean was presented with the standard deviation (S.D.) and the number of animals (N) used to calculate the mean. Where applicable, the litter was used as the experimental unit. Due to the use of significant figures and the different rounding conventions inherent in the types of software used, the means and standard deviations on the summary and individual tables may differ slightly. Therefore, the use of reported individual values to calculate subsequent parameters or means will, in some instances, yield minor variations from those listed in the report data tables. Data obtained from nongravid animals were excluded from statistical analyses. Comparative statistics were not performed on the data from the exposure assessment phase.

All statistical tests were performed using WTDMS™ unless otherwise noted. Analyses were conducted using two-tailed tests (except as noted otherwise) for minimum significance levels of 1% and 5%, comparing each test substance-treated group to the vehicle control group by sex. Additionally, the positive control group was compared separately the vehicle control group

Maternal body weights and body weight changes (absolute and net), and food and water consumption, gravid uterine weights, numbers of corpora lutea, implantation sites, and viable fetuses, and fetal body weights (separately by sex and combined) were subjected to a parametric

one-way ANOVA[16] to determine intergroup differences. If the ANOVA revealed significant ($p < 0.05$) intergroup variance, Dunnett's test[17] was used to compare the test substance-treated groups to the vehicle control group. In addition, the data from the positive control group were compared to the vehicle control group using a two-sample t-test.[18] Mean litter proportions of prenatal data (viable and nonviable fetuses, early and late resorptions, total resorptions, pre- and postimplantation loss, and fetal sex distribution), total fetal cardiac malformations and developmental variations, and each particular visceral cardiac malformation or variation were subjected to the Kruskal-Wallis nonparametric ANOVA test[19] to determine intergroup differences. If the nonparametric ANOVA revealed significant ($p < 0.05$) intergroup variance, Dunn's test[20] was used to compare the test substance-treated groups and the positive control group to the vehicle control group.

6. COMPUTERIZED SYSTEMS

Critical computerized systems used in the study are listed below or presented in the appropriate phase report. All computerized systems used in the conduct of this study have been validated (with the exception of Microsoft Office); when a particular system has not satisfied all requirements, appropriate administrative and procedural controls were implemented to assure the quality and integrity of data.

As Charles River Ashland transitions between various computer systems, the study number may appear as 00459506, 459506, or WIL-459506 in the data records and report.

Text Table 7
Critical Computerized Systems

Program/System	Version No.	Description
Bio Medic Data Systems (BMDS) Implantable Micro Identification™ (IMI-500 or IMI-1000)	N/A	Animal identification.
Logbook™ ELN	5.5	System (Instem) used to document study events.
Metasys DDC Electronic Environmental Control System	12.04	Controls and monitors animal room environmental conditions.
Microsoft Office 2010 or higher	N/A	Used in conjunction with the publishing software to generate study reports.
Provantis Dispense™	9.3.1.4	Comprehensive system (Instem LSS Limited) to manage test materials, including receipt, formulation instructions, and accountability.
WIL Formulations Dispense System (WFDS)	1.07	In-house developed system for use in conjunction with Provantis Dispense™ to ensure proper storage and use of formulations.
WIL Metasys	2.28	In-house developed system used to record and report animal room environmental conditions.
WIL Toxicology Data Management System™ (WTDMS™)	Various	In-house developed system used for collection and reporting of in-life and postmortem data.

N/A = not applicable.
Note: Version numbers of WTDMS™ programs used for the study are presented on the report data tables (reporting programs), Study Records (input programs), and Facility Records (release dates).

7. RETENTION OF RECORDS, SAMPLES, AND SPECIMENS

All study-specific raw data, documentation, protocol, samples, specimens, and Final Reports from this study were archived at the Testing Facility by no later than the date of Final Report issue unless otherwise specified in the protocol. At least 1 year after issue of the Draft Report, the Sponsor will be contacted to determine the disposition of materials associated with the study.

Electronic data generated by the Testing Facility were archived as noted above, except that the data collected using Logbook, Dispense, and reporting files stored on SDMS were archived at the Charles River Laboratories facility location in Wilmington, MA.

8. RESULTS

8.1. Analyses of Dosing Formulations

(Appendix 3)

The analyzed dosing formulations contained 90.1% to 118% of the test substance which was within the protocol-specified range of target concentrations (80% to 120% of the target concentration), with the following exceptions. The analyzed concentrations of the 25/26 Jul 2018 and the 30/31 Jul 2018 Group 3 (0.25 ppm) and Group 4 (1.5 ppm) formulations and the 26/27 Jul 2018 and the 16/17 Aug 2018 Group 3 (0.25 ppm) formulations collected at time of preparation ranged from 125% to 130% of the target concentration. In addition, the analyzed concentrations of the 30/31 Jul 2018 Group 3 (0.25 ppm) and Group 4 (1.5 ppm) formulations, the 04/05 Aug 2018, the 14/15 Aug 2018 formulations, the 07/08 Aug 2018, and the 16/17 Aug 2018 Group 3 (0.25 ppm) formulations collected at the time of dispensation ranged from 125% to 166% of the target concentration. No test substance was detected in the analyzed vehicle administered to the control group. The failure to meet acceptability criteria was not considered to have impacted the quality of the study, or the integrity of the study data, because measured concentrations were higher than protocol-specified acceptability criteria at the time of preparation and the time of dispensation which indicated that the animals received at minimum the targeted dose levels at each concentration.

Results of concentration analyses of dosing formulations are summarized below. Based on the mean concentrations of test substance in drinking water formulations sampled at the time of preparation and at the time of dispensation, there was no significant loss of TCE between preparation and transfer into drinking water bottles for administration to study animals.

Text Table 8
Results of Concentration Analyses at Time of Preparation

	Mean Concentration, ppm (% of Target)			
Date of Preparation	**Group 3 (0.25 ppm)**	**Group 4 (1.5 ppm)**	**Group 5 (500 ppm)**	**Group 6 (1000 ppm)**
24/25 Jul 2018	0.225 (90.2)	1.40 (93.0)	517 (103)	1027 (103)
25/26 Jul 2018	0.324 (130)	1.91 (128)	538 (108)	1158 (116)
26/27 Jul 2018	0.319 (127)	1.51 (101)	583 (117)	1133 (113)
30/31 Jul 2018	0.322 (129)	1.87 (125)	571 (114)	1045 (104)
04/05 Aug 2018	0.279 (111)	1.62 (108)	547 (109)	1019 (102)
07/08 Aug 2018	0.273 (109)	1.35 (90.1)	464 (92.8)	998 (99.8)
14/15 Aug 2018	0.296 (118)	1.73 (115)	575 (115)	1003 (100)
16/17 Aug 2018	0.318 (127)	1.61 (107)	549 (110)	1001 (100)

Text Table 9
Results of Concentration Analyses at Time of Dispensation

	Mean Concentration, ppm (% of Target)			
Date of Preparation	**Group 3 (0.25 ppm)**	**Group 4 (1.5 ppm)**	**Group 5 (500 ppm)**	**Group 6 (1000 ppm)**
24/25 Jul 2018	0.261 (104)	1.41 (94.1)	516 (103)	1018 (102)
25/26 Jul 2018	0.294 (118)	1.67 (111)	537 (107)	1020 (102)
26/27 Jul 2018	0.278 (111)	1.59 (106)	577 (115)	1077 (108)
30/31 Jul 2018	0.318 (127)	2.19 (146)	574 (115)	1070 (107)
04/05 Aug 2018	0.350 (140)	1.87 (125)	625 (125)	1262(126)
07/08 Aug 2018	0.415 (166)	1.46 (97.7)	504 (101)	1119 (112)
14/15 Aug 2018	0.312 (125)	1.86 (124)	646 (129)	1284 (128)
16/17 Aug 2018	0.382 (153)	1.75 (117)	580 (116)	1125 (112)

The results of up to 24-hour loss monitoring of the formulations used for test substance administration showed a percent loss ranging from -48.6% to -30.2%.

Text Table 10
Up to 24-Hour Loss Monitoring of the Formulations

	Group 3 (0.25 ppm)	**Group 4 (1.5 ppm)**	**Group 5 (500 ppm)**	**Group 6 (1000 ppm)**
Assessment of the 24/25 Jul 2018 Formulations				
Mean Concentration (ppm)	0.116	0.757	306	533
RSD (%)	4.2	3.5	4.3	3.5
Mean % of Target	46.4	50.4	61.2	53.3
Mean % of Pre-Storage	51.4	54.2	59.2	51.9
% Loss	-48.6	-45.8	-40.8	-48.1
Assessment of the 14/15 Aug 2018 Formulations				
Mean Concentration (ppm)	NQ	NQ	321	565
RSD (%)	N/A	N/A	4.5	7.5
Mean % of Target	N/A	N/A	64.2	56.5
Mean % of Pre-Storage	N/A	N/A	55.8	56.3
% Loss	N/A	N/A	-44.2	-43.7
Assessment of the 16/17 Aug 2018 Formulations				
Mean Concentration (ppm)	NQ	NQ	383	685
RSD (%)	N/A	N/A	7.9	7.9
Mean % of Target	N/A	N/A	76.6	68.5
Mean % of Pre-Storage	N/A	N/A	69.8	68.4
% Loss	N/A	N/A	-30.2	-31.6

NQ = Not quantitated due to interference in the chromatograms at the lower concentrations.
N/A= Not applicable.

8.2. Exposure Assessment

(Appendix 7)

In-life and necropsy data for exposure assessment phase animals are presented in Appendix 5. All females in the exposure assessment groups survived to the scheduled euthanasia. All females were gravid.

Maternal and fetal plasma samples were analyzed for the TCA concentrations and the results of the analysis are summarized in the following table. TCA was not quantifiable in any samples obtained from dams exposed to 0.25 and 1.5 ppm TCE in drinking water at any interval and in

fetal samples obtained on Gestation Day 21. Serum concentrations of TCA were comparable in samples obtained from dams exposed to 500 and 1000 ppm TCE in drinking water at all intervals evaluated and in fetal samples obtained on Gestation Day 21.

Text Table 11
Summary of Serum TCA Concentration Data

	Group 1 (0 ppm)	**Group 3 (0.25 ppm)**	**Group 4 (1.5 ppm)**	**Group 5 (500 ppm)**	**Group 6 (1000 ppm)**
Assessment of the Gestation Day 8 Serum Samples					
Mean Concentration (ng/mL)	BLQ<(150)	BLQ<(150)	BLQ<(150)	1710.0	1695.0
SD	N/A	N/A	N/A	436.3	592.0
N	4	4	4	4	4
Assessment of the Gestation Day 12 Serum Samples					
Mean Concentration (ng/mL)	BLQ<(150)	BLQ<(150)	BLQ<(150)	1805.0	2237.5
SD	N/A	N/A	N/A	878.1	622.2
N	4	4	4	4	4
Assessment of the Gestation Day 21 (Dam) Serum Samples					
Mean Concentration (ng/mL)	BLQ<(150)	BLQ<(150)	BLQ<(150)	1105.3	1164.5
SD	N/A	N/A	N/A	235.4	365.7
N	4	4	4	4	4
Assessment of the Gestation Day 21 (Fetal) Serum Samples					
Mean Concentration (ng/mL)	BLQ<(150)	BLQ<(150)	BLQ<(150)	1165.0	1235.5
SD	N/A	N/A	N/A	273.1	432.9
N	4	4	4	4	4

N/A= Not applicable.
BLQ = Below the Limit of Quantitation.

Text Table 12
Summary of Maternal/Fetal Ratios

	Group 1 (0 ppm)	**Group 3 (0.25 ppm)**	**Group 4 (1.5 ppm)**	**Group 5 (500 ppm)**	**Group 6 (1000 ppm)**
Mean Ratio	N/A	N/A	N/A	0.95	0.94

N/A= Not applicable.

8.3. Mortality and Observations

(Table 1, Table 2, Table 3 and Appendix 4, Table 4.1, Table 4.2)

All animals survived to the scheduled necropsy on Gestation Day 21, including Female No. 8766 that delivered 13 viable fetuses on that day.

There were no test substance-related clinical observations noted in the 0.25, 1.5, 500, and 1000 ppm TCE groups at the daily examinations. Dilated pupils were noted for 5 and 2 females in the 500 and 1000 ppm TCE groups, respectively, at the daily examinations. These observations were noted sporadically throughout the exposure period, generally did not persist to the next scheduled observation, and did not occur in a dose-related manner, and therefore were not considered test substance-related. Other clinical observations noted in the test substance-treated groups, including hair loss on various body surfaces, occurred infrequently, at similar frequencies in the vehicle control group, and/or in a manner that was not dose-related.

In the positive control group, dilated pupils were noted sporadically at approximately 1 hour postdosing for 7 females during Gestation Days 6–12. There were no other remarkable clinical observations noted in this group at the daily examinations or 1 hour postdosing.

8.4. Body Weights and Gravid Uterine Weights

(Table 4, Table 5, Table 6 and Appendix 4, Table 4.3, Table 4.4, Table 4.5)

Lower mean body weight gains were noted in the 500 and 1000 ppm TCE groups compared to the vehicle control group during Gestation Days 1–6; differences were statistically significant. Mean body weight gains in these group were comparable to the vehicle control group for the remainder of the treatment period (Gestation Days 6–9, 9–12, 12–16, and 16–21), with the following exception: a slightly lower mean body weight gain was noted at 500 ppm TCE during Gestation Days 6–7 resulted in a statistically significantly lower mean body weight gain for this group when the Gestation Days 6–9 interval was evaluated. The initial decrements in mean body weight gain at 500 and 1000 ppm TCE were not of sufficient magnitude to affect mean absolute body weights, and therefore were not considered adverse. Mean net body weight change in the 500 and 1000 ppm TCE groups was statistically significantly lower than the control group. In the absence of an effect on terminal body weight, mean gravid uterine weight or mean fetal weight in these groups, these differences were considered incidental. Mean net body weights and gravid uterine weights in the 500 and 1000 ppm TCE groups were unaffected by test substance administration.

Mean body weights, body weight gains, net body weights, net body weight gains, and gravid uterine weights in the 0.25 and 1.5 ppm TCE groups were unaffected by test substance administration. Differences from the vehicle control group were slight and not statistically significant.

A lower mean body weight loss was observed for the positive control (RA) following the initiation of dosing (Gestation Days 6-7) which was followed by lower mean body weight gains generally throughout the treatment period (Gestation Days 6-9, 9–12, and 12-16) and when the overall treatment (Gestation Days 6–16) period was evaluated; differences from the control group were occasionally statistically significant. As a result, the mean absolute body weights in the positive control group were statistically significantly lower (3.0% to 5.9%) than the vehicle control group from Gestation Days 8–21. Following the cessation of dosing (Gestation Days 16-21), mean body weight gain in the positive control group was comparable to the vehicle control group. Statistically significantly lower mean net body weight and net body weight change was noted in this group compared to the vehicle control group. The aforementioned effects on body weight were expected effects of the positive control substance, RA. Mean gravid uterine weight in the positive control group was comparable to the vehicle control group.

8.5. Food Consumption

(Table 7, Table 8 and Appendix 4, Table 4.6, Table 4.7)

Mean maternal food consumption, evaluated as g/animal/day and g/kg/day, in the 0.25, 1.5, 500, and 1000 ppm TCE groups was unaffected by test substance administration. Differences from the vehicle control group were slight and not statistically significant, with the following exceptions. Higher mean food consumption was noted in the 1.5 ppm TCE group compared to the vehicle control group during Gestation Days 6–7; the difference was statistically significant. In the 500 ppm TCE group, lower mean food consumption was noted during Gestation Days 8–9 and 12–13 resulting in lower mean food consumption when the Gestation Days 6–9 and 6–16 intervals were evaluated; differences from the vehicle control group were statistically significant. The aforementioned differences in mean food consumption were noted in a non-dose responsive manner and considered incidental.

In the positive control group, lower mean maternal food consumption was noted throughout the treatment and posttreatment periods (Gestation Days 6–9, 9–12, 12–16, and 16–21) and when the overall treatment period (Gestation Days 6–16) was evaluated; differences from the vehicle control group were statistically significant.

8.6. Water Consumption

(Table 9, Table 10 and Appendix 4, Table 4.8, Table 4.9)

Test substance-related lower mean water consumption was noted in the 500 and 1000 ppm TCE groups throughout the gestation treatment period (Gestation Days 1–6, 6–9, 9–12, 12–16, and 16–21) and when the entire gestation treatment period (1–21) was evaluated. Differences were generally statistically significant.

Mean water consumption in the 0.25 and 1.5 ppm TCE groups was comparable to the vehicle control group; differences from the vehicle control group were not statistically significant.

In the positive control group, mean water consumption was generally comparable to the vehicle control group throughout gestation. Differences from the vehicle control group were slight and not statistically significant, with the following exceptions. Lower mean water consumption was noted in the positive control group compared to the vehicle control group during Gestation Days 6–9; the difference was statistically significant. Mean water consumption in this group was statistically significantly higher than the vehicle control group following the cessation of dosing (Gestation Days 16–21) and when the entire gestation period (Gestation Days 1–21) was evaluated.

8.7. Test Substance Consumption

(Table 11 and Appendix 4, Table 4.10)

Mean compound consumption (mg/kg/day) values for the TCE groups during Gestation Days 1-21 was based on analytically measured concentrations of the test substance (in drinking water formulations) and is presented in the following table.

Text Table 13
Mean Calculated Test Substance Consumption (mg/kg/day)

Theoretical Concentration (ppm)	Mean Test Substance Consumption (mg/kg/day)
0	0.00
N/A	N/A
0.25	0.04
1.5	0.21
500	58.03
1000	113.45

N/A = Not applicable.

8.8. Gross Pathology

(Table 12 and Appendix 4, Table 4.11)

At the scheduled necropsy on Gestation Day 21, no test substance-related internal findings were observed at dosage levels of 0.25, 1.5, 500, and 1000 ppm TCE. Macroscopic findings observed in the test substance-treated groups occurred infrequently, at similar frequencies in the vehicle control group, and/or in a manner that was not dose-related. One, 2, 1, 1, and 1 females in the vehicle control, 0.25, 1.5, 500, and 1000 ppm TCE groups, respectively, were determined to be nongravid.

In the positive control group, 17 of 25 females were noted with red fluid in the amniotic sac and 5 of 25 females were noted with dark red uterine contents. These findings generally correlated with the external fetal malformation exencephaly in individual fetuses at the affected sites. All females in the positive control group were gravid.

8.9. Ovarian and Uterine Examinations

(Table 13, Table 14 and Appendix 4, Table 4.12, Table 4.13, Table 4.14)

Intrauterine growth and survival were unaffected by test substance administration at dosage levels of 0.25, 1.5, 500, and 1000 ppm TCE. Parameters evaluated included mean litter proportions of postimplantation loss, mean number and percentage of viable fetuses, mean fetal body weights, and fetal sex ratios. Differences from the vehicle control group were slight and not statistically significant.

In the positive control group, the mean litter proportion of postimplantation loss (22.8 % per litter) was higher when compared to the concurrent vehicle control group (5.7% per litter). The difference was statistically significant when compared to the concurrent vehicle control group and the value exceeded the maximum mean value in the Charles River Ashland historical control data version 2017.03 (16.51% per litter). Corresponding lower mean number and litter proportion of viable fetuses were noted in this group (10.8 fetuses and 77.2% per litter, respectively) when compared to the concurrent vehicle control group (12.8 fetuses and 94.3%

per litter) and the minimum mean values in the Charles River Ashland historical control data (11.85 fetuses and 83.49% per litter, respectively). In addition, the mean fetal body weights (males, females, and combined) in the positive control group (4.8 g, 4.4 g, and 4.6 g, respectively) were lower (21.3%, 25.4%, and 23.3%, respectively) than the concurrent vehicle control group (6.1 g, 5.9 g, and 6.0 g, respectively) and below the minimum mean values in the Charles River Ashland historical control data. Differences from the concurrent vehicle control group were statistically significant.

Mean numbers of corpora lutea and implantation sites and the mean litter proportions of pre-implantation loss were similar across all groups.

8.10. Fetal Morphological Data

(Table 15, Table 16, Table 17, Table 18 and Appendix 4, Table 4.15, Table 4.16)

The numbers of fetuses (litters) available for morphological evaluation were 308(24), 269(25), 275(22), 321(24), 330(24), and 342(24) in the vehicle control, positive control, 0.25, 1.5, 500, and 1000 ppm TCE groups, respectively. Malformations were observed in 8(6), 210(25), 4(4), 5(3), 13(8), and 12(6) fetuses (litters) in these same respective dose groups.

8.10.1. External Malformations and Variations

A single fetus (No. 8771-10) in the 1000 ppm TCE group was noted with microphthalmia (bilateral). This finding was also noted in a single vehicle control group fetus (No. 8751-01). Given the similar incidence at 1000 ppm TCE and the vehicle control group, this malformation was considered spontaneous in origin and not test substance-related. No other external malformations were noted for fetuses in the TCE groups.

The positive control (RA) elicited the expected response to treatment during gestation. A wide spectrum of craniofacial and digit anomalies were noted for 195(25) fetuses (litters) in this group and included exencephaly with or without open eyelids in 120(22) fetuses (litters), cleft palate in 70(17) fetuses (litters), microphthalmia and/or anophthalmia in 58(16) fetuses (litters), hydrocephaly with or without domed head in 23(9) fetuses (litters), ectrodactyly in 21(7) fetuses (litters), meningocele in 20(14) fetuses (litters), syndactyly in 7(4) fetuses (litters), spina bifida in 5(3) fetuses (litters), bent tail in 4(3) fetuses (litters), and microstomia in 3(2) fetuses (litters). Additional findings, noted at lower incidence included anal atresia, short or bent tail, open eyelids, anury, malpositioned, small or absent pinnae, mandibular and maxillary micrognathia, meningoencephalocele, facial cleft, omphalocele, macroglossia, cleft lip, and ankyloglossia. The mean litter proportions of noted external findings in the positive control group were substantially higher than the control group. These findings were consistent with previously published effects of gestational retinoic acid exposure.[11]

No external developmental variations were observed in fetuses in the TCE groups in this study. A single fetus (No. 8854-12) in the positive control group was noted with the external variation, skin tags (left lateral head).

8.10.2. Visceral Malformations and Variations

The visceral cardiac anomaly interventricular septal defect was noted for 7(5), 112(23), 4(4), 5(3), 13(8), and 12(6) fetuses (litters) in the control, positive control, 0.25, 1.5, 500, and 1000 ppm TCE groups, respectively. One and 8 fetuses in the vehicle control and positive

control group were noted with openings in the interventricular septum greater than 1 mm in diameter. In addition, a single fetus (No. 8854-10) in the positive control group was noted with an opening greater than 2 mm in diameter that spanned the membranous and muscular portions of the septum. The majority of interventricular septal defects in the TCE groups were observed in the membranous portion of the septum. The mean litter proportion for interventricular septal defect in the positive control group was statistically significantly higher than the vehicle control group. There were no other cardiac malformations in the TCE groups.

The following table summarizes the prevalence of the interventricular septal defect.

Text Table 14
Summary of Observed Interventricular Septal Defects

Dosage Level:	0 ppm	15 mg/kg/day RA (Positive Control)	0.25 ppm	1.5 ppm	500 ppm	1000 ppm
Affected Fetuses (Litters)	7(5)	112(23)	4(4)	5(3)	13(8)	12(6)
% Per Litter	2.4	42.2**	1.4	1.5	3.8	3.7
Size of Opening, No. Fetuses (size)	6 (<1 mm) 1 (1 mm)	103 (<1 mm) 8 (1 mm) 1 (>2 mm)	All (<1 mm)	All (<1 mm)	All (<1 mm)	All (<1 mm)
Location of Defect	Mem	Mem (111 fetuses) Mus/Mem (1 fetus)	Mem	Mem	Mem	Mem

NA = Not applicable;
Mem = Membranous portion of septum.
Mus/Mem = Muscular and membranous portion of septum.
** = Significantly different from the vehicle control group at 0.01.

Other cardiac anomalies noted in the positive control group included retroesophageal aortic arch (aortic arch coursed retroesophageal immediately following the left carotid artery and returned to the normal position adjacent to the ductus arteriosus) in 5(5) fetuses (litters), transposition of the great vessels in 5(3) fetuses (litters), and interrupted aortic arch (brachiocephalic trunk and left carotid artery arose from ascending aorta, left subclavian artery arose from the descending aorta; ductus arteriosus communicated with the descending aorta) in 2(2) fetuses (litters). In addition, situs inversus (heart and great/major vessels transposed), stenotic aortic arch (ascending and aortic arch), coarctation of the aortic arch, stenotic carotid artery (unilateral), and small ventricle (unilateral) were each noted for single fetuses in this group. The cardiac malformations noted in the positive control group were consistent with previously published effects of RA exposure.[11]

The visceral cardiac variation major blood vessel variation (right carotid and subclavian arteries arose independently from the aortic arch [no brachiocephalic trunk] or right subclavian artery coursed retroesophageal and joined the aortic arch adjacent to ductus arteriosus [no brachiocephalic trunk]) was noted for 0(0), 19(12), 1(1), 2(1), 1(1), and 2(2) fetuses (litters) in the control, positive control, 0.25, 1.5, 500, and 1000 ppm TCE groups, respectively. The mean litter proportions of this variation in the TCE-treated groups (0.3% to 0.6% per litter) were within the Charles River Ashland historical control data range (0.0 to 0.86% per litter). Major blood vessel variation is the third most common visceral variation laboratory rats and based on the incidence, this finding in the TCE groups were considered incidental. The mean litter proportion of this variation in the positive control group was statistically significantly higher than the vehicle control group and attributed to RA exposure. No other visceral developmental variations were noted for fetuses in this study.

8.10.3. Summary of External and Visceral Examinations

The numbers of fetuses (litters) available for morphological evaluation were 308(24), 275(22), 321(24), 330(24), and 342(24) in the vehicle control, 0.25, 1.5, 500, and 1000 ppm TCE groups, respectively. Cardiac anomalies were observed in 8(6), 4(4), 5(3), 13(8), and 12(6) fetuses (litters) in these same respective dose groups, and were considered to be spontaneous in origin, as discussed below (Section 9.).

The positive control (RA) elicited the expected external (craniofacial and digit anomalies) and visceral (cardiovascular) malformations and visceral (major vessel) variations when administered at 15 mg/kg/day. As a result, higher mean litter proportions of cardiac malformations and variations were noted in this group compared to the vehicle control group; differences were generally statistically significant.

9. DISCUSSION

The objective of this study was to determine the potential of trichloroethylene (TCE) to induce cardiac defects in the offspring after maternal exposure from the day following copulation through the day of euthanasia.

There were no test substance-related effects on maternal survival or clinical observations at any dosage level tested. Mean maternal body weights, body weight gains and food consumption as well as mean gravid uterine weights in the 0.25, 1.5, 500, and 1000 ppm TCE groups were comparable to controls. Treatment-related lower mean water consumption was noted in the 500 and 1000 ppm TCE groups throughout the gestation treatment period, which was attributed to the palatability of the test substance in drinking water. Given the lack of corresponding effects on mean body weights or food consumption, these differences were not considered adverse. There were no adverse macroscopic findings noted at scheduled necropsy and intrauterine growth and survival were unaffected by test substance administration at dosage levels of 0.25, 1.5, 500, and 1000 ppm TCE.

The positive control, all-*trans* Retinoic acid elicited the expected response to treatment at 15 mg/kg/day during the period of major organogenesis. External findings included craniofacial and digit anomalies and visceral findings included a variety of cardiovascular malformations including interventricular septal defects in 112 fetuses across 23 litters. These findings were consistent with previous published reports.[11]

The only cardiac anomaly observed in the TCE treated groups was interventricular septal defect in 4(4), 5(3), 13(8), and 12(6) fetuses (litters) in the 0.25, 1.5, 500, and 1000 ppm groups, respectively. Interventricular septal defect was also observed in 7(5) fetuses (litters) in the vehicle control groups. With the exception of 1 fetus in the vehicle control group, all openings in the interventricular septum were less than 1 mm in diameter; and all of the openings were observed in the membranous portion of the septum.

The mean litter proportion of interventricular septal defect observed in the control group (2.4% per litter) exceeded the maximum mean value in the Charles River Ashland historical control data (0.26% per litter, see Appendix 8). This difference in control incidence was attributed to the current study design, where the singular focus on the heart and great and major blood vessels likely resulted in heightened observer sensitivity to the presence of interventricular septal defects. Thus, the Charles River Ashland historical control data was not utilized as a basis for comparison of background control incidence of this finding. Instead, previously published

manuscripts, which had similar focus on cardiovascular development[1-4] were utilized for the purposes of comparison and data interpretation.

The mean litter proportion for membranous interventricular septal defect on the current study, and historical incidences based on previously published studies are presented in the tables below:

Text Table 15
Mean Litter Proportions of Membranous Interventricular Septal Defects in the Sprague Dawley Rat

Dosage Level:	0 ppm	0.25 ppm	1.5 ppm	500 ppm	1000 ppm
Current Study	2.4	1.4	1.5	3.8	3.7
Johnson 2003[4]	3.0	0.0	1.7	N/A	3.8[a]

[a] = TCE was administered at 1100 ppm in drinking water.[4]

Text Table 16
Current Study and Literature-Based Historical Control Fetal Incidence (on a per Fetus Basis)
Values for Ventricular Septal Defects in Fetal Sprague Dawley Rats

Dosage Level:	0 ppm	0.25 ppm	1.5 ppm	500 ppm	1000 ppm
Current Study	2.3	1.5	1.6	3.9	3.5
Inomata 1971[1]	5.2[a]	N/A	N/A	N/A	N/A
Inomata 1971[1]	3.6[b]	N/A	N/A	N/A	N/A
Haring 1965[2]	3.2	N/A	N/A	N/A	N/A
Haring 1966[3]	2.8	N/A	N/A	N/A	N/A

N/A = Not applicable
[a] = Naïve animals; not exposed to any control or test substance.
[b] = Control substance (0.5% carboxymethylcellulose) was administered once on Gestation Day 10.

Cardiovascular development, especially as it pertains to the interventricular septum, has been described in great detail in the literature. The ventricular septum has two parts: an inferiorly located muscular portion that makes up >90% of the septum and a much smaller superiorly located membranous portion. The muscular septum is formed by cardiomyocyte progenitors originating in the bulboventricular fold (a "C"-shaped ring between the bulbus cordis and the primitive ventricle). The small membranous septum is formed from endocardial cushion tissue with contribution from the aorticopulmonary septum.

Based on published data, as included above, membranous interventricular septal defects are spontaneously observed in rats at an incidence rate between 2.8 to 5.2%. Furthermore, interventricular septal defects, especially where the nature of the defect is small (≤ 1 mm in diameter) have been shown to resolve postnatally, without adverse effects on postnatal survival of the animals.[5,6,7] In rodents, using trimethadione and trypan blue, it was demonstrated that interventricular septal defects did not alter postnatal survival and closed spontaneously during neonatal life.[6] Fetuses from dams exposed to trimethadione and trypan blue were examined in late gestation (Gestation Days 17, 19, and 21) and pups from similarly exposed dams were examined following weaning (PND 21) and as adults. Based on fresh visceral examination, interventricular septal defects were observed in approximately 2% of the fetuses examined on GD 21, but not in weanlings or adults. Similarly, in another study, trimethadione-induced interventricular septal defects were significantly reduced in fetuses/pups from exposed dams when examined in late gestation (Gestation Day 21) versus following weaning (PND 21).[5] These reports suggest that similar to humans,[7] small spontaneous interventricular septal defects in rats close postnatally and hence should not be considered adverse. Based on these data, and the absence of statistical significance in any TCE group relative to controls, the interventricular

septal defects observed in the TCE treated groups were considered to be spontaneous background occurrences and unrelated to TCE exposure.

10. CONCLUSIONS

Based on the absence of adverse maternal or developmental effects following administration of trichloroethylene via drinking water to time-mated Crl:CD(SD) rats, a dosage level of 1000 ppm was considered to be the no-observed-adverse-effect level (NOAEL) for maternal and cardiac developmental toxicity.

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TABLES

TABLE 1

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 1
SPONSOR:HSIA SUMMARY OF MATERNAL SURVIVAL AND PREGNANCY STATUS

DOSE GROUP :	1		2		3		4		5		6	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
FEMALES ON STUDY	25		25		25		25		25		25	
FEMALES THAT ABORTED OR DELIVERED	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
FEMALES THAT DIED	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
FEMALES THAT ABORTED	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NONGRAVID	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
GRAVID	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
FEMALES THAT WERE EUTHANIZED	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NONGRAVID	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
GRAVID	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
FEMALES EXAMINED AT SCHEDULED NECROPSY	25	100.0-A	25	100.0	25	100.0	25	100.0	25	100.0	25	100.0
NONGRAVID	1	4.0	0	0.0	2	8.0	1	4.0	1	4.0	1	4.0
GRAVID	24	96.0	25	100.0	23	92.0	24	96.0	24	96.0	24	96.0
WITH RESORPTIONS ONLY	0	0.0	0	0.0	1	4.3	0	0.0	0	0.0	0	0.0
WITH VIABLE FETUSES	24	100.0	25	100.0	22	95.7	24	100.0	24	100.0	24	100.0
TOTAL FEMALES GRAVID	24	96.0	25	100.0	23	92.0	24	96.0	24	96.0	24	96.0

1- 0 PPM 2- 15 MG/KG RA 3- 0.25 PPM 4- 1.5 PPM 5- 500 PPM 6- 1000 PPM

A = INCLUDES FEMALE NO. 8766 THAT DELIVERED ON GESTATION DAY 21 WITH ALL IMPLANTATION SITES ACCOUNTED FOR.

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TABLE 2 (DAILY EXAMINATIONS)

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 1
SPONSOR:HSIA SUMMARY OF CLINICAL FINDINGS: TOTAL OCCURRENCE/NO. OF ANIMALS

----- F E M A L E -----

TABLE RANGE:	07-24-18 TO 08-18-18					
GROUP:	1	2	3	4	5	6
NORMAL						
-NO SIGNIFICANT CLINICAL OBSERVATIONS	546/25	525/25	530/25	542/25	520/25	536/25
DISPOSITION						
-SCHEDULED EUTHANASIA; GESTATION DAY 21	24/24	25/25	25/25	25/25	25/25	25/25
-DELIVERED	1/ 1	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0
BODY/INTEGUMENT						
-HAIR LOSS FORELIMB(S)	4/ 1	17/ 4	20/ 3	7/ 3	23/ 4	6/ 2
-HAIR LOSS VENTRAL TRUNK	0/ 0	2/ 1	4/ 1	0/ 0	0/ 0	0/ 0
-HAIR LOSS FACIAL AREA	0/ 0	1/ 1	0/ 0	0/ 0	0/ 0	0/ 0
-HAIR LOSS HINDLIMB(S)	0/ 0	0/ 0	1/ 1	0/ 0	0/ 0	0/ 0
EYES/EARS/NOSE						
-PUPIL DILATED LEFT EYE	0/ 0	0/ 0	0/ 0	0/ 0	7/ 5	6/ 2
-PUPIL DILATED RIGHT EYE	0/ 0	0/ 0	0/ 0	0/ 0	7/ 5	6/ 2
-RED NASAL DISCHARGE	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	1/ 1
-DRIED RED MATERIAL AROUND NOSE	0/ 0	0/ 0	0/ 0	1/ 1	0/ 0	0/ 0
-DRIED RED MATERIAL AROUND LEFT EYE	0/ 0	2/ 1	0/ 0	0/ 0	0/ 0	0/ 0
BODY/INTEG. II						
-WET RED MATERIAL UROGENITAL AREA	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	1/ 1

1- 0 PPM 2- 15 MG/KG RA 3- 0.25 PPM 4- 1.5 PPM 5- 500 PPM 6- 1000 PPM

TABLE 2 (DAILY EXAMINATIONS)

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 2
SPONSOR:HSIA SUMMARY OF CLINICAL FINDINGS: TOTAL OCCURRENCE/NO. OF ANIMALS

----- F E M A L E -----

TABLE RANGE:	07-24-18 TO 08-18-18					
GROUP:	1	2	3	4	5	6
BODY/INTEG. II						
-SCABBING DORSAL NECK	0/ 0	1/ 1	0/ 0	0/ 0	0/ 0	0/ 0
ORAL/DENTAL						
-WET RED MATERIAL AROUND MOUTH	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	1/ 1
-SCABBING AROUND MOUTH	0/ 0	6/ 3	0/ 0	0/ 0	0/ 0	0/ 0

1- 0 PPM 2- 15 MG/KG RA 3- 0.25 PPM 4- 1.5 PPM 5- 500 PPM 6- 1000 PPM

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TABLE 3

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 1
SPONSOR:HSIA SUMMARY OF POST-DOSE FINDINGS: TOTAL OCCURRENCE/NO. OF ANIMALS

----- F E M A L E -----

TABLE RANGE: 07-30-18 TO 08-12-18 GROUP:	1	2	3	4	5	6
NORMAL						
1 HOUR POST-DOSING						
-NO SIGNIFICANT CLINICAL OBSERVATIONS	0/0	233/25	0/0	0/0	0/0	0/0
EYES/EARS/NOSE						
1 HOUR POST-DOSING						
-PUPIL DILATED LEFT EYE	0/0	17/7	0/0	0/0	0/0	0/0
-PUPIL DILATED RIGHT EYE	0/0	17/7	0/0	0/0	0/0	0/0

1- 0 PPM 2- 15 MG/KG RA 3- 0.25 PPM 4- 1.5 PPM 5- 500 PPM 6- 1000 PPM

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TABLE 4

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 1

SPONSOR:HSIA SUMMARY OF BODY WEIGHTS DURING GESTATION [G]

GROUP:	0 PPM	15 MG/KG RA	0.25 PPM	1.5 PPM	500 PPM	1000 PPM
DAY 0						
MEAN	248.	248.	248.	248.	247.	248.
% DIFFERENCE		0.0	0.0	0.0	-0.4	0.0
S.D.	14.0	11.6	12.7	11.6	11.8	12.1
N	24	25	23	24	24	24
DAY 1						
MEAN	258.	258.	258.	257.	257.	256.
% DIFFERENCE		0.0	0.0	-0.4	-0.4	-0.8
S.D.	12.0	11.6	12.2	11.3	13.1	11.9
N	24	25	23	24	24	24
DAY 2						
MEAN	265.	263.	263.	262.	260.	260.
% DIFFERENCE		-0.8	-0.8	-1.1	-1.9	-1.9
S.D.	13.2	11.8	13.6	11.2	13.0	12.0
N	24	25	23	24	24	24
DAY 3						
MEAN	269.	268.	268.	267.	265.	264.
% DIFFERENCE		-0.4	-0.4	-0.7	-1.5	-1.9
S.D.	13.6	12.1	13.3	12.0	14.2	13.6
N	24	25	23	24	24	24
DAY 4						
MEAN	274.	273.	273.	272.	270.	268.
% DIFFERENCE		-0.4	-0.4	-0.7	-1.5	-2.2
S.D.	14.0	12.1	13.7	11.9	13.5	14.1
N	24	25	23	24	24	24

MODIFIED STATISTICS USED
For statistical analyses, control group 1 was compared to group 2; control group 1 was compared to groups 3, 4, 5 and 6.
None significantly different from control group
NONGRAVID WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 2

SPONSOR:HSIA SUMMARY OF BODY WEIGHTS DURING GESTATION [G]

GROUP:	0 PPM	15 MG/KG RA	0.25 PPM	1.5 PPM	500 PPM	1000 PPM
DAY 5						
MEAN	280.	278.	278.	276.	274.	273.
% DIFFERENCE		-0.7	-0.7	-1.4	-2.1	-2.5
S.D.	13.6	12.4	14.3	11.7	13.8	14.4
N	24	25	23	24	24	24
DAY 6						
MEAN	284.	283.	283.	281.	278.	277.
% DIFFERENCE		-0.4	-0.4	-1.1	-2.1	-2.5
S.D.	15.0	13.8	15.1	13.7	14.8	14.5
N	24	25	23	24	24	24
DAY 7						
MEAN	289.	281.	287.	286.	281.	281.
% DIFFERENCE		-2.8	-0.7	-1.0	-2.8	-2.8
S.D.	15.4	13.1	14.7	13.0	14.9	15.5
N	24	25	23	24	24	24
DAY 8						
MEAN	295.	285.a	292.	292.	287.	286.
% DIFFERENCE		-3.4	-1.0	-1.0	-2.7	-3.1
S.D.	16.2	13.5	15.2	12.6	15.2	14.9
N	24	25	23	24	24	24
DAY 9						
MEAN	299.	290.a	299.	296.	290.	292.
% DIFFERENCE		-3.0	0.0	-1.0	-3.0	-2.3
S.D.	16.6	14.1	16.8	13.7	15.7	14.5
N	24	25	23	24	24	24

MODIFIED STATISTICS USED
For statistical analyses, control group 1 was compared to group 2; control group 1 was compared to groups 3, 4, 5 and 6.
a = Significantly different from control group 1 at 0.05 using two-sample t-test
NONGRAVID WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 3
SPONSOR:HSIA SUMMARY OF BODY WEIGHTS DURING GESTATION [G]

GROUP:	0 PPM	15 MG/KG RA	0.25 PPM	1.5 PPM	500 PPM	1000 PPM
DAY 10						
MEAN	306.	296.a	304.	304.	297.	299.
% DIFFERENCE		-3.3	-0.7	-0.7	-2.9	-2.3
S.D.	17.1	15.1	15.9	13.5	15.2	15.7
N	24	25	23	24	24	24
DAY 11						
MEAN	312.	301.a	311.	308.	303.	306.
% DIFFERENCE		-3.5	-0.3	-1.3	-2.9	-1.9
S.D.	18.3	14.6	16.1	12.5	16.4	15.0
N	24	25	23	24	24	24
DAY 12						
MEAN	317.	304.a	315.	315.	311.	312.
% DIFFERENCE		-4.1	-0.6	-0.6	-1.9	-1.6
S.D.	19.4	14.7	17.2	14.6	16.1	15.3
N	24	25	23	24	24	24
DAY 13						
MEAN	324.	308.b	322.	320.	316.	317.
% DIFFERENCE		-4.9	-0.6	-1.2	-2.5	-2.2
S.D.	20.1	15.0	17.3	14.4	17.3	16.8
N	24	25	23	24	24	24
DAY 14						
MEAN	330.	313.b	328.	326.	319.	323.
% DIFFERENCE		-5.2	-0.6	-1.2	-3.3	-2.1
S.D.	21.3	15.5	18.1	15.3	17.5	16.5
N	24	25	23	24	24	24

MODIFIED STATISTICS USED
For statistical analyses, control group 1 was compared to group 2; control group 1 was compared to groups 3, 4, 5 and 6.
a = Significantly different from control group 1 at 0.05 using two-sample t-test
b = Significantly different from control group 1 at 0.01 using two-sample t-test
NONGRAVID WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 4

SPONSOR:HSIA SUMMARY OF BODY WEIGHTS DURING GESTATION [G]

GROUP:	0 PPM	15 MG/KG RA	0.25 PPM	1.5 PPM	500 PPM	1000 PPM
DAY 15						
MEAN	338.	319.b	336.	334.	328.	333.
% DIFFERENCE		-5.6	-0.6	-1.2	-3.0	-1.5
S.D.	22.6	15.6	20.3	14.3	18.0	18.0
N	24	25	23	24	24	24
DAY 16						
MEAN	348.	328.b	345.	342.	339.	342.
% DIFFERENCE		-5.7	-0.9	-1.7	-2.6	-1.7
S.D.	25.8	17.2	22.0	15.2	19.6	17.6
N	24	25	23	24	24	24
DAY 17						
MEAN	360.	340.b	358.	357.	353.	356.
% DIFFERENCE		-5.6	-0.6	-0.8	-1.9	-1.1
S.D.	28.7	19.5	24.4	16.5	19.9	18.9
N	24	25	23	24	24	24
DAY 18						
MEAN	376.	354.b	374.	372.	371.	374.
% DIFFERENCE		-5.9	-0.5	-1.1	-1.3	-0.5
S.D.	30.5	22.3	28.1	17.5	20.5	20.5
N	24	25	23	24	24	24
DAY 19						
MEAN	391.	371.a	387.	387.	385.	390.
% DIFFERENCE		-5.1	-1.0	-1.0	-1.5	-0.3
S.D.	34.5	25.6	30.9	17.8	21.3	21.2
N	24	25	23	24	24	24

MODIFIED STATISTICS USED
For statistical analyses, control group 1 was compared to group 2; control group 1 was compared to groups 3, 4, 5 and 6.
a = Significantly different from control group 1 at 0.05 using two-sample t-test
b = Significantly different from control group 1 at 0.01 using two-sample t-test
NONGRAVID WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 5

SPONSOR:HSIA SUMMARY OF BODY WEIGHTS DURING GESTATION [G]

GROUP:	0 PPM	15 MG/KG RA	0.25 PPM	1.5 PPM	500 PPM	1000 PPM
DAY 20						
MEAN	408.	387.a	402.	403.	403.	407.
% DIFFERENCE		-5.1	-1.5	-1.2	-1.2	-0.2
S.D.	38.2	27.9	35.1	18.8	25.1	24.0
N	24	25	23	24	24	24
DAY 21						
MEAN	427.	404.a	425.	423.	424.	427.
% DIFFERENCE		-5.4	-0.5	-0.9	-0.7	0.0
S.D.	41.2	35.3	38.0	22.0	26.3	27.8
N	24	25	23	24	24	24

MODIFIED STATISTICS USED
For statistical analyses, control group 1 was compared to group 2; control group 1 was compared to groups 3, 4, 5 and 6.
a = Significantly different from control group 1 at 0.05 using two-sample t-test
NONGRAVID WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

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TABLE 5

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 1

SPONSOR:HSIA SUMMARY OF BODY WEIGHT CHANGES DURING GESTATION [G]

GROUP:		0 PPM	15 MG/KG RA	0.25 PPM	1.5 PPM	500 PPM	1000 PPM
DAY 0- 1							
	MEAN	10.	11.	10.	9.	10.	8.
	S.D.	4.2	4.3	6.3	5.1	4.5	3.9
	N	24	25	23	24	24	24
DAY 1- 2							
	MEAN	7.	5.	5.	5.	3.	4.
	S.D.	4.2	3.8	5.3	5.4	3.8	4.7
	N	24	25	23	24	24	24
DAY 2- 3							
	MEAN	4.	4.	5.	5.	4.	4.
	S.D.	4.0	3.9	4.1	5.1	3.7	4.4
	N	24	25	23	24	24	24
DAY 3- 4							
	MEAN	5.	5.	5.	5.	5.	4.
	S.D.	3.5	3.1	4.5	4.1	4.2	3.7
	N	24	25	23	24	24	24
DAY 4- 5							
	MEAN	6.	5.	5.	5.	4.	5.
	S.D.	3.8	3.3	4.2	3.0	4.4	4.6
	N	24	25	23	24	24	24
DAY 5- 6							
	MEAN	4.	5.	5.	4.	4.	4.
	S.D.	3.1	3.9	3.2	4.6	5.5	4.3
	N	24	25	23	24	24	24

MODIFIED STATISTICS USED
For statistical analyses, control group 1 was compared to group 2; control group 1 was compared to groups 3, 4, 5 and 6.
None significantly different from control group
MEAN DIFFERENCES CALCULATED FROM INDIVIDUAL DIFFERENCES
NONGRAVID WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 5

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 2

SPONSOR:HSIA SUMMARY OF BODY WEIGHT CHANGES DURING GESTATION [G]

GROUP:		0 PPM	15 MG/KG RA	0.25 PPM	1.5 PPM	500 PPM	1000 PPM
DAY 6- 7							
	MEAN	5.	-1.b	4.	5.	2.	4.
	S.D.	3.6	3.8	3.2	4.4	7.4	4.3
	N	24	25	23	24	24	24
DAY 7- 8							
	MEAN	6.	4.b	5.	6.	6.	6.
	S.D.	3.1	3.7	4.3	2.6	5.8	4.7
	N	24	25	23	24	24	24
DAY 8- 9							
	MEAN	4.	5.	7.	4.	3.	5.
	S.D.	4.0	4.3	4.0	3.1	4.2	4.8
	N	24	25	23	24	24	24
DAY 9- 10							
	MEAN	6.	5.	5.	7.	7.	7.
	S.D.	3.1	4.3	3.6	3.2	3.7	4.8
	N	24	25	23	24	24	24
DAY 10- 11							
	MEAN	7.	5.	7.	4.	6.	7.
	S.D.	4.0	4.3	3.2	3.3	3.8	4.3
	N	24	25	23	24	24	24
DAY 11- 12							
	MEAN	5.	3.	4.	7.	8.	6.
	S.D.	3.5	5.3	6.1	3.6	4.3	4.6
	N	24	25	23	24	24	24

MODIFIED STATISTICS USED
For statistical analyses, control group 1 was compared to group 2; control group 1 was compared to groups 3, 4, 5 and 6.
b = Significantly different from control group 1 at 0.01 using two-sample t-test
MEAN DIFFERENCES CALCULATED FROM INDIVIDUAL DIFFERENCES
NONGRAVID WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 5

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 3
SPONSOR:HSIA SUMMARY OF BODY WEIGHT CHANGES DURING GESTATION [G]

GROUP:		0 PPM	15 MG/KG RA	0.25 PPM	1.5 PPM	500 PPM	1000 PPM
DAY 12- 13							
	MEAN	6.	4.	7.	5.	5.	5.
	S.D.	3.7	4.4	4.1	3.5	4.0	5.3
	N	24	25	23	24	24	24
DAY 13- 14							
	MEAN	6.	5.	6.	5.	4.	6.
	S.D.	4.0	5.0	4.9	5.2	3.4	5.4
	N	24	25	23	24	24	24
DAY 14- 15							
	MEAN	9.	6.a	8.	9.	8.	10.
	S.D.	4.0	5.0	4.3	5.7	6.3	4.5
	N	24	25	23	24	24	24
DAY 15- 16							
	MEAN	10.	9.	9.	7.	11.	9.
	S.D.	4.9	4.3	4.7	4.6	6.3	4.4
	N	24	25	23	24	24	24
DAY 16- 17							
	MEAN	12.	12.	13.	15.	15.	14.
	S.D.	4.8	4.9	6.2	4.7	5.6	4.0
	N	24	25	23	24	24	24
DAY 17- 18							
	MEAN	16.	14.	16.	16.	17.	17.
	S.D.	5.4	6.1	6.1	5.1	4.5	4.7
	N	24	25	23	24	24	24

MODIFIED STATISTICS USED
For statistical analyses, control group 1 was compared to group 2; control group 1 was compared to groups 3, 4, 5 and 6.
a = Significantly different from control group 1 at 0.05 using two-sample t-test
MEAN DIFFERENCES CALCULATED FROM INDIVIDUAL DIFFERENCES
NONGRAVID WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 5

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 4

SPONSOR:HSIA SUMMARY OF BODY WEIGHT CHANGES DURING GESTATION [G]

GROUP:		0 PPM	15 MG/KG RA	0.25 PPM	1.5 PPM	500 PPM	1000 PPM
DAY 18- 19							
	MEAN	14.	17.	13.	15.	15.	16.
	S.D.	6.5	6.6	4.8	5.4	3.5	3.8
	N	24	25	23	24	24	24
DAY 19- 20							
	MEAN	17.	16.	15.	16.	18.	17.
	S.D.	5.4	5.7	7.1	6.8	5.8	5.2
	N	24	25	23	24	24	24
DAY 20- 21							
	MEAN	19.	17.	23.	21.	21.	20.
	S.D.	7.1	8.5	7.3	6.1	7.1	7.2
	N	24	25	23	24	24	24
DAY 1- 6							
	MEAN	26.	25.	25.	24.	21.c	21.c
	S.D.	6.3	6.3	5.5	6.6	6.8	6.4
	N	24	25	23	24	24	24
DAY 6- 9							
	MEAN	16.	8.b	17.	16.	11.d	15.
	S.D.	4.4	5.0	3.9	5.3	4.2	4.3
	N	24	25	23	24	24	24
DAY 9- 12							
	MEAN	18.	14.b	16.	19.	21.	20.
	S.D.	4.8	5.0	7.7	5.3	4.8	4.5
	N	24	25	23	24	24	24

MODIFIED STATISTICS USED
For statistical analyses, control group 1 was compared to group 2; control group 1 was compared to groups 3, 4, 5 and 6.
b = Significantly different from control group 1 at 0.01 using two-sample t-test
c = Significantly different from control group 1 at 0.05 using Dunnett's test
d = Significantly different from control group 1 at 0.01 using Dunnett's test
MEAN DIFFERENCES CALCULATED FROM INDIVIDUAL DIFFERENCES
NONGRAVID WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 5

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 5
SPONSOR:HSIA SUMMARY OF BODY WEIGHT CHANGES DURING GESTATION [G]

GROUP:		0 PPM	15 MG/KG RA	0.25 PPM	1.5 PPM	500 PPM	1000 PPM
DAY 12- 16							
	MEAN	31.	24.b	30.	27.	28.	31.
	S.D.	10.1	7.2	9.5	7.3	7.2	7.4
	N	24	25	23	24	24	24
DAY 16- 21							
	MEAN	79.	76.	79.	82.	85.	84.
	S.D.	20.1	22.4	21.4	14.0	12.5	14.6
	N	24	25	23	24	24	24
DAY 6- 16							
	MEAN	64.	45.b	62.	61.	60.	65.
	S.D.	15.2	9.7	14.7	9.7	9.0	9.9
	N	24	25	23	24	24	24
DAY 1- 21							
	MEAN	169.	146.a	167.	167.	166.	170.
	S.D.	35.3	28.9	36.8	21.0	20.7	21.4
	N	24	25	23	24	24	24

MODIFIED STATISTICS USED
For statistical analyses, control group 1 was compared to group 2; control group 1 was compared to groups 3, 4, 5 and 6.
a = Significantly different from control group 1 at 0.05 using two-sample t-test
b = Significantly different from control group 1 at 0.01 using two-sample t-test
MEAN DIFFERENCES CALCULATED FROM INDIVIDUAL DIFFERENCES
NONGRAVID WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

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TABLE 6

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 1
SPONSOR:HSIA SUMMARY OF GRAVID UTERINE WTS. AND NET BODY WT. CHANGES [G]

GROUP:	0 PPM	15 MG/KG RA	0.25 PPM	1.5 PPM	500 PPM	1000 PPM
INITIAL BODY WT.						
MEAN	248.	248.	248.	248.	247.	248.
S.D.	14.0	11.6	12.7	11.6	11.8	12.1
N	24	25	23	24	24	24
TERMINAL BODY WT.						
MEAN	427.	404.a	425.	423.	424.	427.
S.D.	41.2	35.3	38.0	22.0	26.3	27.8
N	24	25	23	24	24	24
GRAVID UTERINE WT.						
MEAN	101.4	95.3	96.6	104.0	109.1	112.2
S.D.	30.91	29.87	31.63	20.23	16.54	17.38
N	23	25	23	24	24	24
NET BODY WT.						
MEAN	327.4	308.4b	328.0	319.4	314.5	314.4
S.D.	23.91	19.43	16.83	19.71	18.84	18.14
N	23	25	23	24	24	24
NET BODY WT. CHANGE						
MEAN	79.0	60.8b	79.7	71.2	67.3c	66.2c
S.D.	17.10	16.68	14.25	15.61	14.90	10.17
N	23	25	23	24	24	24

MODIFIED STATISTICS USED
For statistical analyses, control group 1 was compared to group 2; control group 1 was compared to groups 3, 4, 5 and 6.
a = Significantly different from control group 1 at 0.05 using two-sample t-test
b = Significantly different from control group 1 at 0.01 using two-sample t-test
c = Significantly different from control group 1 at 0.05 using Dunnett's test

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11/02/2018
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TABLE 7

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 1

SPONSOR:HSIA SUMMARY OF FOOD CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

GROUP:		0 PPM	15 MG/KG RA	0.25 PPM	1.5 PPM	500 PPM	1000 PPM
DAY 0- 1							
	MEAN	16.	16.	16.	16.	16.	15.
	S.D.	1.8	2.8	3.2	2.5	2.7	2.1
	N	24	25	23	24	24	24
DAY 1- 2							
	MEAN	19.	18.	18.	18.	18.	18.
	S.D.	2.0	1.8	2.7	2.3	2.4	2.4
	N	24	25	23	24	24	24
DAY 2- 3							
	MEAN	18.	18.	19.	19.	18.	18.
	S.D.	2.1	2.3	2.4	2.3	2.8	2.4
	N	24	25	23	24	24	24
DAY 3- 4							
	MEAN	18.	18.	19.	19.	18.	17.
	S.D.	2.2	2.1	2.3	2.3	2.2	2.8
	N	24	25	23	24	24	24
DAY 4- 5							
	MEAN	19.	19.	20.	20.	18.	19.
	S.D.	2.1	1.8	2.6	2.5	2.6	2.6
	N	24	25	23	24	24	24
DAY 5- 6							
	MEAN	19.	20.	20.	19.	19.	18.
	S.D.	2.6	2.2	2.9	2.9	2.4	2.4
	N	24	25	23	24	24	23

MODIFIED STATISTICS USED
For statistical analyses, control group 1 was compared to group 2; control group 1 was compared to groups 3, 4, 5 and 6.
None significantly different from control group
NONGRAVID WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 7

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 2

SPONSOR:HSIA SUMMARY OF FOOD CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

GROUP:		0 PPM	15 MG/KG RA	0.25 PPM	1.5 PPM	500 PPM	1000 PPM
DAY 6- 7							
	MEAN	19.	14.b	20.	21.d	18.	19.
	S.D.	3.5	2.3	1.8	2.4	2.6	2.7
	N	24	25	23	24	24	24
DAY 7- 8							
	MEAN	21.	16.b	21.	22.	20.	20.
	S.D.	2.6	2.7	2.8	1.9	2.8	2.2
	N	24	25	23	24	24	24
DAY 8- 9							
	MEAN	21.	16.b	22.	21.	18.c	21.
	S.D.	2.3	3.5	2.6	2.1	2.8	2.0
	N	24	25	23	24	24	24
DAY 9- 10							
	MEAN	20.	16.b	20.	21.	20.	20.
	S.D.	2.0	3.5	2.9	3.0	2.3	2.7
	N	24	25	23	24	24	24
DAY 10- 11							
	MEAN	21.	16.b	21.	20.	19.	21.
	S.D.	3.2	3.2	2.5	2.4	2.8	2.8
	N	24	25	23	24	24	24
DAY 11- 12							
	MEAN	21.	15.b	21.	22.	21.	21.
	S.D.	2.7	2.8	3.4	2.8	2.7	2.8
	N	24	25	23	24	24	24

MODIFIED STATISTICS USED
For statistical analyses, control group 1 was compared to group 2; control group 1 was compared to groups 3, 4, 5 and 6.
b = Significantly different from control group 1 at 0.01 using two-sample t-test
c = Significantly different from control group 1 at 0.05 using Dunnett's test
d = Significantly different from control group 1 at 0.01 using Dunnett's test
NONGRAVID WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 7

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 3

SPONSOR:HSIA SUMMARY OF FOOD CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

GROUP:		0 PPM	15 MG/KG RA	0.25 PPM	1.5 PPM	500 PPM	1000 PPM
DAY 12- 13							
	MEAN	23.	16.b	23.	23.	20.c	21.
	S.D.	2.7	3.3	3.6	2.5	2.9	2.0
	N	24	24	23	24	24	24
DAY 13- 14							
	MEAN	22.	17.b	22.	22.	20.	21.
	S.D.	3.2	3.5	3.2	2.7	3.0	2.6
	N	24	25	23	24	24	24
DAY 14- 15							
	MEAN	24.	17.b	24.	24.	22.	23.
	S.D.	3.5	2.9	3.1	2.8	3.2	2.4
	N	24	25	23	24	24	24
DAY 15- 16							
	MEAN	24.	18.b	24.	23.	23.	23.
	S.D.	3.3	3.6	4.0	2.4	4.1	1.9
	N	24	25	23	24	24	24
DAY 16- 17							
	MEAN	25.	22.b	24.	24.	24.	24.
	S.D.	4.0	3.6	3.2	2.5	3.3	2.5
	N	24	25	23	24	24	24
DAY 17- 18							
	MEAN	26.	22.b	25.	24.	25.	24.
	S.D.	3.1	4.3	3.5	3.7	4.0	2.6
	N	24	25	23	23	24	24

MODIFIED STATISTICS USED
For statistical analyses, control group 1 was compared to group 2; control group 1 was compared to groups 3, 4, 5 and 6.
b = Significantly different from control group 1 at 0.01 using two-sample t-test
c = Significantly different from control group 1 at 0.05 using Dunnett's test
NONGRAVID WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 7

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 4

SPONSOR:HSIA SUMMARY OF FOOD CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

GROUP:		0 PPM	15 MG/KG RA	0.25 PPM	1.5 PPM	500 PPM	1000 PPM
DAY 18- 19							
	MEAN	25.	23.	25.	23.	23.	25.
	S.D.	4.0	4.0	3.3	5.4	3.4	2.5
	N	24	25	23	24	24	24
DAY 19- 20							
	MEAN	25.	23.	24.	24.	24.	23.
	S.D.	3.5	5.4	3.8	2.5	3.2	4.4
	N	24	25	23	24	24	24
DAY 20- 21							
	MEAN	23.	19.b	24.	24.	22.	23.
	S.D.	2.8	3.8	4.6	3.3	5.4	3.4
	N	24	24	23	24	24	24
DAY 1- 6							
	MEAN	19.	19.	19.	19.	18.	18.
	S.D.	1.6	1.0	1.4	1.5	1.9	1.6
	N	24	25	23	24	24	24
DAY 6- 9							
	MEAN	20.	15.b	21.	21.	19.c	20.
	S.D.	1.6	2.1	1.8	1.9	1.9	1.6
	N	24	25	23	24	24	24
DAY 9- 12							
	MEAN	21.	15.b	21.	21.	20.	21.
	S.D.	2.2	2.2	2.2	2.2	2.1	1.6
	N	24	25	23	24	24	24

MODIFIED STATISTICS USED
For statistical analyses, control group 1 was compared to group 2; control group 1 was compared to groups 3, 4, 5 and 6.
b = Significantly different from control group 1 at 0.01 using two-sample t-test
c = Significantly different from control group 1 at 0.05 using Dunnett's test
NONGRAVID WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 7

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 5

SPONSOR:HSIA SUMMARY OF FOOD CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

GROUP:		0 PPM	15 MG/KG RA	0.25 PPM	1.5 PPM	500 PPM	1000 PPM
DAY 12- 16							
	MEAN	23.	17.b	23.	23.	22.	22.
	S.D.	2.6	2.2	2.4	1.7	2.4	1.4
	N	24	25	23	24	24	24
DAY 16- 21							
	MEAN	25.	22.b	24.	24.	24.	24.
	S.D.	2.6	3.0	2.6	2.2	2.5	2.4
	N	24	25	23	24	24	24
DAY 6- 16							
	MEAN	22.	16.b	22.	22.	20.c	21.
	S.D.	1.8	1.9	1.5	1.4	1.9	1.2
	N	24	25	23	24	24	24
DAY 1- 21							
	MEAN	22.	18.b	22.	22.	21.	21.
	S.D.	1.9	1.7	1.7	1.3	1.9	1.3
	N	24	25	23	24	24	24

MODIFIED STATISTICS USED
For statistical analyses, control group 1 was compared to group 2; control group 1 was compared to groups 3, 4, 5 and 6.
b = Significantly different from control group 1 at 0.01 using two-sample t-test
c = Significantly different from control group 1 at 0.05 using Dunnett's test
NONGRAVID WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

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11/02/2018
R:11/02/2018

TABLE 8

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 1

SPONSOR:HSIA SUMMARY OF FOOD CONSUMPTION DURING GESTATION [G/KG/DAY]

GROUP:		0 PPM	15 MG/KG RA	0.25 PPM	1.5 PPM	500 PPM	1000 PPM
DAY 0- 1							
	MEAN	61.	62.	61.	64.	64.	61.
	S.D.	7.4	10.8	12.0	9.7	9.6	8.6
	N	24	25	23	24	24	24
DAY 1- 2							
	MEAN	71.	71.	70.	70.	68.	69.
	S.D.	7.4	6.3	10.4	9.5	8.1	8.7
	N	24	25	23	24	24	24
DAY 2- 3							
	MEAN	69.	69.	71.	73.	70.	69.
	S.D.	6.7	8.0	7.9	9.0	8.8	8.2
	N	24	25	23	24	24	24
DAY 3- 4							
	MEAN	66.	67.	69.	69.	68.	65.
	S.D.	7.5	7.3	8.3	8.9	7.6	9.6
	N	24	25	23	24	24	24
DAY 4- 5							
	MEAN	70.	67.	72.	72.	68.	68.
	S.D.	6.7	6.9	8.3	8.3	8.1	9.0
	N	24	25	23	24	24	24
DAY 5- 6							
	MEAN	68.	70.	70.	68.	67.	67.
	S.D.	7.3	6.6	8.4	9.1	7.4	7.6
	N	24	25	23	24	24	23

MODIFIED STATISTICS USED
For statistical analyses, control group 1 was compared to group 2; control group 1 was compared to groups 3, 4, 5 and 6.
None significantly different from control group
NONGRAVID WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 8

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 2

SPONSOR:HSIA SUMMARY OF FOOD CONSUMPTION DURING GESTATION [G/KG/DAY]

GROUP:		0 PPM	15 MG/KG RA	0.25 PPM	1.5 PPM	500 PPM	1000 PPM
DAY 6- 7							
	MEAN	66.	48.b	70.	76.d	65.	68.
	S.D.	12.1	8.0	6.1	8.1	8.2	8.0
	N	24	25	23	24	24	24
DAY 7- 8							
	MEAN	72.	55.b	72.	75.	69.	71.
	S.D.	6.9	9.1	8.6	6.3	8.1	7.1
	N	24	25	23	24	24	24
DAY 8- 9							
	MEAN	69.	55.b	73.	71.	64.c	71.
	S.D.	6.1	11.4	6.3	6.2	8.2	6.6
	N	24	25	23	24	24	24
DAY 9- 10							
	MEAN	68.	53.b	67.	70.	67.	69.
	S.D.	5.4	10.3	9.4	9.2	6.5	8.4
	N	24	25	23	24	24	24
DAY 10- 11							
	MEAN	67.	52.b	68.	66.	64.	68.
	S.D.	9.1	9.9	6.8	8.1	8.1	9.0
	N	24	25	23	24	24	24
DAY 11- 12							
	MEAN	66.	51.b	66.	71.	69.	68.
	S.D.	7.0	9.1	10.1	8.1	7.2	8.2
	N	24	25	23	24	24	24

MODIFIED STATISTICS USED
For statistical analyses, control group 1 was compared to group 2; control group 1 was compared to groups 3, 4, 5 and 6.
b = Significantly different from control group 1 at 0.01 using two-sample t-test
c = Significantly different from control group 1 at 0.05 using Dunnett's test
d = Significantly different from control group 1 at 0.01 using Dunnett's test
NONGRAVID WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 8

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 3

SPONSOR:HSIA SUMMARY OF FOOD CONSUMPTION DURING GESTATION [G/KG/DAY]

GROUP:		0 PPM	15 MG/KG RA	0.25 PPM	1.5 PPM	500 PPM	1000 PPM
DAY 12- 13							
	MEAN	70.	53.b	73.	71.	65.	68.
	S.D.	6.8	10.0	9.4	7.0	8.0	5.4
	N	24	24	23	24	24	24
DAY 13- 14							
	MEAN	67.	54.b	67.	69.	63.	67.
	S.D.	7.9	10.9	8.7	7.5	7.5	7.5
	N	24	25	23	24	24	24
DAY 14- 15							
	MEAN	71.	53.b	72.	73.	69.	70.
	S.D.	8.6	7.8	7.3	8.6	7.7	5.8
	N	24	25	23	24	24	24
DAY 15- 16							
	MEAN	70.	57.b	69.	69.	69.	68.
	S.D.	5.9	10.3	10.3	6.3	10.3	6.1
	N	24	25	23	24	24	24
DAY 16- 17							
	MEAN	71.	66.	69.	70.	69.	69.
	S.D.	7.5	9.3	7.6	7.1	8.6	5.9
	N	24	25	23	24	24	24
DAY 17- 18							
	MEAN	71.	63.b	69.	67.	68.	67.
	S.D.	6.1	11.4	7.5	11.0	9.6	6.4
	N	24	25	23	23	24	24

MODIFIED STATISTICS USED
For statistical analyses, control group 1 was compared to group 2; control group 1 was compared to groups 3, 4, 5 and 6.
b = Significantly different from control group 1 at 0.01 using two-sample t-test
NONGRAVID WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 8

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 4

SPONSOR:HSIA SUMMARY OF FOOD CONSUMPTION DURING GESTATION [G/KG/DAY]

GROUP:	0 PPM	15 MG/KG RA	0.25 PPM	1.5 PPM	500 PPM	1000 PPM
DAY 18- 19						
MEAN	65.	64.	64.	61.	61.	64.
S.D.	6.8	9.6	5.9	13.6	7.6	6.2
N	24	25	23	24	24	24
DAY 19- 20						
MEAN	64.	61.	61.	61.	61.	59.
S.D.	6.9	14.1	8.4	6.0	5.9	10.2
N	24	25	23	24	24	24
DAY 20- 21						
MEAN	56.	48.b	59.	58.	53.	54.
S.D.	8.1	8.5	10.5	7.7	13.2	6.9
N	24	24	23	24	24	24
DAY 1- 6						
MEAN	69.	69.	71.	71.	68.	67.
S.D.	4.2	3.1	4.1	5.1	5.6	4.7
N	24	25	23	24	24	24
DAY 6- 9						
MEAN	69.	53.b	72.	74.d	66.	70.
S.D.	3.5	6.8	4.3	5.6	4.6	4.3
N	24	25	23	24	24	24
DAY 9- 12						
MEAN	67.	52.b	67.	69.	67.	68.
S.D.	5.1	6.3	6.5	6.6	5.5	4.2
N	24	25	23	24	24	24

MODIFIED STATISTICS USED
For statistical analyses, control group 1 was compared to group 2; control group 1 was compared to groups 3, 4, 5 and 6.
b = Significantly different from control group 1 at 0.01 using two-sample t-test
d = Significantly different from control group 1 at 0.01 using Dunnett's test
NONGRAVID WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 8

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 5

SPONSOR:HSIA SUMMARY OF FOOD CONSUMPTION DURING GESTATION [G/KG/DAY]

GROUP:		0 PPM	15 MG/KG RA	0.25 PPM	1.5 PPM	500 PPM	1000 PPM
DAY 12- 16							
	MEAN	70.	55.b	71.	71.	67.	69.
	S.D.	4.6	5.9	5.0	4.2	4.9	3.0
	N	24	25	23	24	24	24
DAY 16- 21							
	MEAN	65.	60.b	64.	63.	62.	62.
	S.D.	3.6	6.9	4.2	5.4	5.0	4.8
	N	24	25	23	24	24	24
DAY 6- 16							
	MEAN	69.	53.b	70.	71.	67.	69.
	S.D.	3.6	5.1	2.9	3.9	3.9	2.5
	N	24	25	23	24	24	24
DAY 1- 21							
	MEAN	68.	59.b	68.	68.	65.	67.
	S.D.	2.8	4.1	3.5	3.6	3.6	2.7
	N	24	25	23	24	24	24

MODIFIED STATISTICS USED
For statistical analyses, control group 1 was compared to group 2; control group 1 was compared to groups 3, 4, 5 and 6.
b = Significantly different from control group 1 at 0.01 using two-sample t-test
NONGRAVID WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

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TABLE 9

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 1

SPONSOR:HSIA SUMMARY OF WATER CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

GROUP:		0 PPM	15 MG/KG RA	0.25 PPM	1.5 PPM	500 PPM	1000 PPM
DAY 0- 1							
	MEAN	27.	28.	28.	26.	26.	26.
	S.D.	5.2	4.2	5.0	4.6	4.8	4.0
	N	23	24	23	24	24	24
DAY 1- 2							
	MEAN	30.	31.	30.	30.	27.c	25.d
	S.D.	4.0	4.6	4.2	4.6	4.9	3.8
	N	23	25	23	24	23	24
DAY 2- 3							
	MEAN	31.	33.	33.	31.	27.c	26.d
	S.D.	5.0	5.5	5.9	5.4	4.3	5.7
	N	24	25	23	24	24	24
DAY 3- 4							
	MEAN	31.	33.	33.	31.	27.d	26.d
	S.D.	4.6	7.1	5.2	6.0	4.4	3.1
	N	24	25	23	24	24	24
DAY 4- 5							
	MEAN	32.	34.	32.	32.	27.d	25.d
	S.D.	3.5	4.1	5.7	6.1	4.8	4.7
	N	23	25	23	23	24	23
DAY 5- 6							
	MEAN	31.	35.a	32.	32.	26.d	26.d
	S.D.	4.3	5.8	5.8	4.8	4.8	3.4
	N	24	25	23	24	23	24

MODIFIED STATISTICS USED
For statistical analyses, control group 1 was compared to group 2; control group 1 was compared to groups 3, 4, 5 and 6.
a = Significantly different from control group 1 at 0.05 using two-sample t-test
c = Significantly different from control group 1 at 0.05 using Dunnett's test
d = Significantly different from control group 1 at 0.01 using Dunnett's test
NONGRAVID WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 9

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 2

SPONSOR:HSIA SUMMARY OF WATER CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

GROUP:	0 PPM	15 MG/KG RA	0.25 PPM	1.5 PPM	500 PPM	1000 PPM
DAY 6- 7						
MEAN	31.	28.a	32.	33.	25.d	25.d
S.D.	3.7	5.1	4.8	5.3	5.4	4.4
N	24	25	23	23	24	23
DAY 7- 8						
MEAN	33.	32.	32.	33.	27.d	25.d
S.D.	5.3	6.8	4.5	5.0	4.9	3.8
N	24	25	23	24	24	24
DAY 8- 9						
MEAN	35.	30.b	35.	35.	25.d	26.d
S.D.	5.7	4.8	6.6	6.5	4.8	3.2
N	24	25	23	24	24	24
DAY 9- 10						
MEAN	36.	33.	35.	35.	27.d	26.d
S.D.	7.0	5.0	5.8	5.4	4.9	3.5
N	24	25	23	24	24	23
DAY 10- 11						
MEAN	36.	37.	37.	36.	29.d	28.d
S.D.	5.4	7.1	5.2	5.0	5.3	4.6
N	24	25	22	24	23	23
DAY 11- 12						
MEAN	36.	38.	37.	37.	30.d	29.d
S.D.	5.0	9.1	6.9	6.5	6.7	4.9
N	24	25	23	24	24	24

MODIFIED STATISTICS USED
For statistical analyses, control group 1 was compared to group 2; control group 1 was compared to groups 3, 4, 5 and 6.
a = Significantly different from control group 1 at 0.05 using two-sample t-test
b = Significantly different from control group 1 at 0.01 using two-sample t-test
d = Significantly different from control group 1 at 0.01 using Dunnett's test
NONGRAVID WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 9

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 3

SPONSOR:HSIA SUMMARY OF WATER CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

GROUP:	0 PPM	15 MG/KG RA	0.25 PPM	1.5 PPM	500 PPM	1000 PPM
DAY 12- 13						
MEAN	39.	38.	39.	38.	31.d	29.d
S.D.	4.8	8.6	5.5	6.5	6.2	4.9
N	23	25	23	24	24	23
DAY 13- 14						
MEAN	37.	38.	40.	39.	31.d	30.d
S.D.	4.7	9.8	5.9	7.3	7.2	4.0
N	24	25	23	24	24	24
DAY 14- 15						
MEAN	42.	43.	42.	41.	33.d	34.d
S.D.	7.6	10.8	6.3	8.3	6.4	3.7
N	24	25	23	24	24	24
DAY 15- 16						
MEAN	44.	44.	45.	43.	38.d	37.d
S.D.	4.8	8.3	6.9	6.9	7.6	5.0
N	24	25	23	24	24	24
DAY 16- 17						
MEAN	46.	49.	48.	46.	41.	39.d
S.D.	6.8	9.2	7.6	8.3	7.7	5.0
N	24	24	22	24	24	23
DAY 17- 18						
MEAN	49.	53.	50.	47.	43.d	41.d
S.D.	5.1	10.4	6.8	5.9	7.1	4.0
N	24	23	23	24	24	24

MODIFIED STATISTICS USED
For statistical analyses, control group 1 was compared to group 2; control group 1 was compared to groups 3, 4, 5 and 6.
d = Significantly different from control group 1 at 0.01 using Dunnett's test
NONGRAVID WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 9

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 4

SPONSOR:HSIA SUMMARY OF WATER CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

GROUP:	0 PPM	15 MG/KG RA	0.25 PPM	1.5 PPM	500 PPM	1000 PPM
DAY 18- 19						
MEAN	46.	54.b	47.	43.	41.	40.c
S.D.	6.1	13.7	7.1	7.6	7.2	5.4
N	24	25	23	24	23	24
DAY 19- 20						
MEAN	45.	50.a	45.	44.	40.c	37.d
S.D.	5.1	9.3	6.7	7.5	7.3	5.6
N	24	23	23	24	24	23
DAY 20- 21						
MEAN	43.	43.	45.	42.	38.	36.d
S.D.	5.4	8.9	6.8	7.0	8.0	6.2
N	24	25	21	24	24	24
DAY 1- 6						
MEAN	31.	33.	32.	31.	27.d	25.d
S.D.	3.8	4.5	4.4	4.7	4.1	2.7
N	24	25	23	24	24	24
DAY 6- 9						
MEAN	33.	30.b	33.	34.	26.d	25.d
S.D.	4.2	3.9	4.9	5.2	4.2	3.2
N	24	25	23	24	24	24
DAY 9- 12						
MEAN	36.	36.	36.	36.	28.d	28.d
S.D.	4.6	4.7	5.2	4.7	5.2	3.7
N	24	25	23	24	24	24

MODIFIED STATISTICS USED
For statistical analyses, control group 1 was compared to group 2; control group 1 was compared to groups 3, 4, 5 and 6.
a = Significantly different from control group 1 at 0.05 using two-sample t-test
b = Significantly different from control group 1 at 0.01 using two-sample t-test
c = Significantly different from control group 1 at 0.05 using Dunnett's test
d = Significantly different from control group 1 at 0.01 using Dunnett's test
NONGRAVID WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 9

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 5

SPONSOR:HSIA SUMMARY OF WATER CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

GROUP:	0 PPM	15 MG/KG RA	0.25 PPM	1.5 PPM	500 PPM	1000 PPM
DAY 12- 16						
MEAN	41.	41.	42.	40.	34.d	33.d
S.D.	4.7	7.3	5.5	6.6	6.4	3.1
N	24	25	23	24	24	24
DAY 16- 21						
MEAN	45.	50.a	47.	44.	41.d	39.d
S.D.	4.6	8.7	5.9	6.1	6.8	4.1
N	24	25	23	24	24	24
DAY 6- 16						
MEAN	37.	36.	37.	37.	30.d	29.d
S.D.	4.2	4.8	4.7	5.4	5.2	3.0
N	24	25	23	24	24	24
DAY 1- 21						
MEAN	38.	39.	38.	37.	32.d	31.d
S.D.	3.8	4.7	4.2	5.2	5.2	2.9
N	24	25	23	24	24	24

MODIFIED STATISTICS USED
For statistical analyses, control group 1 was compared to group 2; control group 1 was compared to groups 3, 4, 5 and 6.
a = Significantly different from control group 1 at 0.05 using two-sample t-test
d = Significantly different from control group 1 at 0.01 using Dunnett's test
NONGRAVID WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

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TABLE 10

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 1

SPONSOR:HSIA SUMMARY OF WATER CONSUMPTION DURING GESTATION [G/KG/DAY]

GROUP:		0 PPM	15 MG/KG RA	0.25 PPM	1.5 PPM	500 PPM	1000 PPM
DAY 0- 1							
	MEAN	107.	109.	109.	103.	103.	101.
	S.D.	21.4	15.9	19.4	17.9	17.0	16.3
	N	23	24	23	24	24	24
DAY 1- 2							
	MEAN	116.	119.	114.	115.	104.	97.d
	S.D.	14.9	18.0	15.0	16.4	18.7	14.6
	N	23	25	23	24	23	24
DAY 2- 3							
	MEAN	116.	124.	122.	117.	102.c	97.d
	S.D.	19.6	19.9	21.9	18.8	14.9	19.8
	N	24	25	23	24	24	24
DAY 3- 4							
	MEAN	114.	122.	120.	116.	99.c	97.d
	S.D.	17.0	25.6	18.4	21.6	15.2	10.8
	N	24	25	23	24	24	24
DAY 4- 5							
	MEAN	116.	122.	116.	117.	99.d	93.d
	S.D.	12.8	14.2	20.3	20.4	16.1	15.4
	N	23	25	23	23	24	23
DAY 5- 6							
	MEAN	111.	123.a	115.	114.	92.d	93.d
	S.D.	14.0	21.5	19.1	16.0	15.6	11.5
	N	24	25	23	24	23	24

MODIFIED STATISTICS USED
For statistical analyses, control group 1 was compared to group 2; control group 1 was compared to groups 3, 4, 5 and 6.
a = Significantly different from control group 1 at 0.05 using two-sample t-test
c = Significantly different from control group 1 at 0.05 using Dunnett's test
d = Significantly different from control group 1 at 0.01 using Dunnett's test
NONGRAVID WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 10

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 2

SPONSOR:HSIA SUMMARY OF WATER CONSUMPTION DURING GESTATION [G/KG/DAY]

GROUP:		0 PPM	15 MG/KG RA	0.25 PPM	1.5 PPM	500 PPM	1000 PPM
DAY 6- 7							
	MEAN	109.	99.a	111.	116.	91.d	88.d
	S.D.	12.2	18.1	14.8	18.5	17.2	13.5
	N	24	25	23	23	24	23
DAY 7- 8							
	MEAN	114.	111.	112.	115.	93.d	89.d
	S.D.	16.5	24.7	13.0	16.3	14.4	11.9
	N	24	25	23	24	24	24
DAY 8- 9							
	MEAN	116.	105.a	117.	118.	86.d	91.d
	S.D.	16.8	16.0	20.0	20.1	13.4	10.3
	N	24	25	23	24	24	24
DAY 9- 10							
	MEAN	118.	113.	116.	118.	90.d	89.d
	S.D.	24.0	15.3	16.9	16.5	14.0	9.3
	N	24	25	23	24	24	23
DAY 10- 11							
	MEAN	117.	124.	120.	117.	96.d	94.d
	S.D.	16.6	23.9	15.2	18.3	14.7	13.9
	N	24	25	22	24	23	23
DAY 11- 12							
	MEAN	114.	124.	118.	118.	97.d	95.d
	S.D.	16.7	30.1	19.6	19.5	18.6	14.2
	N	24	25	23	24	24	24

MODIFIED STATISTICS USED
For statistical analyses, control group 1 was compared to group 2; control group 1 was compared to groups 3, 4, 5 and 6.
a = Significantly different from control group 1 at 0.05 using two-sample t-test
d = Significantly different from control group 1 at 0.01 using Dunnett's test
NONGRAVID WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 10

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 3

SPONSOR:HSIA SUMMARY OF WATER CONSUMPTION DURING GESTATION [G/KG/DAY]

GROUP:		0 PPM	15 MG/KG RA	0.25 PPM	1.5 PPM	500 PPM	1000 PPM
DAY 12- 13							
	MEAN	120.	125.	121.	119.	100.d	93.d
	S.D.	16.1	29.0	15.0	18.6	16.6	13.6
	N	23	25	23	24	24	23
DAY 13- 14							
	MEAN	114.	123.	123.	122.	97.d	92.d
	S.D.	14.5	28.3	14.8	21.9	19.8	11.3
	N	24	25	23	24	24	24
DAY 14- 15							
	MEAN	125.	136.	126.	124.	103.d	104.d
	S.D.	20.4	34.2	14.8	23.5	16.6	9.9
	N	24	25	23	24	24	24
DAY 15- 16							
	MEAN	130.	137.	133.	126.	114.d	109.d
	S.D.	12.8	23.9	17.0	19.1	19.8	15.3
	N	24	25	23	24	24	24
DAY 16- 17							
	MEAN	129.	147.b	135.	132.	118.	111.d
	S.D.	16.8	24.6	17.7	23.2	18.9	12.6
	N	24	24	22	24	24	23
DAY 17- 18							
	MEAN	133.	153.b	137.	127.	118.d	113.d
	S.D.	12.7	26.3	14.8	15.0	16.2	8.6
	N	24	23	23	24	24	24

MODIFIED STATISTICS USED
For statistical analyses, control group 1 was compared to group 2; control group 1 was compared to groups 3, 4, 5 and 6.
b = Significantly different from control group 1 at 0.01 using two-sample t-test
d = Significantly different from control group 1 at 0.01 using Dunnett's test
NONGRAVID WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 10

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 4

SPONSOR:HSIA SUMMARY OF WATER CONSUMPTION DURING GESTATION [G/KG/DAY]

GROUP:		0 PPM	15 MG/KG RA	0.25 PPM	1.5 PPM	500 PPM	1000 PPM
DAY 18- 19							
	MEAN	119.	148.b	125.	113.	108.	104.d
	S.D.	14.3	33.3	15.5	20.6	16.0	13.3
	N	24	25	23	24	23	24
DAY 19- 20							
	MEAN	113.	131.b	114.	111.	100.c	93.d
	S.D.	11.7	22.6	14.7	19.2	15.1	11.7
	N	24	23	23	24	24	23
DAY 20- 21							
	MEAN	103.	109.	109.	102.	92.c	86.d
	S.D.	11.9	16.7	16.1	16.2	17.2	11.8
	N	24	25	21	24	24	24
DAY 1- 6							
	MEAN	115.	122.	118.	116.	99.d	95.d
	S.D.	13.9	16.6	15.2	16.2	13.5	8.1
	N	24	25	23	24	24	24
DAY 6- 9							
	MEAN	114.	105.a	114.	116.	90.d	89.d
	S.D.	12.5	13.8	14.3	16.6	11.4	9.6
	N	24	25	23	24	24	24
DAY 9- 12							
	MEAN	116.	121.	118.	117.	94.d	93.d
	S.D.	15.2	15.2	15.0	14.6	14.3	10.3
	N	24	25	23	24	24	24

MODIFIED STATISTICS USED
For statistical analyses, control group 1 was compared to group 2; control group 1 was compared to groups 3, 4, 5 and 6.
a = Significantly different from control group 1 at 0.05 using two-sample t-test
b = Significantly different from control group 1 at 0.01 using two-sample t-test
c = Significantly different from control group 1 at 0.05 using Dunnett's test
d = Significantly different from control group 1 at 0.01 using Dunnett's test
NONGRAVID WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 10

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 5

SPONSOR:HSIA SUMMARY OF WATER CONSUMPTION DURING GESTATION [G/KG/DAY]

GROUP:		0 PPM	15 MG/KG RA	0.25 PPM	1.5 PPM	500 PPM	1000 PPM
DAY 12- 16							
	MEAN	123.	131.	126.	123.	104.d	100.d
	S.D.	13.7	21.8	13.0	19.0	16.3	7.9
	N	24	25	23	24	24	24
DAY 16- 21							
	MEAN	118.	137.b	123.	117.	107.d	101.d
	S.D.	9.9	19.4	12.3	15.5	14.6	7.6
	N	24	25	23	24	24	24
DAY 6- 16							
	MEAN	118.	121.	120.	119.	97.d	95.d
	S.D.	12.7	15.1	12.2	16.4	13.6	7.6
	N	24	25	23	24	24	24
DAY 1- 21							
	MEAN	117.	125.a	120.	118.	100.d	96.d
	S.D.	11.0	14.1	11.2	15.3	13.3	6.4
	N	24	25	23	24	24	24

MODIFIED STATISTICS USED
For statistical analyses, control group 1 was compared to group 2; control group 1 was compared to groups 3, 4, 5 and 6.
a = Significantly different from control group 1 at 0.05 using two-sample t-test
b = Significantly different from control group 1 at 0.01 using two-sample t-test
d = Significantly different from control group 1 at 0.01 using Dunnett's test
NONGRAVID WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

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TABLE 11

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 1

SPONSOR:HSIA SUMMARY OF CALCULATED GESTATION COMPOUND CONSUMPTION [MG/KG/DAY]

GROUP:		0 PPM	15 MG/KG RA	0.25 PPM	1.5 PPM	500 PPM	1000 PPM
DAY 1- 2							
	MEAN	0.00	0.00	0.03	0.21	58.82	102.89
	S.D.	0.000	0.000	0.005	0.035	10.208	15.231
	N	23	25	23	24	23	24
DAY 2- 3							
	MEAN	0.00	0.00	0.04	0.22	58.81	104.52
	S.D.	0.000	0.000	0.006	0.040	8.559	21.218
	N	24	25	23	24	24	24
DAY 3- 4							
	MEAN	0.00	0.00	0.04	0.23	57.26	105.15
	S.D.	0.000	0.000	0.006	0.041	8.862	12.098
	N	24	25	23	24	24	24
DAY 4- 5							
	MEAN	0.00	0.00	0.04	0.24	57.65	102.79
	S.D.	0.000	0.000	0.006	0.043	9.218	18.294
	N	23	25	23	23	24	23
DAY 5- 6							
	MEAN	0.00	0.00	0.04	0.23	54.45	104.72
	S.D.	0.000	0.000	0.006	0.029	9.074	12.184
	N	24	25	23	24	23	24

NONGRAVID WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 11

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 2

SPONSOR:HSIA SUMMARY OF CALCULATED GESTATION COMPOUND CONSUMPTION [MG/KG/DAY]

GROUP:		0 PPM	15 MG/KG RA	0.25 PPM	1.5 PPM	500 PPM	1000 PPM
DAY 6- 7							
	MEAN	0.00	0.00	0.04	0.24	53.76	100.53
	S.D.	0.000	0.000	0.005	0.039	10.579	15.612
	N	24	25	23	23	24	23
DAY 7- 8							
	MEAN	0.00	0.00	0.04	0.23	56.22	104.78
	S.D.	0.000	0.000	0.004	0.033	8.557	14.530
	N	24	25	23	24	24	24
DAY 8- 9							
	MEAN	0.00	0.00	0.04	0.23	51.60	108.18
	S.D.	0.000	0.000	0.007	0.043	8.030	11.865
	N	24	25	23	24	24	24
DAY 9- 10							
	MEAN	0.00	0.00	0.04	0.22	53.93	106.59
	S.D.	0.000	0.000	0.006	0.034	8.434	11.282
	N	24	25	23	24	24	23
DAY 10- 11							
	MEAN	0.00	0.00	0.04	0.21	55.25	111.35
	S.D.	0.000	0.000	0.005	0.041	9.476	15.866
	N	24	25	22	24	23	23
DAY 11- 12							
	MEAN	0.00	0.00	0.04	0.20	55.20	112.63
	S.D.	0.000	0.000	0.008	0.035	11.656	17.396
	N	24	25	23	24	24	24

NONGRAVID WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 11

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 3

SPONSOR:HSIA SUMMARY OF CALCULATED GESTATION COMPOUND CONSUMPTION [MG/KG/DAY]

GROUP:		0 PPM	15 MG/KG RA	0.25 PPM	1.5 PPM	500 PPM	1000 PPM
DAY 12- 13							
	MEAN	0.00	0.00	0.05	0.19	54.96	109.63
	S.D.	0.000	0.000	0.006	0.032	9.594	17.299
	N	23	25	23	24	24	23
DAY 13- 14							
	MEAN	0.00	0.00	0.05	0.20	54.23	109.54
	S.D.	0.000	0.000	0.006	0.039	11.158	14.522
	N	24	25	23	24	24	24
DAY 14- 15							
	MEAN	0.00	0.00	0.05	0.20	57.35	122.45
	S.D.	0.000	0.000	0.007	0.040	10.187	12.278
	N	24	25	23	24	24	24
DAY 15- 16							
	MEAN	0.00	0.00	0.05	0.21	65.74	131.47
	S.D.	0.000	0.000	0.006	0.032	11.389	18.431
	N	24	25	23	24	24	24
DAY 16- 17							
	MEAN	0.00	0.00	0.05	0.22	67.61	133.06
	S.D.	0.000	0.000	0.006	0.038	10.879	15.133
	N	24	24	22	24	24	23
DAY 17- 18							
	MEAN	0.00	0.00	0.05	0.21	68.39	136.82
	S.D.	0.000	0.000	0.005	0.025	10.105	11.030
	N	24	23	23	24	24	24

NONGRAVID WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 11

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 4
SPONSOR:HSIA SUMMARY OF CALCULATED GESTATION COMPOUND CONSUMPTION [MG/KG/DAY]

GROUP:		0 PPM	15 MG/KG RA	0.25 PPM	1.5 PPM	500 PPM	1000 PPM
DAY 18- 19							
	MEAN	0.00	0.00	0.04	0.19	63.58	127.31
	S.D.	0.000	0.000	0.006	0.038	10.122	17.664
	N	24	25	23	24	23	24
DAY 19- 20							
	MEAN	0.00	0.00	0.04	0.20	60.50	133.18
	S.D.	0.000	0.000	0.006	0.037	9.926	14.039
	N	24	23	23	24	24	23
DAY 20- 21							
	MEAN	0.00	0.00	0.04	0.18	55.26	101.45
	S.D.	0.000	0.000	0.006	0.029	11.039	13.271
	N	24	25	21	24	24	24
DAY 1- 21							
	MEAN	0.00	0.00	0.04	0.21	58.03	113.45
	S.D.	0.000	0.000	0.006	0.017	4.799	12.277
	N	24	25	21	24	24	24

NONGRAVID WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

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TABLE 12

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 1
SPONSOR:HSIA SUMMARY OF MATERNAL MACROSCOPIC FINDINGS

GROUP :	1	2	3	4	5	6
NUMBER EXAMINED	25	25	25	25	25	25
NO SIGNIFICANT CHANGES OBSERVED	22	8	21	22	21	22
NONGRAVID -- AMMONIUM SULFIDE NEGATIVE	1	0	2	1	1	1
GRAVID -- AMMONIUM SULFIDE POSITIVE	0	0	1	0	0	0
VAGINA: CONTENTS, DARK RED	0	1	0	1	0	0
UTERUS: CONTENTS, DARK RED	1	5	1	2	1	1
AMNIOTIC SAC: CONTENTS, RED FLUID	0	17	0	0	0	0
UTERUS: CYST(S)	0	1	1	0	0	0
LIVER: ACCESSORY LOBULE(S)	0	0	0	0	1	0
PLACENTAE: ENLARGED	0	0	0	0	1	0
LIVER: PALE	0	0	0	0	1	0
PLACENTAE: FUSED	0	0	0	0	0	1
DELIVERED	1	0	0	0	0	0

1- 0 PPM 2- 15 MG/KG RA 3- 0.25 PPM 4- 1.5 PPM 5- 500 PPM 6- 1000 PPM

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09/24/2018

TABLE 13

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 1
SPONSOR:HSIA SUMMARY OF FETAL DATA AT SCHEDULED NECROPSY

GROUP	SEX M	SEX F	VIABLE FETUSES	DEAD FETUSES	RESORPTIONS EARLY	RESORPTIONS LATE	POST IMPLANTATION LOSS	IMPLANTATION SITES	CORPORA LUTEA	PRE IMPLANTATION LOSS	FETAL WEIGHTS IN GRAMS	NO. OF GRAVID FEMALES
1 TOTAL	164	144	308	0	20	1	21	329	359	30	NA	24
MEAN	6.8	6.0	12.8	0.0	0.8	0.0	0.9	13.7	15.0	1.3	6.0	
S.D.	2.90	2.45	4.25	0.00	1.24	0.20	1.36	4.41	2.66	2.21	0.31	
2 TOTAL	150	119	269	0	60	19	79	348	391	43	NA	25
MEAN	6.0	4.8	10.8	0.0	2.4	0.8	3.2	13.9	15.6	1.7	4.6**	
S.D.	3.00	2.73	3.91	0.00	2.20	1.48	2.90	3.04	2.04	2.37	0.69	
3 TOTAL	148	127	275	0	28	0	28	303	358	55	NA	23
MEAN	6.4	5.5	12.0	0.0	1.2	0.0	1.2	13.2	15.6	2.4	6.2	
S.D.	2.71	2.29	4.08	0.00	2.50	0.00	2.50	3.38	2.64	4.71	0.31	
4 TOTAL	158	163	321	0	11	0	11	332	362	30	NA	24
MEAN	6.6	6.8	13.4	0.0	0.5	0.0	0.5	13.8	15.1	1.3	5.9	
S.D.	2.30	1.77	3.05	0.00	0.88	0.00	0.88	3.19	2.12	1.75	0.43	
5 TOTAL	158	172	330	0	16	0	16	346	370	24	NA	24
MEAN	6.6	7.2	13.8	0.0	0.7	0.0	0.7	14.4	15.4	1.0	6.0	
S.D.	2.00	1.76	2.17	0.00	1.09	0.00	1.09	1.79	1.91	1.22	0.33	
6 TOTAL	165	177	342	0	15	1	16	358	390	32	NA	24
MEAN	6.9	7.4	14.3	0.0	0.6	0.0	0.7	14.9	16.3	1.3	5.9	
S.D.	2.42	2.10	2.44	0.00	0.71	0.20	0.76	2.47	2.23	2.24	0.26	

** = Significantly different from the control group at 0.01
NA = NOT APPLICABLE
MEAN NUMBER OF VIABLE FETUSES, MEAN NUMBER OF IMPLANTATION SITES, MEAN NUMBER OF CORPORA LUTEA,
FETAL WEIGHTS COMPARED USING DUNNETT'S TEST OR A TWO-SAMPLE T-TEST

1- 0 PPM 2- 15 MG/KG RA 3- 0.25 PPM 4- 1.5 PPM 5- 500 PPM 6- 1000 PPM

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TABLE 14

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 1

SPONSOR:HSIA SUMMARY OF FETAL DATA AT SCHEDULED NECROPSY [% PER LITTER]

GROUP:	0 PPM	15 MG/KG RA	0.25 PPM	1.5 PPM	500 PPM	1000 PPM
CORPORA LUTEA						
MEAN	15.0	15.6	15.6	15.1	15.4	16.3
S.D.	2.66	2.04	2.64	2.12	1.91	2.23
N	24	25	23	24	24	24
IMPLANTATION SITES						
MEAN	13.7	13.9	13.2	13.8	14.4	14.9
S.D.	4.41	3.04	3.38	3.19	1.79	2.47
N	24	25	23	24	24	24
VIABLE FETUSES (%)						
MEAN	94.3	77.2b	87.7	97.0	95.2	95.6
S.D.	8.91	20.90	25.51	6.12	8.69	5.03
N	24	25	23	24	24	24
DEAD FETUSES (%)						
MEAN	0.0	0.0	0.0	0.0	0.0	0.0
S.D.	0.00	0.00	0.00	0.00	0.00	0.00
N	24	25	23	24	24	24
EARLY RESORPTIONS (%)						
MEAN	5.5	17.6b	12.3	3.0	4.8	4.1
S.D.	8.29	16.49	25.50	6.12	8.70	4.61
N	24	25	23	24	24	24

PROPORTIONAL (%) DATA COMPARED USING DUNN'S TEST
CORPORA LUTEA AND IMPLANTATION SITES COMPARED USING DUNNETT'S TEST OR A TWO-SAMPLE T-TEST
MODIFIED STATISTICS USED.
For statistical analyses, control group 1 was compared to group 2; control group 1 was compared to groups 3, 4, 5 and 6.
b = Significantly different from control group 1 at 0.01

TABLE 14

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 2

SPONSOR:HSIA SUMMARY OF FETAL DATA AT SCHEDULED NECROPSY [% PER LITTER]

GROUP:	0 PPM	15 MG/KG RA	0.25 PPM	1.5 PPM	500 PPM	1000 PPM
LATE RESORPTIONS (%)						
MEAN	0.2	5.2a	0.0	0.0	0.0	0.3
S.D.	1.20	9.98	0.00	0.00	0.00	1.45
N	24	25	23	24	24	24
TOTAL RESORPTIONS (%)						
MEAN	5.7	22.8b	12.3	3.0	4.8	4.4
S.D.	8.91	20.89	25.50	6.12	8.70	5.03
N	24	25	23	24	24	24
PRE-IMPLANTATION LOSS (%)						
MEAN	10.7	11.1	12.8	9.1	6.2	7.7
S.D.	20.75	16.12	22.55	14.31	7.19	12.30
N	24	25	23	24	24	24
POST-IMPLANTATION LOSS (%)						
MEAN	5.7	22.8b	12.3	3.0	4.8	4.4
S.D.	8.91	20.89	25.50	6.12	8.70	5.03
N	24	25	23	24	24	24
MALES (%)						
MEAN	52.5	55.3	53.8	48.6	47.3	47.8
S.D.	12.13	19.98	12.33	11.06	12.35	13.34
N	24	25	22	24	24	24

PROPORTIONAL (%) DATA COMPARED USING DUNN'S TEST
MODIFIED STATISTICS USED.
For statistical analyses, control group 1 was compared to group 2; control group 1 was compared to groups 3, 4, 5 and 6.
a = Significantly different from control group 1 at 0.05
b = Significantly different from control group 1 at 0.01

TABLE 14

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 3
SPONSOR:HSIA SUMMARY OF FETAL DATA AT SCHEDULED NECROPSY [% PER LITTER]

GROUP:	0 PPM	15 MG/KG RA	0.25 PPM	1.5 PPM	500 PPM	1000 PPM
FEMALES (%)						
MEAN	47.5	44.7	46.2	51.4	52.7	52.2
S.D.	12.13	19.98	12.33	11.06	12.35	13.34
N	24	25	22	24	24	24
MALE FETAL WEIGHTS (g)						
MEAN	6.1	4.8b	6.3	6.1	6.2	6.1
% DIFFERENCE		-21.3	3.3	0.0	1.6	0.0
S.D.	0.35	0.65	0.36	0.49	0.36	0.33
N	24	24	22	24	24	24
FEMALE FETAL WEIGHTS (g)						
MEAN	5.9	4.4b	6.0	5.8	5.9	5.8
% DIFFERENCE		-25.4	1.7	-1.7	0.0	-1.7
S.D.	0.33	0.71	0.32	0.44	0.34	0.26
N	24	25	22	24	24	24
COMBINED FETAL WEIGHTS (g)						
MEAN	6.0	4.6b	6.2	5.9	6.0	5.9
% DIFFERENCE		-23.3	3.3	-1.7	0.0	-1.7
S.D.	0.31	0.69	0.31	0.43	0.33	0.26
N	24	25	22	24	24	24

PROPORTIONAL (%) DATA COMPARED USING DUNN'S TEST
FETAL WEIGHTS COMPARED USING DUNNETT'S TEST OR A TWO-SAMPLE T-TEST
MODIFIED STATISTICS USED.
For statistical analyses, control group 1 was compared to group 2; control group 1 was compared to groups 3, 4, 5 and 6.
b = Significantly different from control group 1 at 0.01

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11/02/2018
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TABLE 15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 1
SPONSOR:HSIA SUMMARY OF FETUSES AND LITTERS WITH MALFORMATIONS [ABSOLUTE NO.]
DAY 21

	F E T U S E S						L I T T E R S					
DOSE GROUP:	1	2	3	4	5	6	1	2	3	4	5	6
NUMBER EXAMINED EXTERNALLY	308	269	275	321	330	342	24	25	22	24	24	24
EXENCEPHALY WITH OR WITHOUT OPEN EYELID	0	120	0	0	0	0	0	22	0	0	0	0
SPINA BIFIDA	0	5	0	0	0	0	0	3	0	0	0	0
ANAL ATRESIA	0	1	0	0	0	0	0	1	0	0	0	0
SHORT TAIL	0	2	0	0	0	0	0	1	0	0	0	0
ECTRODACTYLY	0	21	0	0	0	0	0	7	0	0	0	0
SYNDACTYLY	0	7	0	0	0	0	0	4	0	0	0	0
MENINGOCELE	0	20	0	0	0	0	0	14	0	0	0	0
MICROPHTHALMIA AND/OR ANOPHTHALMIA	1	58	0	0	0	1	1	16	0	0	0	1
HYDROCEPHALY WITH OR WITHOUT DOME HEAD	0	23	0	0	0	0	0	9	0	0	0	0
OPEN EYELID	0	2	0	0	0	0	0	1	0	0	0	0
CLEFT PALATE	0	70	0	0	0	0	0	17	0	0	0	0
BENT TAIL	0	4	0	0	0	0	0	3	0	0	0	0
ANURY	0	1	0	0	0	0	0	1	0	0	0	0
PINNA(E) MALPOSITIONED, SMALL OR ABSENT	0	1	0	0	0	0	0	1	0	0	0	0
MANDIBULAR MICROGNATHIA	0	2	0	0	0	0	0	1	0	0	0	0
MAXILLARY MICROGNATHIA	0	1	0	0	0	0	0	1	0	0	0	0
MICROSTOMIA	0	3	0	0	0	0	0	2	0	0	0	0
MENINGOENCEPHALOCELE	0	2	0	0	0	0	0	1	0	0	0	0
FACIAL CLEFT	0	1	0	0	0	0	0	1	0	0	0	0
OMPHALOCELE	0	1	0	0	0	0	0	1	0	0	0	0
MACROGLOSSIA	0	3	0	0	0	0	0	1	0	0	0	0
CLEFT LIP	0	1	0	0	0	0	0	1	0	0	0	0
ANKYLOGLOSSIA	0	1	0	0	0	0	0	1	0	0	0	0
NUMBER EXAMINED VISCERALLY	308	269	275	321	330	342	24	25	22	24	24	24
SITUS INVERSUS	1	1	0	0	0	0	1	1	0	0	0	0

1- 0 PPM 2- 15 MG/KG RA 3- 0.25 PPM 4- 1.5 PPM 5- 500 PPM 6- 1000 PPM

TABLE 15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 2
SPONSOR:HSIA SUMMARY OF FETUSES AND LITTERS WITH MALFORMATIONS [ABSOLUTE NO.]
DAY 21

	FETUSES						LITTERS					
DOSE GROUP:	1	2	3	4	5	6	1	2	3	4	5	6
NUMBER EXAMINED VISCERALLY	308	269	275	321	330	342	24	25	22	24	24	24
INTERVENTRICULAR SEPTAL DEFECT	7	112	4	5	13	12	5	23	4	3	8	6
RETROESOPHAGEAL AORTIC ARCH	0	5	0	0	0	0	0	5	0	0	0	0
INTERRUPTED AORTIC ARCH	0	2	0	0	0	0	0	2	0	0	0	0
STENOTIC AORTIC ARCH	0	1	0	0	0	0	0	1	0	0	0	0
TRANSPOSITION OF THE GREAT VESSELS	0	5	0	0	0	0	0	3	0	0	0	0
COARCTATION OF THE AORTIC ARCH	0	1	0	0	0	0	0	1	0	0	0	0
CAROTID- STENOTIC	0	1	0	0	0	0	0	1	0	0	0	0
HEART- VENTRICLE(S), SMALL	0	1	0	0	0	0	0	1	0	0	0	0
TOTAL NUMBER WITH MALFORMATIONS												
EXTERNAL :	1	195	0	0	0	1	1	25	0	0	0	1
SOFT TISSUE :	8	118	4	5	13	12	6	23	4	3	8	6
COMBINED :	8	210	4	5	13	12	6	25	4	3	8	6

1- 0 PPM 2- 15 MG/KG RA 3- 0.25 PPM 4- 1.5 PPM 5- 500 PPM 6- 1000 PPM

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TABLE 16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 1
SPONSOR:HSIA SUMMARY OF LITTER PROPORTIONS OF MALFORMATIONS
% PER LITTER DAY 21

DOSE GROUP:		1	2	3	4	5	6
NUMBER OF LITTERS EXAMINED EXTERNALLY		24	25	22	24	24	24
EXENCEPHALY WITH OR WITHOUT OPEN EYELID	MEAN	0.0	50.7	0.0	0.0	0.0	0.0
	S.D.	0.00	34.93	0.00	0.00	0.00	0.00
SPINA BIFIDA	MEAN	0.0	3.8	0.0	0.0	0.0	0.0
	S.D.	0.00	13.72	0.00	0.00	0.00	0.00
ANAL ATRESIA	MEAN	0.0	1.3	0.0	0.0	0.0	0.0
	S.D.	0.00	6.67	0.00	0.00	0.00	0.00
SHORT TAIL	MEAN	0.0	2.7	0.0	0.0	0.0	0.0
	S.D.	0.00	13.33	0.00	0.00	0.00	0.00
ECTRODACTYLY	MEAN	0.0	7.9	0.0	0.0	0.0	0.0
	S.D.	0.00	17.25	0.00	0.00	0.00	0.00
SYNDACTYLY	MEAN	0.0	2.8	0.0	0.0	0.0	0.0
	S.D.	0.00	8.40	0.00	0.00	0.00	0.00
MENINGOCELE	MEAN	0.0	7.0	0.0	0.0	0.0	0.0
	S.D.	0.00	7.79	0.00	0.00	0.00	0.00
MICROPHTHALMIA AND/OR ANOPHTHALMIA	MEAN	0.4	26.0	0.0	0.0	0.0	0.3
	S.D.	2.04	32.39	0.00	0.00	0.00	1.46
HYDROCEPHALY WITH OR WITHOUT DOME HEAD	MEAN	0.0	8.8	0.0	0.0	0.0	0.0
	S.D.	0.00	15.40	0.00	0.00	0.00	0.00
OPEN EYELID	MEAN	0.0	2.0	0.0	0.0	0.0	0.0
	S.D.	0.00	10.00	0.00	0.00	0.00	0.00

1- 0 PPM 2- 15 MG/KG RA 3- 0.25 PPM 4- 1.5 PPM 5- 500 PPM 6- 1000 PPM

TABLE 16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 2

SPONSOR:HSIA SUMMARY OF LITTER PROPORTIONS OF MALFORMATIONS

% PER LITTER DAY 21

DOSE GROUP:		1	2	3	4	5	6
NUMBER OF LITTERS EXAMINED EXTERNALLY		24	25	22	24	24	24
CLEFT PALATE	MEAN	0.0	26.5	0.0	0.0	0.0	0.0
	S.D.	0.00	27.77	0.00	0.00	0.00	0.00
BENT TAIL	MEAN	0.0	1.6	0.0	0.0	0.0	0.0
	S.D.	0.00	4.79	0.00	0.00	0.00	0.00
ANURY	MEAN	0.0	1.0	0.0	0.0	0.0	0.0
	S.D.	0.00	5.00	0.00	0.00	0.00	0.00
PINNA(E) MALPOSITIONED, SMALL OR ABSENT	MEAN	0.0	1.0	0.0	0.0	0.0	0.0
	S.D.	0.00	5.00	0.00	0.00	0.00	0.00
MANDIBULAR MICROGNATHIA	MEAN	0.0	2.0	0.0	0.0	0.0	0.0
	S.D.	0.00	10.00	0.00	0.00	0.00	0.00
MAXILLARY MICROGNATHIA	MEAN	0.0	0.3	0.0	0.0	0.0	0.0
	S.D.	0.00	1.43	0.00	0.00	0.00	0.00
MICROSTOMIA	MEAN	0.0	2.4	0.0	0.0	0.0	0.0
	S.D.	0.00	10.12	0.00	0.00	0.00	0.00
MENINGOENCEPHALOCELE	MEAN	0.0	0.5	0.0	0.0	0.0	0.0
	S.D.	0.00	2.67	0.00	0.00	0.00	0.00
FACIAL CLEFT	MEAN	0.0	0.3	0.0	0.0	0.0	0.0
	S.D.	0.00	1.43	0.00	0.00	0.00	0.00
OMPHALOCELE	MEAN	0.0	0.5	0.0	0.0	0.0	0.0
	S.D.	0.00	2.50	0.00	0.00	0.00	0.00

1- 0 PPM 2- 15 MG/KG RA 3- 0.25 PPM 4- 1.5 PPM 5- 500 PPM 6- 1000 PPM

TABLE 16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 3

SPONSOR:HSIA SUMMARY OF LITTER PROPORTIONS OF MALFORMATIONS

% PER LITTER DAY 21

DOSE GROUP:		1	2	3	4	5	6
NUMBER OF LITTERS EXAMINED EXTERNALLY		24	25	22	24	24	24
MACROGLOSSIA	MEAN	0.0	1.2	0.0	0.0	0.0	0.0
	S.D.	0.00	6.00	0.00	0.00	0.00	0.00
CLEFT LIP	MEAN	0.0	0.4	0.0	0.0	0.0	0.0
	S.D.	0.00	2.00	0.00	0.00	0.00	0.00
ANKYLOGLOSSIA	MEAN	0.0	0.4	0.0	0.0	0.0	0.0
	S.D.	0.00	2.00	0.00	0.00	0.00	0.00

1- 0 PPM 2- 15 MG/KG RA 3- 0.25 PPM 4- 1.5 PPM 5- 500 PPM 6- 1000 PPM

TABLE 16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 4
SPONSOR:HSIA SUMMARY OF LITTER PROPORTIONS OF MALFORMATIONS
% PER LITTER DAY 21

DOSE GROUP:		1	2	3	4	5	6
NUMBER OF LITTERS EXAMINED VISCERALLY		24	25	22	24	24	24
SITUS INVERSUS	MEAN	0.2	0.5	0.0	0.0	0.0	0.0
	S.D.	1.02	2.50	0.00	0.00	0.00	0.00
INTERVENTRICULAR SEPTAL DEFECT	MEAN	2.4	42.2b	1.4	1.5	3.8	3.7
	S.D.	6.47	28.12	3.24	4.37	6.14	7.31
RETROESOPHAGEAL AORTIC ARCH	MEAN	0.0	2.0	0.0	0.0	0.0	0.0
	S.D.	0.00	4.17	0.00	0.00	0.00	0.00
INTERRUPTED AORTIC ARCH	MEAN	0.0	0.8	0.0	0.0	0.0	0.0
	S.D.	0.00	2.88	0.00	0.00	0.00	0.00
STENOTIC AORTIC ARCH	MEAN	0.0	0.3	0.0	0.0	0.0	0.0
	S.D.	0.00	1.54	0.00	0.00	0.00	0.00
TRANSPOSITION OF THE GREAT VESSELS	MEAN	0.0	4.4	0.0	0.0	0.0	0.0
	S.D.	0.00	15.48	0.00	0.00	0.00	0.00
COARCTATION OF THE AORTIC ARCH	MEAN	0.0	0.2	0.0	0.0	0.0	0.0
	S.D.	0.00	1.18	0.00	0.00	0.00	0.00
CAROTID- STENOTIC	MEAN	0.0	0.4	0.0	0.0	0.0	0.0
	S.D.	0.00	2.00	0.00	0.00	0.00	0.00
HEART- VENTRICLE(S), SMALL	MEAN	0.0	0.4	0.0	0.0	0.0	0.0
	S.D.	0.00	2.00	0.00	0.00	0.00	0.00

1- 0 PPM 2- 15 MG/KG RA 3- 0.25 PPM 4- 1.5 PPM 5- 500 PPM 6- 1000 PPM

MODIFIED STATISTICS USED
For statistical analyses, control group 1 was compared to group 2; control group 1 was compared to groups 3, 4, 5 and 6.
b = Significantly different from control group 1 at 0.01

TABLE 16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 5
SPONSOR:HSIA SUMMARY OF LITTER PROPORTIONS OF MALFORMATIONS
% PER LITTER DAY 21

DOSE GROUP:		1	2	3	4	5	6
NUMBER OF LITTERS EXAMINED		24	25	22	24	24	24
TOTAL MALFORMATIONS							
PERCENT PER LITTER WITH EXTERNAL MALFORMATIONS	MEAN	0.4	76.9	0.0	0.0	0.0	0.3
	S.D.	2.04	27.95	0.00	0.00	0.00	1.46
PERCENT PER LITTER WITH SOFT TISSUE MALFORMATIONS	MEAN	2.6	46.2b	1.4	1.5	3.8	3.7
	S.D.	6.47	27.88	3.24	4.37	6.14	7.31
TOTAL PERCENT PER LITTER WITH MALFORMATIONS	MEAN	2.6	81.3	1.4	1.5	3.8	3.7
	S.D.	6.47	25.17	3.24	4.37	6.14	7.31

1- 0 PPM 2- 15 MG/KG RA 3- 0.25 PPM 4- 1.5 PPM 5- 500 PPM 6- 1000 PPM

MODIFIED STATISTICS USED
For statistical analyses, control group 1 was compared to group 2; control group 1 was compared to groups 3, 4, 5 and 6.
b = Significantly different from control group 1 at 0.01

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TABLE 17

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 1
SPONSOR:HSIA SUMMARY OF FETUSES AND LITTERS WITH VARIATIONS [ABSOLUTE NO.]
DAY 21

	FETUSES						LITTERS					
DOSE GROUP:	1	2	3	4	5	6	1	2	3	4	5	6
NUMBER EXAMINED EXTERNALLY	308	269	275	321	330	342	24	25	22	24	24	24
SKIN- TAG	0	1	0	0	0	0	0	1	0	0	0	0
NUMBER EXAMINED VISCERALLY	308	269	275	321	330	342	24	25	22	24	24	24
MAJOR BLOOD VESSEL VARIATION	0	19	1	2	1	2	0	12	1	1	1	2

1- 0 PPM 2- 15 MG/KG RA 3- 0.25 PPM 4- 1.5 PPM 5- 500 PPM 6- 1000 PPM

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TABLE 18

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 1

SPONSOR:HSIA SUMMARY OF LITTER PROPORTIONS OF VARIATIONS

% PER LITTER DAY 21

DOSE GROUP:		1	2	3	4	5	6
NUMBER OF LITTERS EXAMINED EXTERNALLY		24	25	22	24	24	24
SKIN- TAG	MEAN	0.0	1.0	0.0	0.0	0.0	0.0
	S.D.	0.00	5.00	0.00	0.00	0.00	0.00

1- 0 PPM 2- 15 MG/KG RA 3- 0.25 PPM 4- 1.5 PPM 5- 500 PPM 6- 1000 PPM

TABLE 18

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 2
SPONSOR:HSIA SUMMARY OF LITTER PROPORTIONS OF VARIATIONS
% PER LITTER DAY 21

DOSE GROUP:		1	2	3	4	5	6
NUMBER OF LITTERS EXAMINED VISCERALLY		24	25	22	24	24	24
MAJOR BLOOD VESSEL VARIATION	MEAN	0.0	7.2b	0.3	0.6	0.3	0.5
	S.D.	0.00	9.13	1.33	2.72	1.70	1.78

1- 0 PPM 2- 15 MG/KG RA 3- 0.25 PPM 4- 1.5 PPM 5- 500 PPM 6- 1000 PPM

MODIFIED STATISTICS USED
For statistical analyses, control group 1 was compared to group 2; control group 1 was compared to groups 3, 4, 5 and 6.
b = Significantly different from control group 1 at 0.01

TABLE 18

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 3
SPONSOR:HSIA SUMMARY OF LITTER PROPORTIONS OF VARIATIONS
% PER LITTER DAY 21

DOSE GROUP:		1	2	3	4	5	6
NUMBER OF LITTERS EXAMINED		24	25	22	24	24	24
TOTAL VARIATIONS							
PERCENT PER LITTER WITH EXTERNAL VARIATIONS	MEAN	0.0	1.0	0.0	0.0	0.0	0.0
	S.D.	0.00	5.00	0.00	0.00	0.00	0.00
PERCENT PER LITTER WITH SOFT TISSUE VARIATIONS	MEAN	0.0	7.2b	0.3	0.6	0.3	0.5
	S.D.	0.00	9.13	1.33	2.72	1.70	1.78
TOTAL PERCENT PER LITTER WITH VARIATIONS	MEAN	0.0	8.2	0.3	0.6	0.3	0.5
	S.D.	0.00	12.06	1.33	2.72	1.70	1.78

1- 0 PPM 2- 15 MG/KG RA 3- 0.25 PPM 4- 1.5 PPM 5- 500 PPM 6- 1000 PPM

MODIFIED STATISTICS USED
For statistical analyses, control group 1 was compared to group 2; control group 1 was compared to groups 3, 4, 5 and 6.
b = Significantly different from control group 1 at 0.01

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APPENDIX 1

Study Protocol and Deviations

DEVIATIONS

All deviations that occurred during the study have been authorized/acknowledged by the Study Director, assessed for impact, and documented in the study records. All study protocol deviations and those SOP deviations that could have impacted the quality or integrity of the study are listed below. Minor SOP deviations that did not impact the quality or integrity of the study have been included at the discretion of the Study Director.

None of the deviations were considered to have impacted the overall integrity of the study or the interpretation of the study results and conclusions.

Formulations and Dosing

- **Protocol Section 9.1.3.** states the 24-hour post-dispensation samples will be collected from the first and 22nd test substance preparations. On 18 Aug 2018, post-dispensation samples were collected also from the 24th preparation of the test substance between 21 hours 20 minutes and 21 hours 34 minutes following dispensation.

  Impact Assessment: An additional 24-hour loss monitoring assessment was scheduled due to non-quantifiable concentrations from the 22nd preparation. Samples were collected prior to 24-hours post-dispensation because due to the last scheduled necropsy on that date, the water bottles were no longer in use beyond 21 hours and 34 minutes. Overall, this deviation has a positive impact on the study.

- **Protocol Section 11.4.** states that during the treatment period, water bottles will be changed daily. On 29 Jul 2018 (Gestation Days 1–5), there was no documentation that test substance water bottles were changed.

  Impact Assessment: Due to the volatility of the test substance in drinking water formulations, drinking water bottles were filled cage-side and administered fresh every day with formulations that were prepared daily, and is documented in the study records. Therefore, the obvious lack of documentation regarding change-out of water bottles on a single day during the study had no impact of the study data or interpretation.

- **Protocol Section 12.3.4.** states that vehicle control or test substance drinking water formulations will be offered ad libitum from Gestation Day 1 through euthanasia (scheduled for Gestation Day 21). Water formulations will be supplied fresh on a daily basis, within ± 2-3 hours from the previous day. For all animals, on Gestation Day 21, water bottles were weighed prior to the ± 2-3 hour window from the previous day to allow for completion of in-life data collection prior to scheduled laparohysterectomy and macroscopic examination; this was necessary to ensure that Gestation Day 21 dams were euthanized and examined prior to the potential onset of parturition.

  Impact Assessment: This deviation had a positive impact on the study as it allowed for maternal and fetal blood collection in a timely manner, in accordance with Testing Facility SOPs and the protocol, and prior to initiation of parturition. All animals had access to control and treated water until euthanasia.

Husbandry

- **Protocol Section 11.4.** states that reverse osmosis-purified water (with test substance added during the treatment period for animals assigned to Groups 3–6) will be available ad libitum via amber glass water bottles with metal sipper tubes. There was no documentation verifying the use of amber glass water bottles with metal sipper tubes from the time of animal receipt through the end of the in-life phase.

  Impact Assessment: Amber glass bottles were used on this study as observed by the Study Director on multiple occasions. The use and sanitation of amber glass bottles was documented on form T1-058 (Dirty Cage/Accessory Log) on 08 Aug, 09 Aug and 13 Aug 2018. This is a facility form used for return of dirty equipment to cage wash for sanitization. The lack of consistent documentation had no adverse impact on the study. Formulation analysis and 24h loss monitoring data are consistent with previous analytical results, which indicate that appropriate light protection was used, even though the use of amber bottles was not documented consistently.

- **Protocol Section 12.1.** states that after confirmation of mating, the female will be returned to an individual solid-bottom cage (assigned to a group), and the day will be designated as day 0 of gestation. However, on 24 Jul 2018 there was no documentation of Gestation Day 0 females being separated from the males and single-housed.

  Impact Assessment: All gestation animals were noted to be individually housed beginning on Gestation Day 1 when water administration (control or treated) was initiated for all groups, including Group 2 (which received control water throughout gestation). Therefore, the lack of documentation of single housing Gestation Day 0 had no impact on the study data or interpretation.

Laboratory Evaluations

- **Protocol Section 14.7.** states that all samples will be centrifuged within 45 minutes of collection based on the analytical method development. On Gestation Day 21, the samples from the fetuses in Litter Nos. 8752 and 8742 in the control group were not centrifuged until 1 hour 19 minutes and 1 hour 4 minutes, respectively, after collection.

  Impact Assessment: This deviation did not negatively impact the quality or integrity of the data or the outcome of the study because both samples were in the control group; all control samples were below the limit of quantitation upon analytical assessments.

Postmortem and Pathology

- **Protocol Section 15.2.** states that representative photographs of all malformations with comparison photographs of normal fetuses will be included in the Final Report, for illustrative purposes only. In the positive control group, photographic images were not obtained for Fetus No. 8810-13 (male) with the external malformation of exencephaly with open eyelids and Fetus No. 8930-14 (male) with the external malformation of macroglossia and the internal malformation of small ventricle in the heart.

  Impact Assessment: This deviation did not negatively impact the quality or integrity of the data or the outcome of the study because a sufficient number of images were available from

fetuses in the positive control group with the malformations exencephaly, open eyelid and macroglossia. Only a single fetus on the study was noted with small ventricles. However, because the finding pertains to dimensions of the organ, rather than gross abnormality, the lack of an illustrative photograph is not considered to have impacted the integrity of the study or the interpretation of the positive control data.

- **Protocol Section 15.2.1.** states that each viable fetus will be euthanized by a subcutaneous injection of sodium pentobarbital. The route of sodium pentobarbital administration was not documented for fetuses euthanized on 18 Aug 2018.

  Impact Assessment: This deviation did not negatively impact the quality or integrity of the data or the outcome of the study because were examined viscerally post-euthanasia successfully and without incident. Subcutaneous or intraperitoneal injection of sodium pentobarbital or decapitation are all acceptable methods of fetal euthanasia, and none of these methods would be expected to impact the integrity of the heart and great and major blood vessels.

PROTOCOL AMENDMENT NO. 1

Testing Facility Study No. 00459506

An Oral (Drinking Water) Study of the Effects of Trichloroethylene (TCE) on Fetal Heart Development in Sprague Dawley Rats

SPONSOR:
Halogenated Solvents Industry Alliance, Inc.
3033 Wilson Boulevard, Suite 700
Arlington, VA 22201
USA

TESTING FACILITY:
Charles River Laboratories Ashland, LLC
1407 George Road
Ashland, OH 44805
United States

SUMMARY OF CHANGES AND JUSTIFICATIONS

Study Protocol effective date: 05-Jul-2018

Note: When applicable, additions are indicated in bold underlined text and deletions are indicated in bold strikethrough text in the affected sections of the document.

Item or Section(s)	Justification
Amendment 1	**Effective Date: 27-Jul-2018**
1Objectives	- Typographical error correction; water formulations will be provided to all animals through euthanasia.
8 Test Substance, Positive Control Substance And Vehicle Data	- A new subsection (8.5 Reference/Internal Standards) has been added to this section.
9.1.3 Concentration of Test Substance in Drinking Water Formulations	- The 24h Post-Dispensation Samples will be collected from the First and 22nd batch. The text table included in this section is updated accordingly.
14.7 Sample Handling and Plasma Preparation	- Added requirement to centrifuge blood samples within 45 min of collection based on analytical method development.
22 References	- The study title for reference 7 has been corrected. - The study numbers listed in reference 1 and 7 have been corrected.

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1. OBJECTIVES

The objective of this study is to determine the potential of trichloroethylene (TCE) to induce cardiac defects in the offspring after maternal exposure from the day after copulation **through euthanasia** ~~**to 1 day prior to expected parturition**~~, to characterize maternal toxicity at the exposure levels tested and to determine a NOAEL (no-observed-adverse-effect level) for maternal and cardiac developmental toxicity.

In addition, plasma concentrations of TCA (trichloroacetic acid, the primary metabolite of trichloroethylene) will be assessed in maternal and fetal plasma.

1.1. Study Classification

Study Category:	Developmental and Reproductive Toxicology
Study Type:	Prenatal Development
Study Design:	Parallel
Primary Treatment CAS Registry Number:	79-01-6
Primary Treatment Unique Ingredient ID:	Trichloroethylene
Class of Compound:	Solvent

2. PROPOSED STUDY SCHEDULE

Proposed study dates are listed below. Actual applicable dates will be included in the Final Report.

Animal Arrival:	17 Jul 2018
Initiation of Dosing:	25 Jul 2018
Completion of In-life:	20 Aug 2018
Audited Draft Report:	29 Oct 2018

3. GUIDELINES FOR STUDY DESIGN

This study will be conducted in general accordance with the United States Environmental Protection Agency (EPA) Health Effects Test Guidelines OPPTS 870.3700, Prenatal Developmental Toxicity Study, August 1998, and the Organisation of Economic Cooperation and Development Guidelines (OECD) for the Testing of Chemicals Guideline 414, Prenatal Developmental Toxicity Study, January 2001.

4. REGULATORY COMPLIANCE

This study will be conducted in compliance with the United States Environmental Protection Agency (EPA) TSCA (40 CFR Part 792) Good Laboratory Practice Standards and as accepted by regulatory authorities throughout the European Union (Organization for Economic Cooperation

and Development), Japan, and other countries that are signatories to the OECD Mutual Acceptance of Data Agreement. Exceptions to GLPs include the following study elements:

- Test substance characterization will not be conducted according to GLP standards.

5. QUALITY ASSURANCE

5.1. Testing Facility

The Testing Facility Quality Assurance Unit (QAU) will monitor the study to assure the facilities, equipment, personnel, methods, practices, records, and controls are in conformance with Good Laboratory Practice regulations. The QAU will review the protocol, conduct inspections at intervals adequate to assure the integrity of the study, and audit the Final Report to assure that it accurately describes the methods and standard operating procedures and that the reported results accurately reflect the raw data of the study.

The Testing Facility QAU contact for this study is indicated below:

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6. SPONSOR

Sponsor Representative

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7. RESPONSIBLE PERSONNEL

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Individual Scientists (IS) at the Testing Facility

Dose Formulation Analysis	Shiladitya Sen, PhD Senior Research Scientist, Analytical Chemistry Address as cited for Testing Facility Tel: (419) 289-8700 Fax: (419) 289-3650 Email: Shiladitya.Sen@crl.com
Plasma Analysis	Joelle Lucarell, BS Research Scientist II, Bioanalytical Chemistry Address as cited for Testing Facility Tel: (419) 289-8700 Fax: (419) 289-3650 Email: Joelle.Lucarell@crl.com

Each IS is required to report any deviations or other circumstances that could affect the quality or integrity of the study to the Study Director in a timely manner and the Study Director will provide notification to the Sponsor Representative within 24 hours. Each IS will provide a report addressing their assigned phase of the study, which will be included as an appendix to the Final Report.

The phase report will include the following:

- A listing of critical computerized systems used in the conduct and/or interpretation of the assigned study phase.

8. TEST SUBSTANCE, POSITIVE CONTROL SUBSTANCE AND VEHICLE DATA

8.1. Test Substance

8.1.1. Identification

Trichloroethylene (TCE) (CAS No. 79-01-6) ≥99% and scavenger-free

Purchased from Spectrum Chemical Manufacturing Corp. (T1115 reagent grade, or equivalent).

8.1.2. Characterization

Lot numbers, purity, stability, and storage conditions will be provided by the Supplier/Manufacturer, documented in the study records and included in the Final Report.

8.1.3. Storage Conditions

In a room with controls set to maintain 18°C to 24°C, protected from light.

8.1.4. Physical Description

To be documented by Charles River.

8.1.5. Reserve Samples

Reserve samples of the test substance will be taken in accordance with Charles River Standard Operating Procedures and stored in the Charles River Archives.

8.1.6. Personnel Safety Data

A Safety Data Sheet (SDS) is to be provided by the Supplier/Manufacturer. Standard safety precautions will apply.

8.1.7. Test Article Disposition

With the exception of the reserve sample for each batch of test article (if applicable), all neat test article remaining at study completion will be discarded appropriately.

8.2. Positive Control Substance

8.2.1. Identification

all-*trans* Retinoic Acid ≥98% by HPLC (CAS No. 302-79-4)

Purchased from Sigma-Aldrich, Inc. (R2625, or equivalent)

8.2.2. Characterization

Lot numbers, purity, stability, and storage conditions will be provided by the Supplier/Manufacturer, documented in the study records and included in the Final Report.

8.2.3. Storage Conditions

In a freezer, set to maintain -20ºC, protected from light.

8.2.4. Physical Description

To be documented by Charles River

8.2.5. Reserve Samples

Reserve samples of the positive control substance will be taken in accordance with Charles River Standard Operating Procedures and stored in the Charles River Archives.

8.2.6. Personal Safety Data

A Safety Data Sheet (SDS) is to be provided by the Supplier/Manufacturer. Standard safety precautions will apply.

8.3. Vehicle (for Drinking Water Formulations)

8.3.1. Identification

Reverse osmosis-purified water

8.3.2. Characterization

Water used on-site is subject to routine monitoring as indicated in SOP A-067. Standard safety precautions will apply.

8.4. Vehicle (for Positive Control Formulations)

8.4.1. Identification

Soybean oil (CAS No. 8001-22-7)

Purchased from Sigma-Aldrich, Inc. (S7381 dietary grade, or equivalent)

8.4.2. Characterization

Lot numbers, purity, stability, and storage conditions will be provided by the Supplier/Manufacturer, documented in the study records and included in the Final Report.

8.5. Reference/Internal Standards

The following reference and internal standards will be used during plasma analysis:

- **Trifluoroacetic acid; CAS 76-05-1**

9. PREPARATION AND ANALYSIS OF TEST AND POSITIVE CONTROL SUBSTANCE FORMULATIONS

9.1. Test Substance Formulations

9.1.1. Method and Frequency of Preparation

Based on the physical characteristics of the test substance, appropriate methods will be used to ensure the best possible formulations of the test substance in the vehicle. Test substance formulations will be prepared daily, in a closed system, under amber light, without sonication, and stored and transported in the same closed system amber formulation bottles (for light protection). Each amber formulation bottle will be purged with nitrogen, sealed with a foil liner and silicone septum fitted with a fabricated siphon valve system built at Charles River Ashland.

All formulation batches will be prepared at volumes large enough to minimize headspace. The 500 and 1000 ppm concentrations will be prepared the day prior to dosing and stirred overnight at room temperature for at least 24 hours. The 0.25 and 1.5 ppm concentrations will be prepared via dilution of higher concentrations on the day of dose administration. Test substance formulations will be stored at room temperature (18°C to 24°C) following preparation and until transfer into drinking water bottles for administration to study animals.

For transfer into drinking water bottles, the inlet valve on each formulation bottle will be connected to a nitrogen source to allow nitrogen to displace dosing formulations that are removed via the outlet value. Purging of any headspace with nitrogen will help reduce volatilization of TCE and ensures that residual water formulations do not come in contact with ambient air. Drinking water bottles will be filled by allowing the water to flow along the inner wall, to reduce splashing, bubbling and volatilization of TCE.

Any procedures not covered by SOPs required for formulation will be approved by the Study Director and included in the study records.

The Study Director or designee will visually inspect the test substance formulations prior to initiation of dosing. This visual inspection will be performed to ensure that the formulations are visibly homogeneous and acceptable for dosing.

9.1.2. Solubility and Stability of Test Substance in Drinking Water Formulations

Test substance formulations in drinking water will be analyzed using a method previously developed and validated at Charles River Ashland.[1] Solubility ~~and stability~~ of the test substance in the vehicle following room temperature (18°C to 24°C) storage for at least 24 hours, ~~and following frozen (purged with nitrogen, -10°C to -20°C)~~ storage, at the range of concentrations

① Frozen stability was not established, but was not necessary as formulation samples were analyzed fresh on day of sampling. 1 Nov 2018

being used on the current study was previously established.[1] Therefore, solubility and stability of test substance formulations will not be assessed on the current study.

9.1.3. Concentration of Test Substance in Drinking Water Formulations

Concentration of test substance in "as-delivered" dosing formulations, including the vehicle control, will be assessed on the 1st, 2nd, 3rd, 7th, 12th, 15th, 22nd and last batch of drinking water formulations. For analytical purposes, the last batch will be the last day all prepared batches (at all concentrations) are used for administration to animals (i.e. taking into consideration breeding stagger). Samples for possible concentration assessment will also be collected from all remaining daily batches, purged with nitrogen, and stored in a freezer set to maintain a target of -20ºC.

Sampling, processing and analysis of prepared drinking water formulations will be conducted on the day of distribution prior to transfer into drinking water bottles for administration to study animals according to the table below. **For preparations scheduled for analysis, samples will be processed and analyzed as soon as possible following collection.**

Test Substance Formulation Sampling Scheme

Group(s)	Time of Sampling	Formulation Container	Sample Scheme and Volume[a]	Formulation Preparation Number(s)[b]
1, 3-6	Time of Prep (Closed System)	Amber Formulation Bottle	2 x 10 mL	First, 2nd, 3rd, 7th, 12th, 15th, 22nd and Last
1, 3-6	Time of Dispensation (Open System)	Amber Drinking Water Bottle	2 x 10 mL	First, 2nd, 3rd, 7th, 12th, 15th, 22nd and Last
1, 3-6	24h Post-Dispensation (Open System)	Amber Drinking Water Bottle	(2 x 10 mL) x 3 bottles	First and **22nd** ~~**Last**~~

[a] All samples will be collected from the middle stratum, into amber glass auto-sampler vials with rubber stoppers, and crimped tops.

[b] For analytical purposes, the last batch will be the last day all prepared batches (at all concentrations) are used for administration to animals (i.e. taking into consideration breeding stagger).

Following acceptance of each set of analytical results, by the study director and the Sponsor Representative, any prior unanalyzed batches up until that point will be discarded appropriately (e.g. following analysis of the 7th batch, and acceptance of the analytical results, samples from the 4th, 5th and 6th (unanalyzed) batches will be discarded.

For consistency and ease of reporting, concentrations for each dose group in the protocol and report tables will be referred to by the initial (target) concentration as has been used in previously published reports.[2,3] Calculated compound consumption will be based on analytically confirmed concentrations at each assessment interval.

The target acceptance criteria for concentration assessment of TCE in drinking water formulations will be mean concentrations within 100% ± 20% (80-120%) of the target concentration. However, because of the volatility of the test substance, it is recognized that this acceptance criteria may not be achievable for each formulation and concentration. If any

formulations do not meet acceptance criteria, the impact of the out-of-specification results will be addressed in the report.

24-hour Loss Monitoring – Samples collected 24-hours post-dispensation will be collected from "used' water bottles in the animal room and will be processed and analyzed for concentration assessment as soon as possible following collection. Because of the open system and the volatility of the test substance, measured concentrations will be reported as-is i.e. target acceptance criteria will not apply to 24-hour loss monitoring samples. Loss of TCE at each concentration, will be calculated by averaging of the three sampled bottles and comparison against corresponding Time Zero concentrations (measured concentrations prior to transfer into drinking water bottles) and will be reported as a Percent 24-Hour Loss for each concentration.

The final analytical report will be incorporated as an appendix to the Charles River final report.

9.2. Positive Control Substance

9.2.1. Method and Frequency of Preparation

Based on the physical characteristics of the positive control substance, appropriate methods will be used to ensure the best possible formulations in the vehicle, soybean oil, which may be warmed to ensure solubilization, if necessary. Positive control substance formulations will be prepared under amber light and stored and transported in amber aliquot bottles for light protection. Positive control substance formulations will normally be prepared approximately weekly, divided into aliquots for daily dispensation, purged with nitrogen and stored in a freezer, set to maintain a target of -20ºC. The positive control formulations will be thawed for each day of administration, and dispensed after remixing for a minimum of 30 minutes (after the aliquots are fully thawed) using a magnetic stirrer. Positive control formulations will be stirred continuously during dosing.

Any procedures not covered by SOPs required for formulation will be added to the protocol by protocol amendment and presented in the final report of this study.

9.2.2. Concentration of Positive Control Substance in Soybean Oil Formulations

Positive control formulations in the vehicle, soybean oil, will not be assessed for solubility, concentration, homogeneity, or stability. All-*trans* retinoic acid (RA) is a commercially available drug substance that will be prepared in general accordance with package specifications. It is a well characterized developmental toxicant that has been previously demonstrated to result in heart malformations in this strain of rat.[4]

Sampling of positive control substance dosing formulations will be conducted for future possible concentration assessments according to the table below. Samples will be purged with nitrogen and stored in a freezer set to maintain a target of -20ºC.

Positive Control Substance Formulation Sampling Scheme

Group(s)	Time of Sampling	Formulation Container	Sample Scheme and Volume	Formulation Preparation Number(s)
2	Time of Prep	First Aliquot	2 x 1 mL	All
2	Time of Dispensation	Last Aliquot	2 x 1 mL	All

If samples are analyzed, the final analytical report will be incorporated as an appendix to the Charles River final report.

Following completion of the in-life phase of the study and the acceptance of study results by the study director and the Sponsor Representative, any unanalyzed samples will be discarded appropriately (i.e. samples will not be archived, but will be discarded prior to issuance of the final report).

10. TEST SYSTEM

Species:	Rat
Strain:	Sprague Dawley Crl:CD(SD)
Condition:	Naïve, Nonpregnant
Source:	Charles River Laboratories, Inc. (Raleigh, North Carolina)
Number of Males Ordered:	A sufficient number of sexually mature untreated resident males of the same strain and source will be purchased to induce pregnancies.
Number of Females Ordered:	210
Target Age at the Initiation of Breeding:	80 to 120 days at the initiation of breeding
Target Weight on Gestation Day 0:	A minimum of 220 g

Animals not assigned to the study will be transferred to the animal colony or will be euthanized by carbon dioxide inhalation and the carcasses discarded. The actual age and weight of animals received will be listed in the Final Report.

10.1. Identification System

A permanent animal number will be assigned to each individual animal. Each animal will be identified using a subcutaneously implanted electronic identification microchip (BMDS system). The microchip will be the primary means to uniquely identify animals assigned to study. Individual cage cards will be affixed to each cage and will display at least the animal number, group number, dosage level, study number, and sex of the animal.

Replacement microchips may be implanted as necessary throughout the course of the study. An ear tag may be used as the alternate unique identifier.

10.2. Justification for Selection

The purpose of this study is to replicate the findings of Dawson et al.[3] and Johnson et al.[2] In these studies it was reported that there was an increase in cardiac malformations in the fetuses of pregnant female Sprague Dawley rats administered TCE in drinking water.

This species and strain of rat has been recognized as appropriate for developmental toxicity studies. Charles River has historical data on the background incidence of fetal malformations and developmental variations in this species from the same strain and source. This animal model has been proven to be susceptible to the effects of developmental toxicants

10.3. Number of Study Animals

The number of animals is based on the US EPA Health Effects Test Guidelines OPPTS 870.3700, Prenatal Development Toxicity Study, August 1998 and the OECD Guidelines for the Testing of Chemicals: Guideline 414, Prenatal Developmental Toxicity Study, January 2001, which recommend evaluation of approximately 20 females with implantation sites at necropsy. Given the possibility of nongravid animals, unexpected deaths, or treatment-related moribundity and/or mortality, 25 females/group is an appropriate number to obtain a sample size of 20 females at termination.

The number of animals assigned to the toxicokinetic phase (4 females/group) is also based on the possibility of nongravid animals, unexpected deaths, or treatment-related moribundity and/or mortality; this is an appropriate number of animals to obtain at least 3 blood samples per time point.

11. SPECIFIC ANIMAL MAINTENANCE SCHEDULE

11.1. Animal Receipt and Acclimation

Each rat will be inspected by a qualified technician upon receipt. Rats judged to be in good health and suitable as test animals will be immediately placed in acclimation for a minimum of 7 days. All rats will be initially weighed, permanently identified with a microchip, and will receive a detailed clinical observation. During the acclimation period, each rat will be observed twice daily for changes in general appearance and behavior. Body weights will be recorded prior to the initiation of breeding. Prior to the start of breeding, those rats judged to be suitable test subjects will be identified.

During social housing, some observations (e.g., fecal observations) may not be attributable to an individual animal. In these instances, observations will be recorded in a separate computer file for the social group.

11.2. Animal Housing

Female rats will be housed, 2-3 per cage, in clean solid-bottom cages with bedding material (Bed O'Cobs® or other suitable material) for at least 3 days following receipt in an environmentally controlled room. Following positive signs of mating, each female will be individually housed in clean, solid-bottom cages with bedding material (Bed O'Cobs® or other suitable material) until euthanasia. Animals may be temporarily separated for protocol-specified activities and this will be documented in the study records. In addition, animals may be individually housed due to incompatible behavior with a cage mate(s) or for health monitoring purposes requested by the veterinarian. Animals whose cage mate(s) are removed from study (morbidity, unscheduled death, etc.) will not be re-paired but will remain individually housed for the remainder of the study.

The cages will be subjected to routine cleaning at a frequency consistent with maintaining good animal health and Charles River Standard Operating Procedures. The facilities at Charles River Ashland are accredited by the Association for Assessment and Accreditation of Laboratory Animal Care International (AAALAC International).

Individual housing of presumed pregnant females is required to adequately monitor the health of these females by allowing collection of individual food consumption and appropriate identification of cage observations in the event of abortion or early delivery

11.3. Environmental Conditions

Controls will be set to maintain temperature at 73 ± 5°F (23 ± 3°C) and relative humidity at 50 ± 20%. Temperature and relative humidity will be monitored continuously. Data for these 2 parameters will be scheduled for automatic collection on an hourly basis. Fluorescent lighting controlled by light timers will provide illumination for a 12-hour light/dark photoperiod. The ventilation rate will be set at a minimum of 10 room air changes per hour, 100% fresh air.

11.4. Drinking Water

Cage banks will not be connected to the automated watering system. Reverse osmosis-purified water (with test substance added during the treatment period for animals assigned to Groups 3-6) will be available *ad libitum* via amber glass water bottles with metal sipper tubes. Bottles will be checked daily for spillage and supplemented as necessary and the occurrence of spillage will be documented. During the treatment period, bottles will be changed daily. The municipal water supplying the laboratory is analyzed according to Charles River Ashland SOPs on a routine basis to ensure that contaminants are not present in concentrations that would be expected to affect the outcome of the study.

11.5. Basal Diet

PMI Nutrition International, LLC Certified Rodent LabDiet® 5002 will be offered *ad libitum* during the study. Periodic analyses of the certified feed are performed by the manufacturer to ensure that heavy metals and pesticides are not present at concentrations that would be expected

to affect the outcome of the study. Results of the analyses are provided to Charles River by the manufacturer. Feeders will be changed and sanitized once per week.

11.6. Environmental Enrichment

Enrichment devices will be provided to each animal for environmental enrichment beginning during acclimation, and continuing throughout the course of the study.

12. EXPERIMENTAL DESIGN

12.1. Breeding Procedure

At the conclusion of the acclimation period, female rats judged to be suitable test subjects and meeting acceptable body weight requirements will be cohabitated with untreated resident male rats (1:1) of the same strain and source in solid-bottom cages for mating. Detection of mating will be confirmed by the appearance of a vaginal copulatory plug or by evidence of sperm in a vaginal lavage. Vaginal lavages will be performed daily during the mating period until evidence of mating is observed. After confirmation of mating, the female will be returned to an individual solid bottom cage (assigned to a group), and the day will be designated as day 0 of gestation.

12.2. Animal Selection and Randomization

Mated females will be assigned to groups using a WIL Toxicology Data Management System (WTDMS™) computer program which assigns animals based on stratification of Gestation Day 0 body weights into a block design to 1 vehicle control group, 1 positive control group and 4 test substance groups of 25 rats each for the prenatal developmental (Main) phase. For the exposure assessment (Exp.) phase, the vehicle control and 4 test substance groups will consist of 4 rats each.

Following the initiation of dosing, it may be necessary to add individual animal(s) (due to animals being found dead, euthanized *in extremis*, exhibiting abnormal clinical signs, reduced food consumption, body weigh losses, or dosing errors). Individual animals that are added to the study will be selected from the remaining unassigned mated animals, and assigned arbitrarily (not computer randomized) to the study based on comparable body weights (if possible) with respect to the animal(s) previously assigned to the study. The reason(s) for adding the animal(s) will be appropriately documented in the study records. The cut-off gestation age for adding animals to study is Gestation Day 1 for the vehicle control and test substance groups and Gestation Day 6 for the positive control group.

12.3. Organization of Test Groups, Dosage Levels, and Treatment Regimen

12.3.1. Rationale for Dose Selection

The dosage levels were selected based on previous published reports assessing fetal heart development in Sprague Dawley rats[2,4,5] and were provided by the Sponsor Representative after consultation with the Charles River Study Director.

The positive control substance, RA, is a well characterized developmental toxicant that has been previously demonstrated to result in heart malformations in this strain of rat. The dosage level of RA was also selected based on previously published reports.[4]

12.3.2. Organization of Test Groups

The following table presents the study group arrangement.

Study Design

Group Number	Test Substance	Dosage Level (mg/kg/day)	Dose Concentration	Dose Volume (mL/kg)	Route of Administration	Number of Females	
						Main	Exp.
1	Vehicle control	0	0 ppm	NA	Drinking Water	25	4
2	RA	15	3 mg/mL	5	Gavage	25	0
3	TCE	a	0.25 ppm	NA	Drinking Water	25	4
4	TCE	a	1.5 ppm	NA	Drinking Water	25	4
5	TCE	a	500 ppm	NA	Drinking Water	25	4
6	TCE	a	1000 ppm	NA	Drinking Water	25	4

a Dosage levels for the drinking water groups (i.e. mean amount of TCE received by each group of rats) will be calculated upon completion of the study based on mean water consumption of each group and target concentration of the test substance in water formulations. For consistency and ease of reporting, concentrations for each dose group will be referred to by the initial target concentration as has been used in previously published reports.[2]

12.3.3. Route and Rationale of Test Article Administration

The route of administration of the test substance will be oral (drinking water) as this is a potential route of exposure for humans.

The positive control substance, RA, will be administered via oral (gavage) as that route of exposure has been demonstrated to elicit a positive response.[4]

12.3.4. Treatment Regimen - Test and Positive Control Substances

Vehicle control or test substance drinking water formulations will be offered *ad libitum* from Gestation Day 1 through euthanasia (scheduled for Gestation Day 21). Water formulations will be supplied fresh on a daily basis, within ± 2-3 hours from the previous day.

The positive control substance will be administered as a single daily dose from Gestation Day 6 through 15, inclusively (Group 2 only). This is the standard dosing regimen for a prenatal developmental toxicity study and is expected to elicit a positive response.[4] All rats will be dosed at approximately the same time each day.

The positive control group (Group 2) will receive vehicle control drinking water formulations *ad libitum* from Gestation Day 1 through euthanasia. Water formulations will be supplied fresh on a daily basis.

12.3.5. Method of Test Article Administration

Control and treated drinking water formulations will be offered *ad libitum* in amber glass water bottles with metal sipper tubes. Water bottles will be changed and sanitized daily, and drinking water formulations will be supplied fresh on a daily basis.

The positive control substance will be administered orally by gavage (Group 2 only) using appropriately sized disposable plastic feeding tubes (Instech Laboratories, Plymouth Meeting, PA). The dose volume will be 5 mL/kg. Formulations will be stirred continuously at room temperature for the duration of the dosing procedure.

12.3.6. Adjustment of Dose Volumes

The test substance will be administered as a constant concentration (ppm) in water.

For the positive control substance treated group (Group 2), individual dosages will be calculated on the most recent body weight to provide the proper mg/kg/day dosage.

13. IN-LIFE PROCEDURES, OBSERVATIONS, AND MEASUREMENTS

13.1. Viability Observations

Each rat will be observed twice daily for moribundity and mortality, once in the morning and once in the afternoon from Gestation Day 0 until euthanasia.

13.2. Maternal Observations during Gestation

Detailed clinical observations will be recorded daily prior to administration of new daily water bottles. Mortality and all signs of overt toxicity will be recorded on the day observed. The observations shall include, but are not limited to, evaluations for changes in appearance of skin and fur, eyes, mucous membranes, respiratory and circulatory system, autonomic and central nervous systems, somatomotor activity, and behavior. All animals will also be observed on the day of necropsy and any findings will be recorded.

For the positive control substance treated group (Group 2 only), individual clinical observations will be recorded approximately 1 hour following each dose administration for findings that are potentially related to treatment or that might change before the next scheduled observation. Additional observations may be necessary and will be documented in the study records.

13.3. Body Weights

Individual body weights will be recorded on Gestation Days 0-21 (daily) for animals assigned to the main and exposure assessment phases.

13.4. Water Consumption

Individual water consumption (by weight) will be recorded on Gestation Days 0-21 (daily) for animals assigned to the main and exposure assessment phases.

The mean amount of TCE received by each group of rats (test substance consumption) will be calculated upon completion of the study based on mean water consumption of each group and the target concentration of the test substance in water formulations. For consistency and ease of reporting, concentrations for each dose group will be referred to by the initial target concentration as has been used in previously published reports.[2]

13.5. Food Consumption

Individual food consumption will be recorded on Gestation Days 0-21 (daily) for animals assigned to the main phase. Food intake will be reported as g/animal/day and g/kg/day for each corresponding body weight interval of gestation.

Food consumption will not be recorded for animals assigned to the exposure assessment phase.

13.6. Deaths and Animals Euthanized in Extremis

Females not surviving until the scheduled euthanasia will be necropsied (as soon as possible upon discovery) and cause of death recorded, if possible. Rats not expected to survive to the next observation period (moribund) will be euthanized by carbon dioxide inhalation. The cranial, thoracic, abdominal, and pelvic cavities will be opened and the organs examined. The number and location of implantation sites and viable fetuses will be recorded. Corpora lutea will also be counted and recorded. Uteri which appear nongravid by macroscopic examination will be opened and placed in 10% ammonium sulfide solution for detection of early implantation loss.[6] Gross lesions will be preserved in 10% neutral-buffered formalin for possible future histopathologic examination. Carcasses from adult animals will be discarded. Viable fetuses will be euthanized by a subcutaneous injection of sodium pentobarbital in the scapular region. Recognizable fetuses will be examined externally and preserved in 10% neutral-buffered formalin.

Animals dying or euthanized *in extremis* (by carbon dioxide inhalation) that are assigned to the exposure assessment phase will have pregnancy status determined (by ammonium sulfide, if necessary). Viable fetuses will be euthanized by a subcutaneous injection of sodium pentobarbital in the scapular region. Carcasses of the dams and fetuses will be discarded.

13.7. Premature Deliveries

Females that deliver prematurely will be euthanized by carbon dioxide inhalation that day. The thoracic, abdominal, and pelvic cavities will be opened and the organs examined. The number and location of former implantation sites and viable fetuses will be recorded. Corpora lutea will also be counted and recorded. Gross lesions will be preserved in 10% neutral-buffered formalin for possible future histopathologic examinations. Carcasses from adult animals will be discarded. Viable fetuses or pups will be euthanized by a subcutaneous (scapular region) or intraperitoneal injection of sodium pentobarbital (as appropriate). Recognizable fetuses or pups will be examined externally and preserved in 10% neutral buffered formalin. Recognizable fetuses or pups aborted on GD 21 will be examined according to the fetal examination section (Section 15.2), if possible.

Females that deliver prematurely that are assigned to the exposure assessment phase will be euthanized by carbon dioxide inhalation that day and identified as gravid. Viable pups will be euthanized by an intraperitoneal injection of sodium pentobarbital. Carcasses of the dams and pups will be discarded.

14. LABORATORY EVALUATIONS (EXPOSURE ASSESSMENT PHASE)

14.1. Intervals

Dams: Gestation days 8, 12 and 21

Fetuses: Gestation Day 21

14.2. Blood Collection Time Points

Dams (Gestation Day 8 and 12): A single blood sample will be collected from each dam between 0830 and 0930 hours.

Dams and Fetuses (Gestation Day 21): A single blood sample will be collected from each dam just prior to euthanasia. Immediately following blood collection, each dam will be euthanized by carbon dioxide inhalation and uteri which appear gravid by macroscopic examination will be removed for fetal blood collection. For any dams that initiate parturition prior to blood collection, blood samples will be still be collected, as scheduled on Gestation Day 21/Lactation Day 0. Delivered pups (Postnatal Day 0) belonging to these females will be bled in the same manner as the Gestation Day 21 fetuses.

14.3. Number of animals

Dams: Four (4) females/group assigned to the exposure assessment phase.

Fetuses: Four (4) litters per group from dams assigned to the exposure assessment phase. Blood will be pooled by litter, without regard to fetal sex.

14.4. Method/Route of Collection

Dams: via the jugular vein using the hand-held restraint method.

Fetuses: via cardiac puncture under isoflurane anesthesia. Delivered pups (Postnatal Day 0) belonging to any females that deliver prior to blood collection will be bled in the same manner as the Gestation Day 21 fetuses.

14.5. Target Blood Volume

Dams: 0.5 mL/animal/time point; samples will be transferred as rapidly as possible from the collection syringe into pre-chilled, uniquely labeled tubes. Samples will be protected from light, to the extent possible.

Fetuses: As much blood as possible; blood will be pooled by litter regardless of sex. Samples will be transferred as rapidly as possible from the collection catheter/syringe into pre-chilled, uniquely labeled tubes. Samples will be protected from light, to the extent possible.

14.6. Anticoagulant

Lithium Heparin

14.7. Sample Handling and Plasma Preparation

Samples will be kept on wet ice, protected from light, following blood collection and through centrifugation, plasma collection, and storage. All samples will be centrifuged (approximately 3000 rpm [approximately 2056xg] for approximately 10 min) at approximately 4°C **within 45 minutes of collection based on analytical method development.** Samples will be processed under amber light.

14.8. Aliquots

The maximum amount of plasma will be recovered and plasma will be transferred into new, uniquely-labeled amber polypropylene tubes.

14.9. Label Information

Samples, and/or accompanying paperwork, will include study number, dose group, animal number, Gestation Day interval, number of pups (in pooled samples), sample type, date and time of blood collection.

14.10. Sample Storage and Transfer

Maternal and fetal plasma samples will be stored in a freezer set to maintain a target of -70°C until transferred to the Charles River Bioanalytical Chemistry Department for analysis for the assessment of TCA concentrations using a method being developed and validated on a concurrent study.[7] The time and date that the samples are placed in the freezer will be recorded.

Any remaining samples kept at Charles River will be discarded following acceptance of the bioanalytical results by the Study Director.

The plasma analysis report will be included as an appendix to the Charles River final report.

14.11. Disposition of Animals/Laparotomy

All exposure assessment phase rats will be euthanized by carbon dioxide inhalation following the last blood collection (GD 21). Uteri which appear gravid by macroscopic examination will be removed immediately for fetal blood collection and the dams will be identified as gravid. Uteri which appear nongravid by macroscopic examination will be opened and placed in 10% ammonium sulfide solution for detection of early implantation loss.[6] Following blood collection, fetuses will be euthanized by decapitation. Carcasses of the dams and fetuses will be discarded without further examination.

14.12. Exposure Assessment

Plasma concentrations of TCA in maternal and fetal samples will be summarized and presented in the main report text. Based on the limited blood sampling, the analysis of exposure data will be limited to mean concentrations, by group, and maternal and fetal concentration ratios.

15. TERMINAL PROCEDURES – GESTATION DAY 21 (PRENATAL DEVELOPMENT PHASE)

15.1. Laparohysterectomy and Macroscopic Examination

Laparohysterectomy and macroscopic examinations will be performed blind to treatment group. All surviving rats will be euthanized by carbon dioxide inhalation on Gestation Day 21. The thoracic, abdominal, and pelvic cavities will be opened and the organs examined. The uterus of each dam will be excised and its adnexa trimmed. Corpora lutea will be counted and recorded. Gravid uterine weights will be obtained and recorded. The uterus of each dam will be opened and the number of viable and nonviable fetuses, early and late resorptions, and total number of implantation sites will be recorded, and the placentae will be examined. The individual uterine distribution will be documented using the following procedure: all implantation sites, including early and late resorptions, will be numbered in consecutive fashion beginning with the left distal uterine horn, noting the position of the cervix and continuing from the proximal to the distal right uterine horn. Uteri which appear nongravid by macroscopic examination will be opened and placed in a 10% ammonium sulfide solution for detection of early implantation loss.[6] Maternal tissues will be preserved for future histopathologic examination in 10% neutral-buffered formalin only as deemed necessary by the gross findings. Representative sections of corresponding organs from a sufficient number of controls will be retained for comparison, if possible. The carcasses will be discarded.

15.2. Fetal Examination

Fetal examinations will be conducted without knowledge of treatment group. All fetuses will receive an external examination. **Internal (visceral) examination will be limited to an examination of the heart and great and major blood vessels only.** Representative photographs of all cardiac and great and major blood vessel malformations, as appropriate, will be included in the study records, for illustrative purposes only. In addition, representative photographs of a normal littermate, will also be included in the study records, as needed and as appropriate, for comparison, where possible. **Representative photographs of all malformations with comparison photographs of normal fetuses will be included in the final report, for illustrative purposes only.** Prenatal data (viable and nonviable fetuses, early and late resorptions, pre- and post-implantation loss, and the fetal sex distribution) will be presented on a group mean basis and additionally as proportional data (% per litter).

15.2.1. External

Each viable fetus will be examined in detail, sexed, weighed, and euthanized by a subcutaneous injection of sodium pentobarbital in the scapular region. Nonviable fetuses (the degree of autolysis is minimal or absent) will be examined, crown-rump length measured, weighed, sexed and tagged individually. The crown-rump length of late resorptions (advanced degree of autolysis) will be measured, the degree of autolysis recorded, a gross external examination performed (if possible), and the tissue will be discarded.

15.2.2. Visceral (Internal)

Fetuses will be examined for visceral cardiac anomalies by dissection in the fresh (non-fixed) state. The thoracic cavity will be opened and dissected using a technique described by Stuckhardt and Poppe[8] with the exception that internal examination will be limited to a thorough examination of the heart and great and major blood vessels only. **Any observed ventricular septal defects will be categorized by size (<1 mm, 1 to 2 mm, or >2 mm) and location (muscular or membranous).** The abdomen will be opened with the sole purpose of internal confirmation of the sex of all fetuses. All carcasses will be discarded following completion of internal examination.

16. STATISTICAL METHODS

All analyses will be two-tailed for significance levels of 5% and 1%. All statistical tests will be performed using a computer with appropriate programming as referenced below. Data from nongravid females will be excluded from calculation of means and from comparative statistics. The litter, rather than the fetus, will be considered as the experimental unit.

Comparative statistics will not be performed on in-life or necropsy data from exposure assessment phase animals.

Data for the positive control substance group will be compared to the control group using a two-sample t-test[9] to determine intergroup differences.

16.1. Maternal In-Life Data

Continuous data variables (maternal body weights [absolute and net], body weight gains [absolute and net], food, and water consumption of each interval) will be subjected to a parametric one-way analysis of variance (ANOVA).[10] If the results of the ANOVA are significant ($p<0.05$), Dunnett's test[11] will be applied to the data to compare the test substance treated groups to the control group.

16.2. Laparohysterectomy Data

The group mean numbers of corpora lutea, implantation sites, viable fetuses, maternal gravid uterine weights and mean fetal weight (separately by sex, and combined) will be subjected to a parametric one-way analysis of variance (ANOVA) and Dunnett's test as described above.[10,11] The mean litter proportions of prenatal data (% per litter of viable and nonviable fetuses, early

and late resorptions, total resorptions, pre- and post-implantation loss, and the fetal sex distribution) will be subjected to the Kruskal-Wallis nonparametric ANOVA test[12] to determine intergroup difference. If the results of the ANOVA are significant ($p<0.05$), Dunn's test[13] will be applied to the data to compare the test substance treated groups to the control group.

16.3. Fetal Morphology Data

The mean litter proportion (% per litter) of total fetal cardiac malformations and developmental variations and of each particular visceral cardiac malformation or variation will be tabulated. The mean litter proportions of fetal cardiac malformations and developmental variations will be subjected to the Kruskal-Wallis nonparametric ANOVA test followed by Dunn's test (if appropriate), to compare the test substance treated groups to the control group, as described above.[12,13]

17. MAJOR COMPUTER SYSTEMS - DATA ACQUISITION, ANALYSIS, AND REPORTING

The following critical computerized systems may be used in the study. The actual critical computerized systems used will be specified in the Final Report.

Data for parameters not required by protocol, which are automatically generated by analytical devices used will be retained on file but not reported.

Statistical analysis results that are generated by the program but are not required by protocol and/or are not scientifically relevant will be retained on file but will not be included in the tabulations.

All computerized systems used for data collection during the conduct of this study have been validated (with the exception of Microsoft Office and GraphPad Prism® 2008); when a particular system has not satisfied all requirements, appropriate administration and procedural controls were implemented to assure the quality and integrity of the data.

The actual version number will be specified in the report.

Critical Computerized Systems

Program/System	Description
Bio Medic Data Systems (BMDS) Implantable Micro Identification™ (IMI-1000 or IMI-500)	Animal identification
Dionex Chromeleon® software, Varian MS Workstation® software, Agilent ChemStation® software, or Molecular Devices SpectraMax® software	Used for chromatographic data acquisition and quantitation
Logbook™ ELN	System (Instem) used to document study events.
Metasys DDC Electronic Environmental Control System	Controls and monitors animal room environmental conditions.
Microsoft Office 2010 or higher; GraphPad Prism® 2008	Used in conjunction with the publishing software to generate study reports.
Provantis Dispense™	Comprehensive system (Instem LSS Limited) to manage test materials, including receipt, formulation instructions, and accountability.
Watson LIMS™	Laboratory Information Management System used for sample tracking, run planning, quantitation, and reporting results.
WIL Formulations Dispense System (WFDS)	In-house developed system for use in conjunction with Provantis Dispense™ to ensure proper storage and use of formulations.
WIL Metasys	In-house developed system used to record and report animal room environmental conditions.
WIL Toxicology Data Management System™ (WTDMS™)	In-house developed system used for collection and reporting of in-life and postmortem data.

Note: Version numbers of WTDMS™ programs used for the study are presented on the report data tables (reporting programs); version numbers and release dates are otherwise maintained in the study records and/or facility records.

18. AMENDMENTS AND DEVIATIONS

Changes to the approved protocol shall be made in the form of an amendment, which will be signed and dated by the Study Director. Every reasonable effort will be made to discuss any necessary protocol changes in advance with the Sponsor.

All protocol and SOP deviations will be documented in the study records. Deviations from the protocol and/or SOP related to the phase(s) of the study conducted at a Test Site shall be documented, acknowledged by the PI/IS, and reported to the Study Director for authorization/acknowledgement. The Study Director will notify the Sponsor of deviations that may result in a significant impact on the study as soon as possible.

19. RETENTION OF RECORDS, SAMPLES, AND SPECIMENS

All study-specific raw data, electronic data, documentation, protocol, retained samples and specimens, and interim (if applicable) and final reports will be archived by no later than the date of final report issue. All materials generated by Charles River from this study will be transferred

to a Charles River archive. At least 1 year after issue of the Draft Report, the Sponsor will be contacted.

For work product shipped or generated by a test site, archiving will be conducted per test site SOPs and will be described in the test site report.

Unless otherwise indicated, any remaining clinical pathology, toxicokinetic, and/or analytical samples will not be archived, but will be discarded prior to issuance of the final report.

Any work product, including documents, specimens, and samples, that are required by this protocol, its amendments, or other written instructions of the Sponsor to be shipped by Charles River to another location will be appropriately packaged and labeled as defined by Charles River SOPs and delivered to a common carrier for shipment. Charles River will not be responsible for shipment following delivery to the common carrier.

20. REPORTING

A comprehensive Draft Report will be prepared following completion of the study and will be finalized following consultation with the Sponsor. The report will include all information necessary to provide a complete and accurate description of the experimental methods and results and any circumstances that may have affected the quality or integrity of the study.

The Sponsor will receive an electronic version of the Draft and Final Report provided in Adobe Acrobat PDF format (hyperlinked and searchable at final) along with a Microsoft Word version of the text. The PDF document will be created from native electronic files to the extent possible, including text and tables generated by the Testing Facility. Report components not available in native electronic files and/or original signature pages will be scanned and converted to PDF image files for incorporation.

Reports should be finalized within 6 months of issue of the Audited Draft Report. If the Sponsor has not provided comments to the report within 6 months of draft issue, the report will be finalized by the Testing Facility unless other arrangements are made by the Sponsor.

21. ANIMAL WELFARE

This study will comply with all applicable sections of the Final Rules of the Animal Welfare Act regulations (Code of Federal Regulations, Title 9), the *Public Health Service Policy on Humane Care and Use of Laboratory Animals* from the Office of Laboratory Animal Welfare,[14] and the *Guide for the Care and Use of Laboratory Animals* from the National Research Council.[15] The protocol and any amendments or procedures involving the care or use of animals in this study will be reviewed and approved by the Testing Facility Institutional Animal Care and Use Committee before the initiation of such procedures.

If an animal is determined to be in overt pain/distress, or appears moribund and is beyond the point where recovery appears reasonable, the animal will be euthanized for humane reasons in accordance with the *American Veterinary Medical Association (AVMA) Guidelines on Euthanasia* and with the procedures outlined in the protocol.[16]

By approving this protocol, the Sponsor affirms that there are no acceptable non-animal alternatives for this study, and that it does not unnecessarily duplicate any previous experiments.

22. REFERENCES

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AMENDMENT APPROVAL

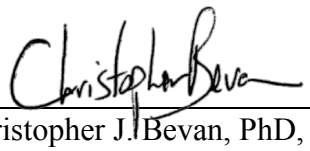
The signature below indicates that the Study Director approves the protocol amendment.

Date: 27 July 2018

Prägati Sawhney Coder, PhD, DABT
Director, Developmental and Reproductive Toxicology
Study Director

SPONSOR APPROVAL

This protocol amendment was approved by the Sponsor via email on 26-Jul-2018. The signature below confirms the approval of the protocol amendment by the Sponsor Representative.



Date: 27 July 2018

Christopher J. Bevan, PhD, DABT
Director, Scientific Programs
Halogenated Solvents Industry Alliance, Inc.
Sponsor Representative

FINAL PROTOCOL

Testing Facility Study No. 00459506

An Oral (Drinking Water) Study of the Effects of Trichloroethylene (TCE) on Fetal Heart Development in Sprague Dawley Rats

SPONSOR:
Halogenated Solvents Industry Alliance, Inc.
3033 Wilson Boulevard, Suite 700
Arlington, VA 22201
USA

TESTING FACILITY:
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1. OBJECTIVES

The objective of this study is to determine the potential of trichloroethylene (TCE) to induce cardiac defects in the offspring after maternal exposure from the day after copulation to 1 day prior to expected parturition, to characterize maternal toxicity at the exposure levels tested and to determine a NOAEL (no-observed-adverse-effect level) for maternal and cardiac developmental toxicity.

In addition, plasma concentrations of TCA (trichloroacetic acid, the primary metabolite of trichloroethylene) will be assessed in maternal and fetal plasma.

1.1. Study Classification

Study Category:	Developmental and Reproductive Toxicology
Study Type:	Prenatal Development
Study Design:	Parallel
Primary Treatment CAS Registry Number:	79-01-6
Primary Treatment Unique Ingredient ID:	Trichloroethylene
Class of Compound:	Solvent

2. PROPOSED STUDY SCHEDULE

Proposed study dates are listed below. Actual applicable dates will be included in the Final Report.

Animal Arrival:	17 Jul 2018
Initiation of Dosing:	25 Jul 2018
Completion of In-life:	20 Aug 2018
Audited Draft Report:	29 Oct 2018

3. GUIDELINES FOR STUDY DESIGN

This study will be conducted in general accordance with the United States Environmental Protection Agency (EPA) Health Effects Test Guidelines OPPTS 870.3700, Prenatal Developmental Toxicity Study, August 1998, and the Organisation of Economic Cooperation and Development Guidelines (OECD) for the Testing of Chemicals Guideline 414, Prenatal Developmental Toxicity Study, January 2001.

4. REGULATORY COMPLIANCE

This study will be conducted in compliance with the United States Environmental Protection Agency (EPA) TSCA (40 CFR Part 792) Good Laboratory Practice Standards and as accepted by regulatory authorities throughout the European Union (Organization for Economic Cooperation

and Development), Japan, and other countries that are signatories to the OECD Mutual Acceptance of Data Agreement. Exceptions to GLPs include the following study elements:

- Test substance characterization will not be conducted according to GLP standards.

5. QUALITY ASSURANCE

5.1. Testing Facility

The Testing Facility Quality Assurance Unit (QAU) will monitor the study to assure the facilities, equipment, personnel, methods, practices, records, and controls are in conformance with Good Laboratory Practice regulations. The QAU will review the protocol, conduct inspections at intervals adequate to assure the integrity of the study, and audit the Final Report to assure that it accurately describes the methods and standard operating procedures and that the reported results accurately reflect the raw data of the study.

The Testing Facility QAU contact for this study is indicated below:

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6. SPONSOR

Sponsor Representative

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7. RESPONSIBLE PERSONNEL

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Plasma Analysis	Joelle Lucarell, BS Research Scientist II, Bioanalytical Chemistry Address as cited for Testing Facility Tel: (419) 289-8700 Fax: (419) 289-3650 Email: Joelle.Lucarell@crl.com

Each IS is required to report any deviations or other circumstances that could affect the quality or integrity of the study to the Study Director in a timely manner and the Study Director will provide notification to the Sponsor Representative within 24 hours. Each IS will provide a report addressing their assigned phase of the study, which will be included as an appendix to the Final Report.

The phase report will include the following:

- A listing of critical computerized systems used in the conduct and/or interpretation of the assigned study phase.

8. TEST SUBSTANCE, POSITIVE CONTROL SUBSTANCE AND VEHICLE DATA

8.1. Test Substance

8.1.1. Identification

Trichloroethylene (TCE) (CAS No. 79-01-6) ≥99% and scavenger-free

Purchased from Spectrum Chemical Manufacturing Corp. (T1115 reagent grade, or equivalent).

8.1.2. Characterization

Lot numbers, purity, stability, and storage conditions will be provided by the Supplier/Manufacturer, documented in the study records and included in the Final Report.

8.1.3. Storage Conditions

In a room with controls set to maintain 18°C to 24°C, protected from light.

8.1.4. Physical Description

To be documented by Charles River.

8.1.5. Reserve Samples

Reserve samples of the test substance will be taken in accordance with Charles River Standard Operating Procedures and stored in the Charles River Archives.

8.1.6. Personnel Safety Data

A Safety Data Sheet (SDS) is to be provided by the Supplier/Manufacturer. Standard safety precautions will apply.

8.1.7. Test Article Disposition

With the exception of the reserve sample for each batch of test article (if applicable), all neat test article remaining at study completion will be discarded appropriately.

8.2. Positive Control Substance

8.2.1. Identification

all-*trans* Retinoic Acid ≥98% by HPLC (CAS No. 302-79-4)

Purchased from Sigma-Aldrich, Inc. (R2625, or equivalent)

8.2.2. Characterization

Lot numbers, purity, stability, and storage conditions will be provided by the Supplier/Manufacturer, documented in the study records and included in the Final Report.

8.2.3. Storage Conditions

In a freezer, set to maintain -20ºC, protected from light.

8.2.4. Physical Description

To be documented by Charles River

8.2.5. Reserve Samples

Reserve samples of the positive control substance will be taken in accordance with Charles River Standard Operating Procedures and stored in the Charles River Archives.

8.2.6. Personal Safety Data

A Safety Data Sheet (SDS) is to be provided by the Supplier/Manufacturer. Standard safety precautions will apply.

8.3. Vehicle (for Drinking Water Formulations)

8.3.1. Identification

Reverse osmosis-purified water

8.3.2. Characterization

Water used on-site is subject to routine monitoring as indicated in SOP A-067. Standard safety precautions will apply.

8.4. Vehicle (for Positive Control Formulations)

8.4.1. Identification

Soybean oil (CAS No. 8001-22-7)

Purchased from Sigma-Aldrich, Inc. (S7381 dietary grade, or equivalent)

8.4.2. Characterization

Lot numbers, purity, stability, and storage conditions will be provided by the Supplier/Manufacturer, documented in the study records and included in the Final Report.

9. PREPARATION AND ANALYSIS OF TEST AND POSITIVE CONTROL SUBSTANCE FORMULATIONS

9.1. Test Substance Formulations

9.1.1. Method and Frequency of Preparation

Based on the physical characteristics of the test substance, appropriate methods will be used to ensure the best possible formulations of the test substance in the vehicle. Test substance formulations will be prepared daily, in a closed system, under amber light, without sonication, and stored and transported in the same closed system amber formulation bottles (for light protection). Each amber formulation bottle will be purged with nitrogen, sealed with a foil liner and silicone septum fitted with a fabricated siphon valve system built at Charles River Ashland.

All formulation batches will be prepared at volumes large enough to minimize headspace. The 500 and 1000 ppm concentrations will be prepared the day prior to dosing and stirred overnight at room temperature for at least 24 hours. The 0.25 and 1.5 ppm concentrations will be prepared via dilution of higher concentrations on the day of dose administration. Test substance formulations will be stored at room temperature (18°C to 24°C) following preparation and until transfer into drinking water bottles for administration to study animals.

For transfer into drinking water bottles, the inlet valve on each formulation bottle will be connected to a nitrogen source to allow nitrogen to displace dosing formulations that are removed via the outlet value. Purging of any headspace with nitrogen will help reduce volatilization of TCE and ensures that residual water formulations do not come in contact with ambient air. Drinking water bottles will be filled by allowing the water to flow along the inner wall, to reduce splashing, bubbling and volatilization of TCE.

Any procedures not covered by SOPs required for formulation will be approved by the Study Director and included in the study records.

The Study Director or designee will visually inspect the test substance formulations prior to initiation of dosing. This visual inspection will be performed to ensure that the formulations are visibly homogeneous and acceptable for dosing.

9.1.2. Solubility and Stability of Test Substance in Drinking Water Formulations

Test substance formulations in drinking water will be analyzed using a method previously developed and validated at Charles River Ashland.[1] Solubility and stability of the test substance in the vehicle following room temperature (18°C to 24°C) storage for at least 24 hours, and following frozen (purged with nitrogen, -10°C to -20°C) storage, at the range of concentrations being used on the current study was previously established.[1] Therefore, solubility and stability of test substance formulations will not be assessed on the current study.

9.1.3. Concentration of Test Substance in Drinking Water Formulations

Concentration of test substance in "as-delivered" dosing formulations, including the vehicle control, will be assessed on the 1st, 2nd, 3rd, 7th, 12th, 15th, 22nd and last batch of drinking water formulations. For analytical purposes, the last batch will be the last day all prepared batches (at all concentrations) are used for administration to animals (i.e. taking into consideration breeding stagger). Samples for possible concentration assessment will also be collected from all remaining daily batches, purged with nitrogen, and stored in a freezer set to maintain a target of -20ºC.

Sampling, processing and analysis of prepared drinking water formulations will be conducted on the day of distribution prior to transfer into drinking water bottles for administration to study animals according to the table below. **For preparations scheduled for analysis, samples will be processed and analyzed as soon as possible following collection.**

Test Substance Formulation Sampling Scheme

Group(s)	Time of Sampling	Formulation Container	Sample Scheme and Volume[a]	Formulation Preparation Number(s)[b]
1, 3-6	Time of Prep (Closed System)	Amber Formulation Bottle	2 x 10 mL	First, 2nd, 3rd, 7th, 12th, 15th, 22nd and Last
1, 3-6	Time of Dispensation (Open System)	Amber Drinking Water Bottle	2 x 10 mL	First, 2nd, 3rd, 7th, 12th, 15th, 22nd and Last
1, 3-6	24h Post-Dispensation (Open System)	Amber Drinking Water Bottle	(2 x 10 mL) x 3 bottles	First and Last

[a] All samples will be collected from the middle stratum, into amber glass auto-sampler vials with rubber stoppers, and crimped tops.

[b] For analytical purposes, the last batch will be the last day all prepared batches (at all concentrations) are used for administration to animals (i.e. taking into consideration breeding stagger).

Following acceptance of each set of analytical results, by the study director and the Sponsor Representative, any prior unanalyzed batches up until that point will be discarded appropriately (e.g. following analysis of the 7th batch, and acceptance of the analytical results, samples from the 4th, 5th and 6th (unanalyzed) batches will be discarded.

For consistency and ease of reporting, concentrations for each dose group in the protocol and report tables will be referred to by the initial (target) concentration as has been used in previously published reports.[2,3] Calculated compound consumption will be based on analytically confirmed concentrations at each assessment interval.

The target acceptance criteria for concentration assessment of TCE in drinking water formulations will be mean concentrations within 100% ± 20% (80-120%) of the target concentration. However, because of the volatility of the test substance, it is recognized that this acceptance criteria may not be achievable for each formulation and concentration. If any formulations do not meet acceptance criteria, the impact of the out-of-specification results will be addressed in the report.

24-hour Loss Monitoring – Samples collected 24-hours post-dispensation will be collected from "used' water bottles in the animal room and will be processed and analyzed for concentration assessment as soon as possible following collection. Because of the open system and the volatility of the test substance, measured concentrations will be reported as-is i.e. target acceptance criteria will not apply to 24-hour loss monitoring samples. Loss of TCE at each concentration, will be calculated by averaging of the three sampled bottles and comparison against corresponding Time Zero concentrations (measured concentrations prior to transfer into drinking water bottles) and will be reported as a Percent 24-Hour Loss for each concentration.

The final analytical report will be incorporated as an appendix to the Charles River final report.

9.2. Positive Control Substance

9.2.1. Method and Frequency of Preparation

Based on the physical characteristics of the positive control substance, appropriate methods will be used to ensure the best possible formulations in the vehicle, soybean oil, which may be warmed to ensure solubilization, if necessary. Positive control substance formulations will be prepared under amber light and stored and transported in amber aliquot bottles for light protection. Positive control substance formulations will normally be prepared approximately weekly, divided into aliquots for daily dispensation, purged with nitrogen and stored in a freezer, set to maintain a target of -20ºC. The positive control formulations will be thawed for each day of administration, and dispensed after remixing for a minimum of 30 minutes (after the aliquots are fully thawed) using a magnetic stirrer. Positive control formulations will be stirred continuously during dosing.

Any procedures not covered by SOPs required for formulation will be added to the protocol by protocol amendment and presented in the final report of this study.

9.2.2. Concentration of Positive Control Substance in Soybean Oil Formulations

Positive control formulations in the vehicle, soybean oil, will not be assessed for solubility, concentration, homogeneity, or stability. All-*trans* retinoic acid (RA) is a commercially available drug substance that will be prepared in general accordance with package specifications. It is a well characterized developmental toxicant that has been previously demonstrated to result in heart malformations in this strain of rat.[4]

Sampling of positive control substance dosing formulations will be conducted for future possible concentration assessments according to the table below. Samples will be purged with nitrogen and stored in a freezer set to maintain a target of -20ºC.

Positive Control Substance Formulation Sampling Scheme

Group(s)	Time of Sampling	Formulation Container	Sample Scheme and Volume	Formulation Preparation Number(s)
2	Time of Prep	First Aliquot	2 x 1 mL	All
2	Time of Dispensation	Last Aliquot	2 x 1 mL	All

If samples are analyzed, the final analytical report will be incorporated as an appendix to the Charles River final report.

Following completion of the in-life phase of the study and the acceptance of study results by the study director and the Sponsor Representative, any unanalyzed samples will be discarded appropriately (i.e. samples will not be archived, but will be discarded prior to issuance of the final report).

10. TEST SYSTEM

Species:	Rat
Strain:	Sprague Dawley Crl:CD(SD)
Condition:	Naïve, Nonpregnant
Source:	Charles River Laboratories, Inc. (Raleigh, North Carolina)
Number of Males Ordered:	A sufficient number of sexually mature untreated resident males of the same strain and source will be purchased to induce pregnancies.
Number of Females Ordered:	210
Target Age at the Initiation of Breeding:	80 to 120 days at the initiation of breeding
Target Weight on Gestation Day 0:	A minimum of 220 g

Animals not assigned to the study will be transferred to the animal colony or will be euthanized by carbon dioxide inhalation and the carcasses discarded. The actual age and weight of animals received will be listed in the Final Report.

10.1. Identification System

A permanent animal number will be assigned to each individual animal. Each animal will be identified using a subcutaneously implanted electronic identification microchip (BMDS system). The microchip will be the primary means to uniquely identify animals assigned to study. Individual cage cards will be affixed to each cage and will display at least the animal number, group number, dosage level, study number, and sex of the animal.

Replacement microchips may be implanted as necessary throughout the course of the study. An ear tag may be used as the alternate unique identifier.

10.2. Justification for Selection

The purpose of this study is to replicate the findings of Dawson et al.[3] and Johnson et al.[2] In these studies it was reported that there was an increase in cardiac malformations in the fetuses of pregnant female Sprague Dawley rats administered TCE in drinking water.

This species and strain of rat has been recognized as appropriate for developmental toxicity studies. Charles River has historical data on the background incidence of fetal malformations and developmental variations in this species from the same strain and source. This animal model has been proven to be susceptible to the effects of developmental toxicants

10.3. Number of Study Animals

The number of animals is based on the US EPA Health Effects Test Guidelines OPPTS 870.3700, Prenatal Development Toxicity Study, August 1998 and the OECD Guidelines for the Testing of Chemicals: Guideline 414, Prenatal Developmental Toxicity Study, January 2001, which recommend evaluation of approximately 20 females with implantation sites at necropsy. Given the possibility of nongravid animals, unexpected deaths, or treatment-related moribundity and/or mortality, 25 females/group is an appropriate number to obtain a sample size of 20 females at termination.

The number of animals assigned to the toxicokinetic phase (4 females/group) is also based on the possibility of nongravid animals, unexpected deaths, or treatment-related moribundity and/or mortality; this is an appropriate number of animals to obtain at least 3 blood samples per time point.

11. SPECIFIC ANIMAL MAINTENANCE SCHEDULE

11.1. Animal Receipt and Acclimation

Each rat will be inspected by a qualified technician upon receipt. Rats judged to be in good health and suitable as test animals will be immediately placed in acclimation for a minimum of 7 days. All rats will be initially weighed, permanently identified with a microchip, and will receive a detailed clinical observation. During the acclimation period, each rat will be observed twice daily for changes in general appearance and behavior. Body weights will be recorded prior to the initiation of breeding. Prior to the start of breeding, those rats judged to be suitable test subjects will be identified.

During social housing, some observations (e.g., fecal observations) may not be attributable to an individual animal. In these instances, observations will be recorded in a separate computer file for the social group.

11.2. Animal Housing

Female rats will be housed, 2-3 per cage, in clean solid-bottom cages with bedding material (Bed O'Cobs® or other suitable material) for at least 3 days following receipt in an environmentally controlled room. Following positive signs of mating, each female will be individually housed in clean, solid-bottom cages with bedding material (Bed O'Cobs® or other suitable material) until euthanasia. Animals may be temporarily separated for protocol-specified activities and this will be documented in the study records. In addition, animals may be individually housed due to incompatible behavior with a cage mate(s) or for health monitoring purposes requested by the veterinarian. Animals whose cage mate(s) are removed from study

(morbidity, unscheduled death, etc.) will not be re-paired but will remain individually housed for the remainder of the study.

The cages will be subjected to routine cleaning at a frequency consistent with maintaining good animal health and Charles River Standard Operating Procedures. The facilities at Charles River Ashland are accredited by the Association for Assessment and Accreditation of Laboratory Animal Care International (AAALAC International).

Individual housing of presumed pregnant females is required to adequately monitor the health of these females by allowing collection of individual food consumption and appropriate identification of cage observations in the event of abortion or early delivery

11.3. Environmental Conditions

Controls will be set to maintain temperature at 73 ± 5°F (23 ± 3°C) and relative humidity at 50 ± 20%. Temperature and relative humidity will be monitored continuously. Data for these 2 parameters will be scheduled for automatic collection on an hourly basis. Fluorescent lighting controlled by light timers will provide illumination for a 12-hour light/dark photoperiod. The ventilation rate will be set at a minimum of 10 room air changes per hour, 100% fresh air.

11.4. Drinking Water

Cage banks will not be connected to the automated watering system. Reverse osmosis-purified water (with test substance added during the treatment period for animals assigned to Groups 3-6) will be available *ad libitum* via amber glass water bottles with metal sipper tubes. Bottles will be checked daily for spillage and supplemented as necessary and the occurrence of spillage will be documented. During the treatment period, bottles will be changed daily. The municipal water supplying the laboratory is analyzed according to Charles River Ashland SOPs on a routine basis to ensure that contaminants are not present in concentrations that would be expected to affect the outcome of the study.

11.5. Basal Diet

PMI Nutrition International, LLC Certified Rodent LabDiet® 5002 will be offered *ad libitum* during the study. Periodic analyses of the certified feed are performed by the manufacturer to ensure that heavy metals and pesticides are not present at concentrations that would be expected to affect the outcome of the study. Results of the analyses are provided to Charles River by the manufacturer. Feeders will be changed and sanitized once per week.

11.6. Environmental Enrichment

Enrichment devices will be provided to each animal for environmental enrichment beginning during acclimation, and continuing throughout the course of the study.

12. EXPERIMENTAL DESIGN

12.1. Breeding Procedure

At the conclusion of the acclimation period, female rats judged to be suitable test subjects and meeting acceptable body weight requirements will be cohabitated with untreated resident male rats (1:1) of the same strain and source in solid-bottom cages for mating. Detection of mating will be confirmed by the appearance of a vaginal copulatory plug or by evidence of sperm in a vaginal lavage. Vaginal lavages will be performed daily during the mating period until evidence of mating is observed. After confirmation of mating, the female will be returned to an individual solid bottom cage (assigned to a group), and the day will be designated as day 0 of gestation.

12.2. Animal Selection and Randomization

Mated females will be assigned to groups using a WIL Toxicology Data Management System (WTDMS™) computer program which assigns animals based on stratification of Gestation Day 0 body weights into a block design to 1 vehicle control group, 1 positive control group and 4 test substance groups of 25 rats each for the prenatal developmental (Main) phase. For the exposure assessment (Exp.) phase, the vehicle control and 4 test substance groups will consist of 4 rats each.

Following the initiation of dosing, it may be necessary to add individual animal(s) (due to animals being found dead, euthanized *in extremis*, exhibiting abnormal clinical signs, reduced food consumption, body weigh losses, or dosing errors). Individual animals that are added to the study will be selected from the remaining unassigned mated animals, and assigned arbitrarily (not computer randomized) to the study based on comparable body weights (if possible) with respect to the animal(s) previously assigned to the study. The reason(s) for adding the animal(s) will be appropriately documented in the study records. The cut-off gestation age for adding animals to study is Gestation Day 1 for the vehicle control and test substance groups and Gestation Day 6 for the positive control group.

12.3. Organization of Test Groups, Dosage Levels, and Treatment Regimen

12.3.1. Rationale for Dose Selection

The dosage levels were selected based on previous published reports assessing fetal heart development in Sprague Dawley rats[2,4,5] and were provided by the Sponsor Representative after consultation with the Charles River Study Director.

The positive control substance, RA, is a well characterized developmental toxicant that has been previously demonstrated to result in heart malformations in this strain of rat. The dosage level of RA was also selected based on previously published reports.[4]

12.3.2. Organization of Test Groups

The following table presents the study group arrangement.

Study Design

Group Number	Test Substance	Dosage Level (mg/kg/day)	Dose Concentration	Dose Volume (mL/kg)	Route of Administration	Number of Females	
						Main	Exp.
1	Vehicle control	0	0 ppm	NA	Drinking Water	25	4
2	RA	15	3 mg/mL	5	Gavage	25	0
3	TCE	a	0.25 ppm	NA	Drinking Water	25	4
4	TCE	a	1.5 ppm	NA	Drinking Water	25	4
5	TCE	a	500 ppm	NA	Drinking Water	25	4
6	TCE	a	1000 ppm	NA	Drinking Water	25	4

a Dosage levels for the drinking water groups (i.e. mean amount of TCE received by each group of rats) will be calculated upon completion of the study based on mean water consumption of each group and target concentration of the test substance in water formulations. For consistency and ease of reporting, concentrations for each dose group will be referred to by the initial target concentration as has been used in previously published reports.[2]

12.3.3. Route and Rationale of Test Article Administration

The route of administration of the test substance will be oral (drinking water) as this is a potential route of exposure for humans.

The positive control substance, RA, will be administered via oral (gavage) as that route of exposure has been demonstrated to elicit a positive response.[4]

12.3.4. Treatment Regimen - Test and Positive Control Substances

Vehicle control or test substance drinking water formulations will be offered *ad libitum* from Gestation Day 1 through euthanasia (scheduled for Gestation Day 21). Water formulations will be supplied fresh on a daily basis, within ± 2-3 hours from the previous day.

The positive control substance will be administered as a single daily dose from Gestation Day 6 through 15, inclusively (Group 2 only). This is the standard dosing regimen for a prenatal developmental toxicity study and is expected to elicit a positive response.[4] All rats will be dosed at approximately the same time each day.

The positive control group (Group 2) will receive vehicle control drinking water formulations *ad libitum* from Gestation Day 1 through euthanasia. Water formulations will be supplied fresh on a daily basis.

12.3.5. Method of Test Article Administration

Control and treated drinking water formulations will be offered *ad libitum* in amber glass water bottles with metal sipper tubes. Water bottles will be changed and sanitized daily, and drinking water formulations will be supplied fresh on a daily basis.

The positive control substance will be administered orally by gavage (Group 2 only) using appropriately sized disposable plastic feeding tubes (Instech Laboratories, Plymouth Meeting, PA). The dose volume will be 5 mL/kg. Formulations will be stirred continuously at room temperature for the duration of the dosing procedure.

12.3.6. Adjustment of Dose Volumes

The test substance will be administered as a constant concentration (ppm) in water.

For the positive control substance treated group (Group 2), individual dosages will be calculated on the most recent body weight to provide the proper mg/kg/day dosage.

13. IN-LIFE PROCEDURES, OBSERVATIONS, AND MEASUREMENTS

13.1. Viability Observations

Each rat will be observed twice daily for moribundity and mortality, once in the morning and once in the afternoon from Gestation Day 0 until euthanasia.

13.2. Maternal Observations during Gestation

Detailed clinical observations will be recorded daily prior to administration of new daily water bottles. Mortality and all signs of overt toxicity will be recorded on the day observed. The observations shall include, but are not limited to, evaluations for changes in appearance of skin and fur, eyes, mucous membranes, respiratory and circulatory system, autonomic and central nervous systems, somatomotor activity, and behavior. All animals will also be observed on the day of necropsy and any findings will be recorded.

For the positive control substance treated group (Group 2 only), individual clinical observations will be recorded approximately 1 hour following each dose administration for findings that are potentially related to treatment or that might change before the next scheduled observation. Additional observations may be necessary and will be documented in the study records.

13.3. Body Weights

Individual body weights will be recorded on Gestation Days 0-21 (daily) for animals assigned to the main and exposure assessment phases.

13.4. Water Consumption

Individual water consumption (by weight) will be recorded on Gestation Days 0-21 (daily) for animals assigned to the main and exposure assessment phases.

The mean amount of TCE received by each group of rats (test substance consumption) will be calculated upon completion of the study based on mean water consumption of each group and the target concentration of the test substance in water formulations. For consistency and ease of reporting, concentrations for each dose group will be referred to by the initial target concentration as has been used in previously published reports.[2]

13.5. Food Consumption

Individual food consumption will be recorded on Gestation Days 0-21 (daily) for animals assigned to the main phase. Food intake will be reported as g/animal/day and g/kg/day for each corresponding body weight interval of gestation.

Food consumption will not be recorded for animals assigned to the exposure assessment phase.

13.6. Deaths and Animals Euthanized in Extremis

Females not surviving until the scheduled euthanasia will be necropsied (as soon as possible upon discovery) and cause of death recorded, if possible. Rats not expected to survive to the next observation period (moribund) will be euthanized by carbon dioxide inhalation. The cranial, thoracic, abdominal, and pelvic cavities will be opened and the organs examined. The number and location of implantation sites and viable fetuses will be recorded. Corpora lutea will also be counted and recorded. Uteri which appear nongravid by macroscopic examination will be opened and placed in 10% ammonium sulfide solution for detection of early implantation loss.[6] Gross lesions will be preserved in 10% neutral-buffered formalin for possible future histopathologic examination. Carcasses from adult animals will be discarded. Viable fetuses will be euthanized by a subcutaneous injection of sodium pentobarbital in the scapular region. Recognizable fetuses will be examined externally and preserved in 10% neutral-buffered formalin.

Animals dying or euthanized *in extremis* (by carbon dioxide inhalation) that are assigned to the exposure assessment phase will have pregnancy status determined (by ammonium sulfide, if necessary). Viable fetuses will be euthanized by a subcutaneous injection of sodium pentobarbital in the scapular region. Carcasses of the dams and fetuses will be discarded.

13.7. Premature Deliveries

Females that deliver prematurely will be euthanized by carbon dioxide inhalation that day. The thoracic, abdominal, and pelvic cavities will be opened and the organs examined. The number and location of former implantation sites and viable fetuses will be recorded. Corpora lutea will also be counted and recorded. Gross lesions will be preserved in 10% neutral-buffered formalin for possible future histopathologic examinations. Carcasses from adult animals will be discarded. Viable fetuses or pups will be euthanized by a subcutaneous (scapular region) or intraperitoneal injection of sodium pentobarbital (as appropriate). Recognizable fetuses or pups will be examined externally and preserved in 10% neutral buffered formalin. Recognizable fetuses or pups aborted on GD 21 will be examined according to the fetal examination section (Section 15.2), if possible.

Females that deliver prematurely that are assigned to the exposure assessment phase will be euthanized by carbon dioxide inhalation that day and identified as gravid. Viable pups will be euthanized by an intraperitoneal injection of sodium pentobarbital. Carcasses of the dams and pups will be discarded.

14. LABORATORY EVALUATIONS (EXPOSURE ASSESSMENT PHASE)

14.1. Intervals

Dams: Gestation days 8, 12 and 21

Fetuses: Gestation Day 21

14.2. Blood Collection Time Points

Dams (Gestation Day 8 and 12): A single blood sample will be collected from each dam between 0830 and 0930 hours.

Dams and Fetuses (Gestation Day 21): A single blood sample will be collected from each dam just prior to euthanasia. Immediately following blood collection, each dam will be euthanized by carbon dioxide inhalation and uteri which appear gravid by macroscopic examination will be removed for fetal blood collection. For any dams that initiate parturition prior to blood collection, blood samples will be still be collected, as scheduled on Gestation Day 21/Lactation Day 0. Delivered pups (Postnatal Day 0) belonging to these females will be bled in the same manner as the Gestation Day 21 fetuses.

14.3. Number of animals

Dams: Four (4) females/group assigned to the exposure assessment phase.

Fetuses: Four (4) litters per group from dams assigned to the exposure assessment phase. Blood will be pooled by litter, without regard to fetal sex.

14.4. Method/Route of Collection

Dams: via the jugular vein using the hand-held restraint method.

Fetuses: via cardiac puncture under isoflurane anesthesia. Delivered pups (Postnatal Day 0) belonging to any females that deliver prior to blood collection will be bled in the same manner as the Gestation Day 21 fetuses.

14.5. Target Blood Volume

Dams: 0.5 mL/animal/time point; samples will be transferred as rapidly as possible from the collection syringe into pre-chilled, uniquely labeled tubes. Samples will be protected from light, to the extent possible.

Fetuses: As much blood as possible; blood will be pooled by litter regardless of sex. Samples will be transferred as rapidly as possible from the collection catheter/syringe into pre-chilled, uniquely labeled tubes. Samples will be protected from light, to the extent possible.

14.6. Anticoagulant

Lithium Heparin

14.7. Sample Handling and Plasma Preparation

Samples will be kept on wet ice, protected from light, following blood collection and through centrifugation, plasma collection, and storage. All samples will be centrifuged (approximately 3000 rpm [approximately 2056xg] for approximately 10 min) at approximately 4°C. Samples will be processed under amber light.

14.8. Aliquots

The maximum amount of plasma will be recovered and plasma will be transferred into new, uniquely-labeled amber polypropylene tubes.

14.9. Label Information

Samples, and/or accompanying paperwork, will include study number, dose group, animal number, Gestation Day interval, number of pups (in pooled samples), sample type, date and time of blood collection.

14.10. Sample Storage and Transfer

Maternal and fetal plasma samples will be stored in a freezer set to maintain a target of -70°C until transferred to the Charles River Bioanalytical Chemistry Department for analysis for the assessment of TCA concentrations using a method being developed and validated on a concurrent study.[7] The time and date that the samples are placed in the freezer will be recorded.

Any remaining samples kept at Charles River will be discarded following acceptance of the bioanalytical results by the Study Director.

The plasma analysis report will be included as an appendix to the Charles River final report.

14.11. Disposition of Animals/Laparotomy

All exposure assessment phase rats will be euthanized by carbon dioxide inhalation following the last blood collection (GD 21). Uteri which appear gravid by macroscopic examination will be removed immediately for fetal blood collection and the dams will be identified as gravid. Uteri which appear nongravid by macroscopic examination will be opened and placed in 10% ammonium sulfide solution for detection of early implantation loss.[6] Following blood collection, fetuses will be euthanized by decapitation. Carcasses of the dams and fetuses will be discarded without further examination.

14.12. Exposure Assessment

Plasma concentrations of TCA in maternal and fetal samples will be summarized and presented in the main report text. Based on the limited blood sampling, the analysis of exposure data will be limited to mean concentrations, by group, and maternal and fetal concentration ratios.

15. TERMINAL PROCEDURES – GESTATION DAY 21 (PRENATAL DEVELOPMENT PHASE)

15.1. Laparohysterectomy and Macroscopic Examination

Laparohysterectomy and macroscopic examinations will be performed blind to treatment group. All surviving rats will be euthanized by carbon dioxide inhalation on Gestation Day 21. The thoracic, abdominal, and pelvic cavities will be opened and the organs examined. The uterus of each dam will be excised and its adnexa trimmed. Corpora lutea will be counted and recorded. Gravid uterine weights will be obtained and recorded. The uterus of each dam will be opened and the number of viable and nonviable fetuses, early and late resorptions, and total number of implantation sites will be recorded, and the placentae will be examined. The individual uterine distribution will be documented using the following procedure: all implantation sites, including early and late resorptions, will be numbered in consecutive fashion beginning with the left distal uterine horn, noting the position of the cervix and continuing from the proximal to the distal right uterine horn. Uteri which appear nongravid by macroscopic examination will be opened and placed in a 10% ammonium sulfide solution for detection of early implantation loss.[6] Maternal tissues will be preserved for future histopathologic examination in 10% neutral-buffered formalin only as deemed necessary by the gross findings. Representative sections of corresponding organs from a sufficient number of controls will be retained for comparison, if possible. The carcasses will be discarded.

15.2. Fetal Examination

Fetal examinations will be conducted without knowledge of treatment group. All fetuses will receive an external examination. **Internal (visceral) examination will be limited to an examination of the heart and great and major blood vessels only.** Representative photographs of all cardiac and great and major blood vessel malformations, as appropriate, will be included in the study records, for illustrative purposes only. In addition, representative photographs of a normal littermate, will also be included in the study records, as needed and as appropriate, for comparison, where possible. **Representative photographs of all malformations with comparison photographs of normal fetuses will be included in the final report, for illustrative purposes only.** Prenatal data (viable and nonviable fetuses, early and late resorptions, pre- and post-implantation loss, and the fetal sex distribution) will be presented on a group mean basis and additionally as proportional data (% per litter).

15.2.1. External

Each viable fetus will be examined in detail, sexed, weighed, and euthanized by a subcutaneous injection of sodium pentobarbital in the scapular region. Nonviable fetuses (the degree of autolysis is minimal or absent) will be examined, crown-rump length measured, weighed, sexed and tagged individually. The crown-rump length of late resorptions (advanced degree of autolysis) will be measured, the degree of autolysis recorded, a gross external examination performed (if possible), and the tissue will be discarded.

15.2.2. Visceral (Internal)

Fetuses will be examined for visceral cardiac anomalies by dissection in the fresh (non-fixed) state. The thoracic cavity will be opened and dissected using a technique described by Stuckhardt and Poppe[8] with the exception that internal examination will be limited to a thorough examination of the heart and great and major blood vessels only. **Any observed ventricular septal defects will be categorized by size (<1 mm, 1 to 2 mm, or >2 mm) and location (muscular or membranous).** The abdomen will be opened with the sole purpose of internal confirmation of the sex of all fetuses. All carcasses will be discarded following completion of internal examination.

16. STATISTICAL METHODS

All analyses will be two-tailed for significance levels of 5% and 1%. All statistical tests will be performed using a computer with appropriate programming as referenced below. Data from nongravid females will be excluded from calculation of means and from comparative statistics. The litter, rather than the fetus, will be considered as the experimental unit.

Comparative statistics will not be performed on in-life or necropsy data from exposure assessment phase animals.

Data for the positive control substance group will be compared to the control group using a two-sample t-test[9] to determine intergroup differences.

16.1. Maternal In-Life Data

Continuous data variables (maternal body weights [absolute and net], body weight gains [absolute and net], food, and water consumption of each interval) will be subjected to a parametric one-way analysis of variance (ANOVA).[10] If the results of the ANOVA are significant ($p<0.05$), Dunnett's test[11] will be applied to the data to compare the test substance treated groups to the control group.

16.2. Laparohysterectomy Data

The group mean numbers of corpora lutea, implantation sites, viable fetuses, maternal gravid uterine weights and mean fetal weight (separately by sex, and combined) will be subjected to a parametric one-way analysis of variance (ANOVA) and Dunnett's test as described above.[10,11] The mean litter proportions of prenatal data (% per litter of viable and nonviable fetuses, early and late resorptions, total resorptions, pre- and post-implantation loss, and the fetal sex distribution) will be subjected to the Kruskal-Wallis nonparametric ANOVA test[12] to determine intergroup difference. If the results of the ANOVA are significant ($p<0.05$), Dunn's test[13] will be applied to the data to compare the test substance treated groups to the control group.

16.3. Fetal Morphology Data

The mean litter proportion (% per litter) of total fetal cardiac malformations and developmental variations and of each particular visceral cardiac malformation or variation will be tabulated.

The mean litter proportions of fetal cardiac malformations and developmental variations will be subjected to the Kruskal-Wallis nonparametric ANOVA test followed by Dunn's test (if appropriate), to compare the test substance treated groups to the control group, as described above.[12,13]

17. MAJOR COMPUTER SYSTEMS - DATA ACQUISITION, ANALYSIS, AND REPORTING

The following critical computerized systems may be used in the study. The actual critical computerized systems used will be specified in the Final Report.

Data for parameters not required by protocol, which are automatically generated by analytical devices used will be retained on file but not reported.

Statistical analysis results that are generated by the program but are not required by protocol and/or are not scientifically relevant will be retained on file but will not be included in the tabulations.

All computerized systems used for data collection during the conduct of this study have been validated (with the exception of Microsoft Office and GraphPad Prism® 2008); when a particular system has not satisfied all requirements, appropriate administration and procedural controls were implemented to assure the quality and integrity of the data.

The actual version number will be specified in the report.

Critical Computerized Systems

Program/System	Description
Bio Medic Data Systems (BMDS) Implantable Micro Identification™ (IMI-1000 or IMI-500)	Animal identification
Dionex Chromeleon® software, Varian MS Workstation® software, Agilent ChemStation® software, or Molecular Devices SpectraMax® software	Used for chromatographic data acquisition and quantitation
Logbook™ ELN	System (Instem) used to document study events.
Metasys DDC Electronic Environmental Control System	Controls and monitors animal room environmental conditions.
Microsoft Office 2010 or higher; GraphPad Prism® 2008	Used in conjunction with the publishing software to generate study reports.
Provantis Dispense™	Comprehensive system (Instem LSS Limited) to manage test materials, including receipt, formulation instructions, and accountability.
Watson LIMS™	Laboratory Information Management System used for sample tracking, run planning, quantitation, and reporting results.
WIL Formulations Dispense System (WFDS)	In-house developed system for use in conjunction with Provantis Dispense™ to ensure proper storage and use of formulations.
WIL Metasys	In-house developed system used to record and report animal room environmental conditions.
WIL Toxicology Data Management System™ (WTDMS™)	In-house developed system used for collection and reporting of in-life and postmortem data.

Note: Version numbers of WTDMS™ programs used for the study are presented on the report data tables (reporting programs); version numbers and release dates are otherwise maintained in the study records and/or facility records.

18. AMENDMENTS AND DEVIATIONS

Changes to the approved protocol shall be made in the form of an amendment, which will be signed and dated by the Study Director. Every reasonable effort will be made to discuss any necessary protocol changes in advance with the Sponsor.

All protocol and SOP deviations will be documented in the study records. Deviations from the protocol and/or SOP related to the phase(s) of the study conducted at a Test Site shall be documented, acknowledged by the PI/IS, and reported to the Study Director for authorization/acknowledgement. The Study Director will notify the Sponsor of deviations that may result in a significant impact on the study as soon as possible.

19. RETENTION OF RECORDS, SAMPLES, AND SPECIMENS

All study-specific raw data, electronic data, documentation, protocol, retained samples and specimens, and interim (if applicable) and final reports will be archived by no later than the date of final report issue. All materials generated by Charles River from this study will be transferred

to a Charles River archive. At least 1 year after issue of the Draft Report, the Sponsor will be contacted.

For work product shipped or generated by a test site, archiving will be conducted per test site SOPs and will be described in the test site report.

Unless otherwise indicated, any remaining clinical pathology, toxicokinetic, and/or analytical samples will not be archived, but will be discarded prior to issuance of the final report.

Any work product, including documents, specimens, and samples, that are required by this protocol, its amendments, or other written instructions of the Sponsor to be shipped by Charles River to another location will be appropriately packaged and labeled as defined by Charles River SOPs and delivered to a common carrier for shipment. Charles River will not be responsible for shipment following delivery to the common carrier.

20. REPORTING

A comprehensive Draft Report will be prepared following completion of the study and will be finalized following consultation with the Sponsor. The report will include all information necessary to provide a complete and accurate description of the experimental methods and results and any circumstances that may have affected the quality or integrity of the study.

The Sponsor will receive an electronic version of the Draft and Final Report provided in Adobe Acrobat PDF format (hyperlinked and searchable at final) along with a Microsoft Word version of the text. The PDF document will be created from native electronic files to the extent possible, including text and tables generated by the Testing Facility. Report components not available in native electronic files and/or original signature pages will be scanned and converted to PDF image files for incorporation.

Reports should be finalized within 6 months of issue of the Audited Draft Report. If the Sponsor has not provided comments to the report within 6 months of draft issue, the report will be finalized by the Testing Facility unless other arrangements are made by the Sponsor.

21. ANIMAL WELFARE

This study will comply with all applicable sections of the Final Rules of the Animal Welfare Act regulations (Code of Federal Regulations, Title 9), the *Public Health Service Policy on Humane Care and Use of Laboratory Animals* from the Office of Laboratory Animal Welfare,[14] and the *Guide for the Care and Use of Laboratory Animals* from the National Research Council.[15] The protocol and any amendments or procedures involving the care or use of animals in this study will be reviewed and approved by the Testing Facility Institutional Animal Care and Use Committee before the initiation of such procedures.

If an animal is determined to be in overt pain/distress, or appears moribund and is beyond the point where recovery appears reasonable, the animal will be euthanized for humane reasons in accordance with the *American Veterinary Medical Association (AVMA) Guidelines on Euthanasia* and with the procedures outlined in the protocol.[16]

By approving this protocol, the Sponsor affirms that there are no acceptable non-animal alternatives for this study, and that it does not unnecessarily duplicate any previous experiments.

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TESTING FACILITY APPROVAL

The signature below acknowledges Testing Facility Management's responsibility to the study as defined by the relevant GLP regulations.

Donald G. Stump

Date: 06 Jul 2018

Donald G. Stump, PhD, DABT
Senior Director, Toxicology
Testing Facility Management

The signature below indicates that the Study Director approves the study protocol.

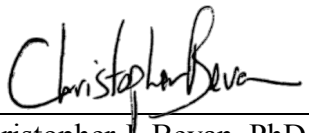
Prägati Sawhney Coder

Date: 05 July 2018

Prägati Sawhney Coder, PhD, DABT
Director, Developmental and Reproductive Toxicology
Study Director

SPONSOR APPROVAL

The protocol was approved by the Sponsor by email on 03-Jul-2018. The signature below confirms the approval of the protocol by the Sponsor Representative.



Date: 05 July 2018

Christopher J. Bevan, PhD, DABT
Director, Scientific Programs
Halogenated Solvents Industry Alliance, Inc.
Sponsor Representative

APPENDIX 2

Test Material Information

CERTIFICATE OF ANALYSIS

Printed: 11/22/2017 Page 1 of 1

Customer No : 15669 **Customer :** CHARLES RIVER LABORATORIES **Customer PO :** 6600487802

Order Number : 3004861 **Delivery # :** 58028216

Catalog : T1115 Trichloroethylene, Reagent, ACS **Lot :** 2GJ0003

Chemical Formula : C_2HCl_3 **Formula Weight :** 131.39

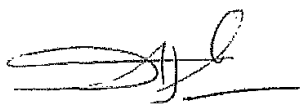
CAS# : 79-01-6

Test	Limit Min.	Limit Max.	Results
ASSAY	99.5 %	--	99.98 %
COLOR	--	10	9
RESIDUE AFTER EVAPORATION	--	0.001 %	<0.001 %
TITRABLE ACID	--	0.0001 meq/g	<0.0001 meq/g
TITRABLE BASE	--	0.0003 meq/g	<0.0003 meq/g
WATER	--	0.02 %	0.0028 %
HEAVY METALS (as Pb)	--	1 ppm	<1 ppm
FREE HALOGENS	TO PASS TEST		PASSES TEST
APPEARANCE			CLEAR COLORLESS LIQUID
DATE OF MANUFACTURE			09-AUG-2017

All pharmaceutical ingredients are tested using current edition of applicable pharmacopeia.

Read and understand label and MSDS/SDS before handling any chemical. All Spectrum's chemicals are for manufacturing, processing, repacking or research purposes by experienced personnel only. The customer must ensure to provide its users adequate hazardous material training and appropriate protective gears before handling our chemicals.

Certificate of Analysis Results Certified By:



spectrum CHEMICAL MFG CORP
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Corporate Office:
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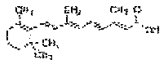
SIGMA-ALDRICH®

sigma-aldrich.com

3050 Spruce Street, Saint Louis, MO 63103, USA
Website: www.sigmaaldrich.com
Email USA: techserv@sial.com
Outside USA: eurtechserv@sial.com

Certificate of Analysis

Product Name:
Retinoic acid – ≥98% (HPLC), powder



Product Number:	**R2625**
Batch Number:	**SLBS1643V**
Brand:	SIGMA
CAS Number:	302-79-4
MDL Number:	MFCD00001551
Formula:	C20H28O2
Formula Weight:	300.44 g/mol
Storage Temperature:	Store at -20 °C
Quality Release Date:	07 SEP 2016
Date Retested:	20 JUN 2018
Recommended Retest Date:	JUN 2020

Test	Specification	Result
Appearance (Color)	Yellow	Yellow
Appearance (Form)	Powder	Powder
Solubility (Color)	Yellow to Yellow-Green	Yellow
Solubility (Turbidity) 50 mg/mL, CHCl3	Clear	Clear
Carbon	78.4 - 81.6 %	80.0 %
Purity (HPLC)	≥ 98 %	100 %
Infrared Spectrum	Conforms to Structure	Conforms

Rodney Burbach

Rodney Burbach, Manager
Analytical Services
St. Louis, Missouri US

APPENDIX 3

Analyses of Dosing Formulations

charles river

AUDITED DRAFT REPORT

Study Phase: Analytical

Laboratory Project ID 00459506

PERFORMING LABORATORY:
Charles River Laboratories Ashland, LLC
1407 George Road
Ashland, OH 44805
United States

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REPORT APPROVAL

Shiladitya Sen, PhD
Senior Research Scientist, Analytical Chemistry
Individual Scientist

RESPONSIBLE PERSONNEL

Individual Scientist	Shiladitya Sen, PhD
Site Director	Erica L. Lashley, MBA, BS, LAT
Scientific Report Review	Geoffrey V. Clay, BS
Analytical Chemistry Personnel	Joseph B. Gump, BA

1. SUMMARY

A high performance liquid chromatography method using ultraviolet absorbance detection at a wavelength of 210 nm for the determination of trichloroethylene concentration in aqueous formulations containing deionized water and test substance ranging in concentration from 0.200 to 1000 ppm was validated in a previous study.[1] In the present study, formulations prepared at target test substance concentrations of 0.25, 1.5, 500, and 1000 ppm were analyzed to assess test substance concentration acceptability at the time of preparation and at the time of dispensation. In addition, up to 24-hour loss monitoring of the formulations in drinking water bottles used for test substance administration was conducted.

The analyzed formulations used for test substance administration met the protocol-specified requirement for concentration acceptability, i.e., the analyzed concentration was 80% to 120% of the target concentration, with the following exceptions. The analyzed concentrations of the 25 Jul 2018 and 26 Jul 2018, and the 30 Jul 2018 and 31 Jul 2018 Group 3 (0.25 ppm) and Group 4 (1.5 ppm) formulations and the 26 Jul 2018 and 27 Jul 2018 and the 16 Aug 2018 and 17 Aug 2018 Group 3 (0.25 ppm) formulations collected at time of preparation ranged from 125% to 130% of the target concentration, which failed to meet the acceptance criteria. In addition, the analyzed concentrations of the 30 Jul 2018 and 31 Jul 2018 Group 3 (0.25 ppm) and Group 4 (1.5 ppm) formulations, the 04 Aug 2018 and 05 Aug 2018 and the 14 Aug 2018 and 15 Aug 2018 formulations, and the 07 Aug 2018 and 08 Aug 2018 and the 16 Aug 2018 and 17 Aug 2018 Group 3 (0.25 ppm) formulations collected at the time of dispensation ranged from 125% to 166% of the target concentration, which failed to meet the acceptance criteria. No test substance was detected in the analyzed vehicle administered to the control group. The results of up to 24-hour loss monitoring of the formulations used for test substance administration showed a percent loss ranging from -48.6% to -30.2%.

2. INTRODUCTION

2.1. Objective

Formulations used for dose administration were analyzed to assess test substance concentration acceptability at the time of preparation and at the time of dispensation. In addition, up to 24-hour loss monitoring of the formulations in drinking water bottles used for test substance administration was conducted.

2.2. Study Design

A validated high performance liquid chromatography (HPLC) method using ultraviolet (UV) absorbance detection at a wavelength of 210 nm was used for the determination of trichloroethylene (TCE) concentration in aqueous formulations containing deionized (DI) water. The method was validated in a previous study for the analysis of aqueous formulations ranging in test substance concentration from 0.200 to 1000 ppm.[1] Also in the previous study, test substance solubility was assessed and verified in a formulation prepared at a target TCE concentration of 1000 ppm.[1] Test substance stability following 26 hours of room temperature storage in formulations ranging in TCE concentration from 0.200 to 1000 ppm was also established.[1] In the present study, formulations used for dose administration were analyzed to verify test substance concentration acceptability at the time of preparation and at the time of dispensation. In addition, up to 24-hour loss monitoring of the formulations in drinking water bottles used for test substance administration was conducted.

2.3. Key Study Dates

First date of analysis	25 Jul 2018
Last date of analysis	18 Aug 2018

2.4. Computerized Systems

Critical computerized systems used in the study are listed below. All computerized systems used in the conduct of this study have been validated; when a particular system has not satisfied all requirements, appropriate administrative and procedural controls were implemented to assure the quality and integrity of data.

As Charles River Ashland transitions between various computer systems, the study number may appear as 00459506, 459506, or WIL-459506 in the data records and report.

Text Table 1
Critical Computerized Systems

Program/System	Description
Archive Management System (AMS), ver. 3.00	In-house developed application for storage, maintenance, and retrieval of information for archived materials (e.g., lab books, study data, wet tissues, slides, etc.).
Dionex Chromeleon® software, ver. 6.8	Used for chromatographic data acquisition and quantitation.
Logbook™ ELN, ver. 5.5	System (Instem) used to document study events.
Metasys DDC Electronic Environmental Control System, ver. 12.04	In-house developed system used to record and report refrigerator/freezer conditions.
Microsoft Office 2007 or higher	Used in conjunction with the publishing software to generate study reports. Used in conjunction with data acquisition software for statistical calculations.
Provantis Dispense™, ver. 9.3.1.4	Comprehensive system (Instem LSS Limited) to manage test materials, including receipt, formulation instructions, and accountability.

3. MATERIALS AND METHODS

3.1. Assay Overview

The materials and methods used during the course of these analyses are documented in Laboratory Method (LM) No. 459.DIW1.01 (presented in Appendix 1).

4. RESULTS

Under the described chromatographic conditions, the retention time of the test substance was approximately 5.4 minutes. Figure 1, Figure 2, and Figure 3 are typical chromatograms of a calibration standard, a processed formulation sample, and a processed vehicle blank sample, respectively. The total analysis time required for each run was 7.0 minutes.

4.1. Specificity/Selectivity

As shown in Figure 3 (and in contrast to the chromatograms shown in Figure 1 and Figure 2), assay specificity/selectivity was confirmed when HPLC-UV analysis of processed vehicle samples revealed no significant peaks (with signal-to-noise ratio [S/N] > 10) at or near the retention time for the test substance (approximately 5.4 minutes).

4.2. Assay Acceptability

In addition to the experimental samples, each analytical session consisted of (but was not limited to) calibration standards at 6 concentrations, which were prepared from 2 independently prepared stock solutions. According to SOP, for an analytical session to be considered valid, the back-calculated values for the calibration standards had to be within ± 10% of the theoretical values (percent relative error [%RE] within ± 10%), except at the lowest calibration level where

%RE within ± 15% was acceptable. In addition, the correlation coefficient (R^2) had to be ≥ 0.99 and the S/N for the lowest standards must be ≥ 10. All reported results were from analytical sessions that met the acceptance criteria.

4.3. Test Substance Concentration in Formulations

Formulations used for test substance administration were analyzed to assess test substance concentration acceptability. The results of the concentration acceptability assessments are presented in Table 1 through Table 16, with the mean concentration and percent of target values summarized in Text Table 2.

Text Table 2
Test Substance Concentration in Formulations

Mean Concentration, ppm (% of Target)						
	Samples Collected at Time of Preparation			Samples Collected at Time of Dispensation		
Date of Preparation	Group 1 (0 ppm)	Group 3 (0.25 ppm)	Group 4 (1.5 ppm)	Group 1 (0 ppm)	Group 3 (0.25 ppm)	Group 4 (1.5 ppm)
24 and 25 Jul 2018	ND (NA)	0.225 (90.2)	1.40 (93.0)	ND (NA)	0.261 (104)	1.41 (94.1)
25 and 26 Jul 2018	ND (NA)	0.324 (130)	1.91 (128)	ND (NA)	0.294 (118)	1.67 (111)
26 and 27 Jul 2018	ND (NA)	0.319 (127)	1.51 (101)	ND (NA)	0.278 (111)	1.59 (106)
30 and 31 Jul 2018	ND (NA)	0.322 (129)	1.87 (125)	ND (NA)	0.318 (127)	2.19 (146)
04 and 05 Aug 2018	ND (NA)	0.279 (111)	1.62 (108)	ND (NA)	0.350 (140)	1.87 (125)
07 and 08 Aug 2018	ND (NA)	0.273 (109)	1.35 (90.1)	ND (NA)	0.415 (166)	1.46 (97.7)
14 and 15 Aug 2018	ND (NA)	0.296 (118)	1.73 (115)	ND (NA)	0.312 (125)	1.86 (124)
16 and 17 Aug 2018	ND (NA)	0.318 (127)	1.61 (107)	ND (NA)	0.382 (153)	1.75 (117)
	Samples Collected at Time of Preparation			Samples Collected at Time of Dispensation		
	Group 5 (500 ppm)		Group 6 (1000 ppm)	Group 5 (500 ppm)		Group 6 (1000 ppm)
24 and 25 Jul 2018	517 (103)		1027 (103)	516 (103)		1018 (102)
25 and 26 Jul 2018	538 (108)		1158 (116)	537 (107)		1020 (102)
26 and 27 Jul 2018	583 (117)		1133 (113)	577 (115)		1077 (108)
30 and 31 Jul 2018	571 (114)		1045 (104)	574 (115)		1070 (107)
04 and 05 Aug 2018	547 (109)		1019 (102)	625 (125)		1262 (126)
07 and 08 Aug 2018	464 (92.8)		998 (99.8)	504 (101)		1119 (112)
14 and 15 Aug 2018	575 (115)		1003 (100)	646 (129)		1284 (128)
16 and 17 Aug 2018	549 (110)		1001 (100)	580 (116)		1125 (112)

ND = No test substance chromatographic peak detected; NA = Not applicable.

The analyzed formulations used for test substance administration met the protocol-specified requirement for concentration acceptability at the time of preparation and at the time of dispensation, i.e., the analyzed concentration was 80% to 120% of the target concentration, with the following exceptions. The analyzed concentrations of the 25 Jul 2018 and 26 July 2018, and the 30 Jul 2018 and 31 Jul 2018 Group 3 (0.25 ppm) and Group 4 (1.5 ppm) formulations and the 26 Jul 2018 and 27 Jul 2018 and the 16 Aug 2018 and 17 Aug 2018 Group 3 (0.25 ppm) formulations collected at time of preparation ranged from 125% to 130% of the target concentration, which failed to meet the acceptance criteria. In addition, the analyzed concentrations of the 30 Jul 2018 and 31 Jul 2018 Group 3 (0.25 ppm) and Group 4 (1.5 ppm) formulations, the 04 Aug 2018 and 05 Aug 2018 and the 14 Aug 2018 and 15 Aug 2018 formulations, and the 07 Aug 2018 and 08 Aug 2018 and the 16 Aug 2018 and 17 Aug 2018 Group 3 (0.25 ppm) formulations collected at the time of dispensation ranged from 125% to 166% of the target concentration, which failed to meet the acceptance criteria. No test substance was detected in the analyzed vehicle administered to the control group (Group 1).

4.4. Percent Up to 24-Hour Loss Monitoring of Formulations

Formulations prepared at target TCE concentrations of 0, 0.25, 1.5, 500, and 1000 ppm were analyzed at the time of preparation and at the time of dispensation into drinking water bottles. Up to 24 hours post-dispensation, samples were collected from 3 “used” drinking water bottles in the animal rooms and analyzed for test substance concentration. Loss of TCE at each concentration was calculated by averaging the analyzed concentration of the 3 bottles sampled post-dispensation and comparing against the corresponding time of preparation analyzed concentration. The results of up to 24-hour loss monitoring assessments are presented in Table 17, Table 18, and Table 19, with the overall statistics summarized in Text Table 3.

Text Table 3
Up to 24-Hour Loss Monitoring of the Formulations

	24 Jul 2018 and 25 Jul 2018 Formulations				
	Group 1 (0 ppm)	**Group 3 (0.25 ppm)**	**Group 4 (1.5 ppm)**	**Group 5 (500 ppm)**	**Group 6 (1000 ppm)**
Mean Concentration (ppm)	ND	0.116	0.757	306	533
SD	NA	0.0048	0.027	13	19
RSD (%)	NA	4.2	3.5	4.3	3.5
Mean Concentration % of Target	NA	46.4	50.4	61.2	53.3
Mean Concentration % of Pre-Storage	NA	51.4	54.2	59.2	51.9
% Loss	NA	-48.6	-45.8	-40.8	-48.1
	14 Aug 2018 and 15 Aug 2018 Formulations		**16 Aug 2018 and 17 Aug 2018 Formulations**		
	Group 5 (500 ppm)	**Group 6 (1000 ppm)**	**Group 5 (500 ppm)**	**Group 6 (1000 ppm)**	
Mean Concentration (ppm)	321	565	383	685	
SD	14	42	30	54	
RSD (%)	4.5	7.5	7.9	7.9	
Mean Concentration % of Target	64.2	56.5	76.6	68.5	
Mean Concentration % of Pre-Storage	55.8	56.3	69.8	68.4	
% Loss	-44.2	-43.7	-30.2	-31.6	

ND = No test substance chromatographic peak detected; NA = Not applicable.

The results of up to 24-hour loss monitoring of the formulations used for test substance administration showed a percent loss ranging from -48.6% to -30.2%. Due to interference in the chromatograms at the lower concentrations (0.25 ppm and 1.5 ppm), the 24-hour loss monitoring of the formulation samples prepared on 14 Aug 2018 and 15 Aug 2018 and also on 16 Aug 2018 and 17 Aug 2018 were not quantitated.

5. CONCLUSIONS

A validated HPLC-UV method was used for the determination of TCE concentration in DI water formulations. The analyzed formulations used for test substance administration met the protocol-specified requirement for concentration acceptability at the time of preparation and at the time of dispensation, with the following exceptions. The analyzed concentrations of the 25 Jul 2018 and 26 Jul 2018, and the 30 Jul 2018 and 31 Jul 2018 Group 3 (0.25 ppm) and Group 4 (1.5 ppm) formulations and the 26 Jul 2018 and 27 Jul 2018 and the 16 Aug 2018 and 17 Aug 2018 Group 3 (0.25 ppm) formulations collected at time of preparation ranged from 125% to 130% of the target concentration, which failed to meet the acceptance criteria.
In addition, the analyzed concentrations of the 30 Jul 2018 and 31 Jul 2018 Group 3 (0.25 ppm) and Group 4 (1.5 ppm) formulations, the 04 Aug 2018 and 05 Aug 2018 and the 14 Aug 2018 and 15 Aug 2018 formulations, and the 07 Aug 2018 and 08 Aug 2018 and the 16 Aug 2018 and 17 Aug 2018 Group 3 (0.25 ppm) formulations collected at the time of dispensation ranged from 125% to 166% of the target concentration, which failed to meet the acceptance criteria. No test substance was detected in the analyzed vehicle administered to the control group. The results of up to 24-hour loss monitoring of the formulations used for test substance administration showed a percent loss ranging from -48.6% to -30.2%.

6. REFERENCES

1 Sen, S. Analytical Validation and Stability Study of Trichloroethylene in Aqueous Solution Formulations (Study No. WIL-459504). Charles River, Ashland, OH, **2017**.

FIGURES

Figure 1
Representative Chromatogram of a 0.100 µg TCE/mL Calibration Standard

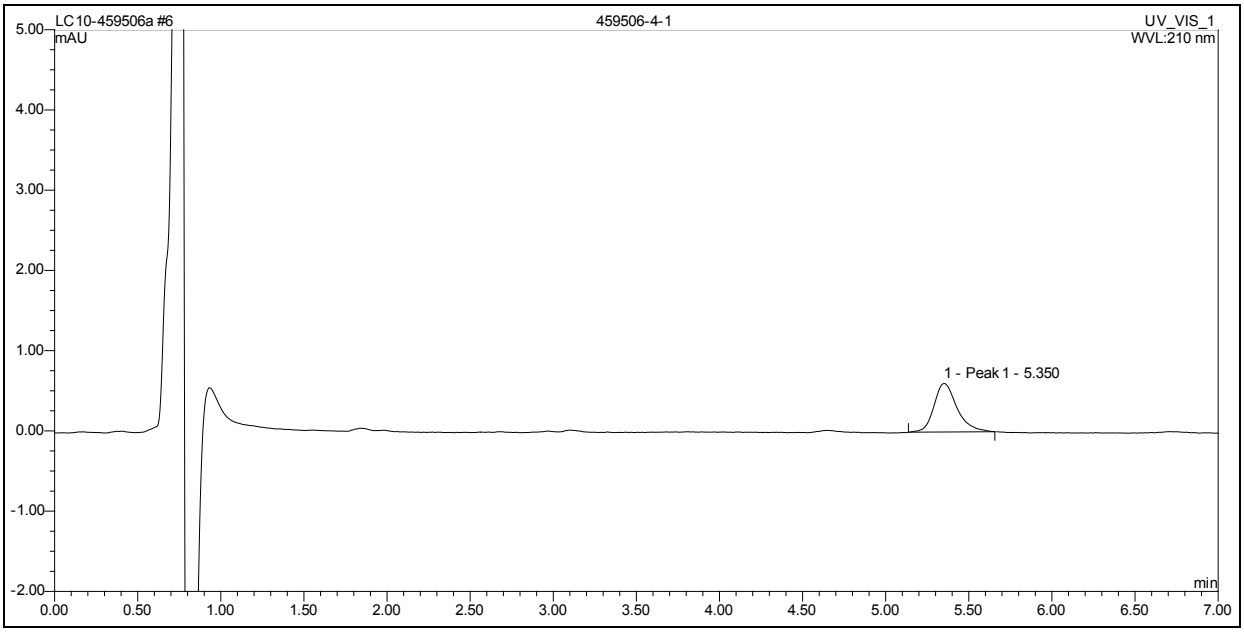


Figure 2
Representative Chromatogram of a Processed 0.25 mg TCE/mL Formulation Sample

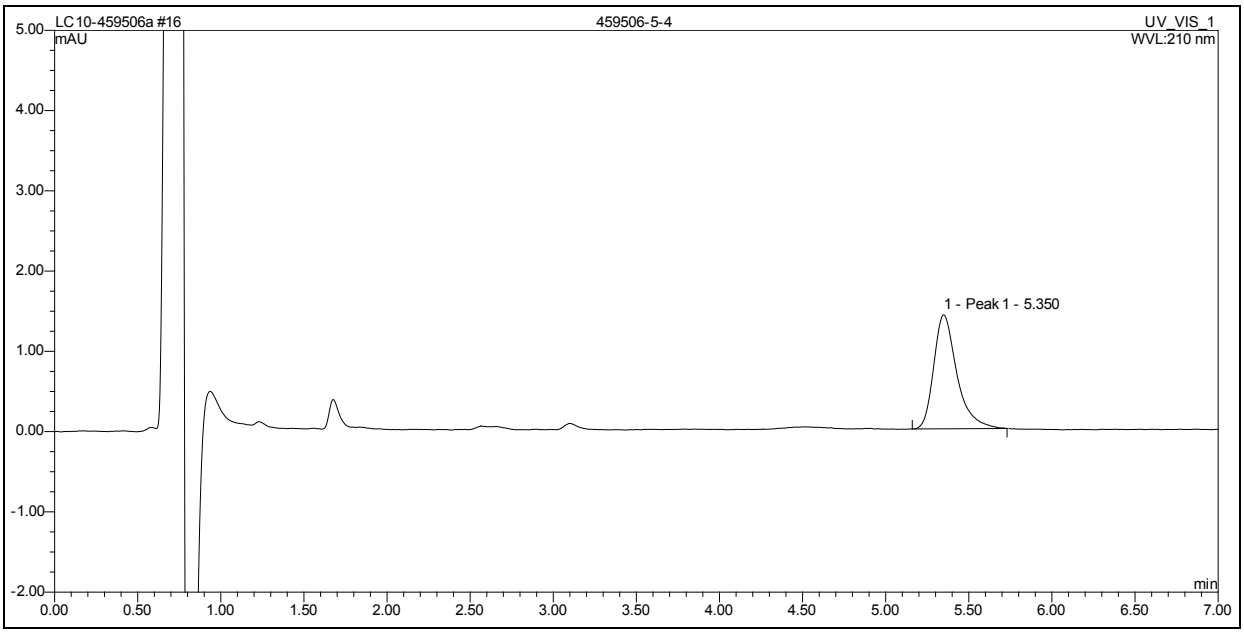
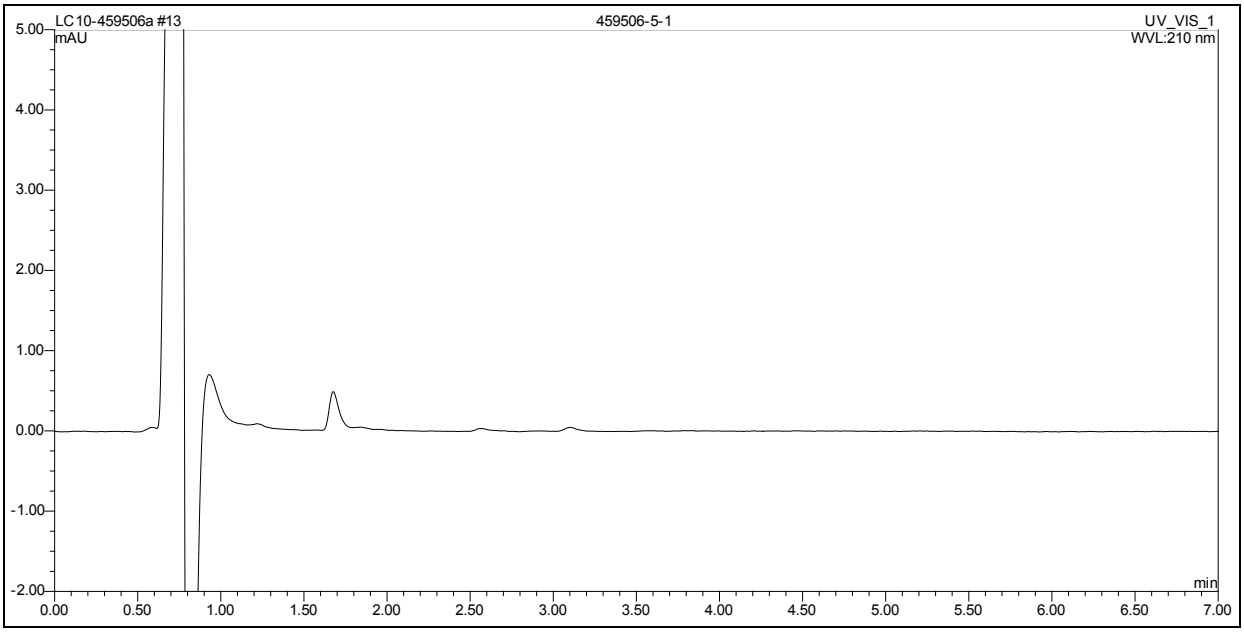


Figure 3
Representative Chromatogram of a Processed Control Group Formulation Sample



TABLES

Table 1
Concentration Assessment of the 24 Jul 2018 and 25 Jul 2018 Formulations - Collected at Time of Preparation
(Analyzed 25 Jul 2018)

Group/ Strata	Conc (ppm)	Ref # (459506-)	Line # LC10-459506a	Analyzed Conc (ppm)	Percent of Target (%)	Mean Conc (ppm)	SD	RSD (%)	Mean Conc % of Target (%)
1/Mid	0	5 - 1	13	----------Not Detected----------					
		5 - 2	14	----------Not Detected----------					
3/Mid	0.25	5 - 3	15	0.224	89.7	0.225	0.0016	0.73	90.2
		5 - 4	16	0.227	90.6				
4/Mid	1.5	5 - 5	17	1.40	93.1	1.40	0.0023	0.17	93.0
		5 - 6	18	1.39	92.9				
5/Mid	500	5 - 7	19	508	102	517	11.8	2.3	103
		5 - 8	20	525	105				
6/Mid	1000	5 - 9	21	1099	110	1027	101	9.8	103
		5 - 10	22	956	95.6				

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Table 2
Concentration Assessment of the 24 Jul 2018 and 25 Jul 2018 Samples - Collected at Time of Dispensation
(Analyzed 25 Jul 2018)

Group/ Strata	Conc (ppm)	Ref # (459506-)	Line # LC10-459506a	Analyzed Conc (ppm)	Percent of Target (%)	Mean Conc (ppm)	SD	RSD (%)	Mean Conc % of Target (%)
1/Mid	0	6 - 1	24	----------Not Detected----------					
		6 - 2	25	----------Not Detected----------					
3/Mid	0.25	6 - 3	26	0.263	105	0.261	0.0029	1.1	104
		6 - 4	27	0.259	104				
4/Mid	1.5	6 - 5	28	1.42	94.6	1.41	0.010	0.74	94.1
		6 - 6	29	1.40	93.6				
5/Mid	500	6 - 7	30	509	102	516	10	2.0	103
		6 - 8	31	524	105				
6/Mid	1000	6 - 9	32	1047	105	1018	41	4.1	102
		6 - 10	33	988	98.8				

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Table 3
Concentration Assessment of the 25 Jul 2018 and 26 Jul 2018 Formulations - Collected at Time of Preparation
(Analyzed 26 Jul 2018)

Group/ Strata	Conc (ppm)	Ref # (459506-)	Line # LC10-459506a	Analyzed Conc (ppm)	Percent of Target (%)	Mean Conc (ppm)	SD	RSD (%)	Mean Conc % of Target (%)
1/Mid	0	10 - 1	41		----------Not Detected----------				
		10 - 2	42		----------Not Detected----------				
3/Mid	0.25	10 - 3	43	0.323	129	0.324	0.00076	0.23	130
		10 - 4	44	0.325	130				
4/Mid	1.5	10 - 5	45	1.94	130	1.91	0.040	2.1	128
		10 - 6	46	1.89	126				
5/Mid	500	10 - 7	47	544	109	538	8.5	1.6	108
		10 - 8	48	532	106				
6/Mid	1000	10 - 9	49	1140	114	1158	25	2.1	116
		10 - 10	50	1175	118				

459506 results.xlsx 2C
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Table 4
Concentration Assessment of the 25 Jul 2018 and 26 Jul 2018 Samples - Collected at Time of Dispensation
(Analyzed 26 Jul 2018)

Group/ Strata	Conc (ppm)	Ref # (459506-)	Line # LC10-459506a	Analyzed Conc (ppm)	Percent of Target (%)	Mean Conc (ppm)	SD	RSD (%)	Mean Conc % of Target (%)
1/Mid	0	11 - 1	52	----------Not Detected----------					
		11 - 2	53	----------Not Detected----------					
3/Mid	0.25	11 - 3	54	0.298	119	0.294	0.0059	2.0	118
		11 - 4	55	0.290	116				
4/Mid	1.5	11 - 5	56	1.68	112	1.67	0.023	1.4	111
		11 - 6	57	1.65	110				
5/Mid	500	11 - 7	58	552	110	537	22	4.1	107
		11 - 8	59	521	104				
6/Mid	1000	11 - 9	60	1006	101	1020	20	2.0	102
		11 - 10	61	1034	103				

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Table 5
Concentration Assessment of the 26 Jul 2018 and 27 Jul 2018 Formulations - Collected at Time of Preparation
(Analyzed 27 Jul 2018)

Group/ Strata	Conc (ppm)	Ref # (459506-)	Line # LC10-459506a	Analyzed Conc (ppm)	Percent of Target (%)	Mean Conc (ppm)	SD	RSD (%)	Mean Conc % of Target (%)
1&2/Mid	0	19 - 1	100	----------Not Detected----------					
		19 - 2	101	----------Not Detected----------					
3/Mid	0.25	19 - 3	102	0.321	129	0.319	0.0041	1.3	127
		19 - 4	103	0.316	126				
4/Mid	1.5	19 - 5	104	1.50	100	1.51	0.011	0.71	101
		19 - 6	105	1.52	101				
5/Mid	500	19 - 7	106	583	117	583	0.69	0.12	117
		19 - 8	107	583	117				
6/Mid	1000	19 - 9	108	1131	113	1133	3.6	0.32	113
		19 - 10	109	1136	114				

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Table 6
Concentration Assessment of the 26 Jul 2018 and 27 Jul 2018 Samples - Collected at Time of Dispensation
(Analyzed 27 Jul 2018)

Group/ Strata	Conc (ppm)	Ref # (459506-)	Line # LC10-459506a	Analyzed Conc (ppm)	Percent of Target (%)	Mean Conc (ppm)	SD	RSD (%)	Mean Conc % of Target (%)
1&2/Mid	0	20 - 1	112	----------Not Detected----------					
		20 - 2	113	----------Not Detected----------					
3/Mid	0.25	20 - 3	114	0.280	112	0.278	0.0035	1.3	111
		20 - 4	115	0.276	110				
4/Mid	1.5	20 - 5	116	1.58	105	1.59	0.022	1.4	106
		20 - 6	117	1.61	107				
5/Mid	500	20 - 7	118	589	118	577	18	3.1	115
		20 - 8	119	564	113				
6/Mid	1000	20 - 9	120	1104	110	1077	38	3.5	108
		20 - 10	121	1051	105				

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Table 7
Concentration Assessment of the 30 Jul 2018 and 31 Jul 2018 Formulations - Collected at Time of Preparation
(Analyzed 31 Jul 2018)

Group/ Strata	Conc (ppm)	Ref # (459506-)	Line # LC10-459506a	Analyzed Conc (ppm)	Percent of Target (%)	Mean Conc (ppm)	SD	RSD (%)	Mean Conc % of Target (%)
1&2/Mid	0	24 - 1	129	----------Not Detected----------					
		24 - 2	130	----------Not Detected----------					
3/Mid	0.25	24 - 3	131	0.324	130	0.322	0.0039	1.2	129
		24 - 4	132	0.319	128				
4/Mid	1.5	24 - 5	133	1.87	124	1.87	0.0049	0.26	125
		24 - 6	134	1.87	125				
5/Mid	500	24 - 7	135	569	114	571	2.7	0.48	114
		24 - 8	136	573	115				
6/Mid	1000	24 - 9	137	1058	106	1045	19	1.8	104
		24 - 10	138	1032	103				

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Table 8
Concentration Assessment of the 30 Jul 2018 and 31 Jul 2018 Samples - Collected at Time of Dispensation
(Analyzed 31 Jul 2018)

Group/ Strata	Conc (ppm)	Ref # (459506-)	Line # LC10-459506a	Analyzed Conc (ppm)	Percent of Target (%)	Mean Conc (ppm)	SD	RSD (%)	Mean Conc % of Target (%)
1&2/Mid	0	25 - 1	140	----------Not Detected----------					
		25 - 2	141	----------Not Detected----------					
3/Mid	0.25	25 - 3	142	0.317	127	0.318	0.0015	0.48	127
		25 - 4	143	0.319	128				
4/Mid	1.5	25 - 5	144	2.20	147	2.19	0.015	0.69	146
		25 - 6	145	2.18	145				
5/Mid	500	25 - 7	146	544	109	574	42	7.3	115
		25 - 8	147	604	121				
6/Mid	1000	25 - 9	148	1052	105	1070	25	2.3	107
		25 - 10	149	1087	109				

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Table 9
Concentration Assessment of the 04 Aug 2018 and 05 Aug 2018 Formulations - Collected at Time of Preparation
(Analyzed 05 Aug 2018)

Group/ Strata	Conc (ppm)	Ref # (459506-)	Line # LC10-459506b	Analyzed Conc (ppm)	Percent of Target (%)	Mean Conc (ppm)	SD	RSD (%)	Mean Conc % of Target (%)
1&2/Mid	0	35 - 1	13	----------Not Detected----------					
		35 - 2	14	----------Not Detected----------					
3/Mid	0.25	35 - 3	15	0.276	110	0.279	0.0040	1.4	111
		35 - 4	16	0.281	113				
4/Mid	1.5	35 - 5	17	1.66	111	1.62	0.060	3.7	108
		35 - 6	18	1.57	105				
5/Mid	500	35 - 7	19	532	106	547	21	3.8	109
		35 - 8	20	562	112				
6/Mid	1000	35 - 9	21	1043	104	1019	34	3.3	102
		35 - 10	22	995	99.5				

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Table 10
Concentration Assessment of the 04 Aug 2018 and 05 Aug 2018 Samples - Collected at Time of Dispensation
(Analyzed 05 Aug 2018)

Group/ Strata	Conc (ppm)	Ref # (459506-)	Line # LC10-459506b	Analyzed Conc (ppm)	Percent of Target (%)	Mean Conc (ppm)	SD	RSD (%)	Mean Conc % of Target (%)
1&2/Mid	0	36 - 1	24	----------Not Detected----------					
		36 - 2	25	----------Not Detected----------					
3/Mid	0.25	36 - 3	26	0.346	138	0.350	0.0062	1.8	140
		36 - 4	27	0.355	142				
4/Mid	1.5	36 - 5	28	1.91	128	1.87	0.060	3.2	125
		36 - 6	29	1.83	122				
5/Mid	500	36 - 7	30	623	125	625	3.7	0.60	125
		36 - 8	31	628	126				
6/Mid	1000	36 - 9	32	1261	126	1262	2.2	0.17	126
		36 - 10	33	1264	126				

459506 results.xlsx 5C ToD
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Table 11
Concentration Assessment of the 07 Aug 2018 and 08 Aug 2018 Formulations - Collected at Time of Preparation
(Analyzed 08 Aug 2018)

Group/ Strata	Conc (ppm)	Ref # (459506-)	Line # LC7-459506a	Analyzed Conc (ppm)	Percent of Target (%)	Mean Conc (ppm)	SD	RSD (%)	Mean Conc % of Target (%)
1&2/Mid	0	45 - 1	15	----------Not Detected----------					
		45 - 2	16	----------Not Detected----------					
3/Mid	0.25	45 - 3	17	0.263	105	0.273	0.015	5.3	109
		45 - 4	18	0.284	114				
4/Mid	1.5	45 - 5	19	1.36	90.6	1.35	0.0095	0.70	90.1
		45 - 6	20	1.35	89.7				
5/Mid	500	45 - 7	21	465	92.9	464	0.47	0.10	92.8
		45 - 8	22	464	92.8				
6/Mid	1000	45 - 9	23	993	99.3	998	6.6	0.66	99.8
		45 - 10	24	1003	100				

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Table 12
Concentration Assessment of the 07 Aug 2018 and 08 Aug 2018 Samples - Collected at Time of Dispensation
(Analyzed 08 Aug 2018)

Group/ Strata	Conc (ppm)	Ref # (459506-)	Line # LC7-459506a	Analyzed Conc (ppm)	Percent of Target (%)	Mean Conc (ppm)	SD	RSD (%)	Mean Conc % of Target (%)
1&2/Mid	0	46 - 1	26	----------Not Detected----------					
		46 - 2	27	----------Not Detected----------					
3/Mid	0.25	46 - 3	28	0.416	166	0.415	0.0013	0.31	166
		46 - 4	29	0.414	166				
4/Mid	1.5	46 - 5	30	1.47	97.8	1.46	0.0029	0.20	97.7
		46 - 6	31	1.46	97.5				
5/Mid	500	46 - 7	32	495	99.0	504	13	2.6	101
		46 - 8	33	513	103				
6/Mid	1000	46 - 9	34	1107	111	1119	16	1.4	112
		46 - 10	35	1130	113				

459506 results.xlsx 6C ToD
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Table 13
Concentration Assessment of the 14 Aug 2018 and 15 Aug 2018 Formulations - Collected at Time of Preparation
(Analyzed 15 Aug 2018)

Group/ Strata	Conc (ppm)	Ref # (459506-)	Line # LC9-459506a	Analyzed Conc (ppm)	Percent of Target (%)	Mean Conc (ppm)	SD	RSD (%)	Mean Conc % of Target (%)
1&2/Mid	0	54 - 1	14	----------Not Detected----------					
		54 - 2	15	----------Not Detected----------					
3/Mid	0.25	54 - 3	16	0.304	122	0.296	0.012	3.9	118
		54 - 4	17	0.287	115				
4/Mid	1.5	54 - 5	18	1.71	114	1.73	0.0244	1.41	115
		54 - 6	19	1.75	117				
5/Mid	500	54 - 7	20	574	115	575	1.17	0.20	115
		54 - 8	21	575	115				
6/Mid	1000	54 - 9	22	1051	105	1003	67.2	6.69	100
		54 - 10	23	956	95.6				

459506 results.xlsx 7C
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Table 14
Concentration Assessment of the 14 Aug 2018 and 15 Aug 2018 Samples - Collected at Time of Dispensation
(Analyzed 15 Aug 2018)

Group/ Strata	Conc (ppm)	Ref # (459506-)	Line # LC9-459506a	Analyzed Conc (ppm)	Percent of Target (%)	Mean Conc (ppm)	SD	RSD (%)	Mean Conc % of Target (%)
1&2/Mid	0	55 - 1	26	----------Not Detected----------					
		55 - 2	27	----------Not Detected----------					
3/Mid	0.25	55 - 3	28	0.311	124	0.312	0.0015	0.48	125
		55 - 4	29	0.313	125				
4/Mid	1.5	55 - 5	30	1.93	129	1.86	0.0995	5.34	124
		55 - 6	31	1.79	120				
5/Mid	500	55 - 7	32	632	126	646	19	2.9	129
		55 - 8	33	659	132				
6/Mid	1000	55 - 9	35	1265	126	1284	27	2.1	128
		55 - 10	36	1303	130				

459506 results.xlsx 7C ToD
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Table 15
Concentration Assessment of the 16 Aug 2018 and 17 Aug 2018 Formulations - Collected at Time of Preparation
(Analyzed 17 Aug 2018)

Group/ Strata	Conc (ppm)	Ref # (459506-)	Line # LC10-459506c	Analyzed Conc (ppm)	Percent of Target (%)	Mean Conc (ppm)	SD	RSD (%)	Mean Conc % of Target (%)
1&2/Mid	0	64 - 1	64	----------Not Detected----------					
		64 - 2	65	----------Not Detected----------					
3/Mid	0.25	64 - 3	66	0.317	127	0.318	0.002	0.6	127
		64 - 4	67	0.320	128				
4/Mid	1.5	64 - 5	68	1.62	108	1.61	0.0146	0.91	107
		64 - 6	69	1.60	107				
5/Mid	500	64 - 7	70	556	111	549	8.87	1.61	110
		64 - 8	71	543	109				
6/Mid	1000	64 - 9	72	990	99.0	1001	16.0	1.60	100
		64 - 10	73	1012	101				

459506 results.xlsx 8C
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Table 16
Concentration Assessment of the 16 Aug 2018 and 17 Aug 2018 Samples - Collected at Time of Dispensation
(Analyzed 17 Aug 2018)

Group/ Strata	Conc (ppm)	Ref # (459506-)	Line # LC10-459506c	Analyzed Conc (ppm)	Percent of Target (%)	Mean Conc (ppm)	SD	RSD (%)	Mean Conc % of Target (%)
1&2/Mid	0	65 - 1	76	----------Not Detected----------					
		65 - 2	77	----------Not Detected----------					
3/Mid	0.25	65 - 3	78	0.388	155	0.382	0.0077	2.02	153
		65 - 4	79	0.377	151				
4/Mid	1.5	65 - 5	80	1.77	118	1.75	0.0269	1.54	117
		65 - 6	81	1.73	115				
5/Mid	500	65 - 7	82	582	116	580	3	0.5	116
		65 - 8	83	578	116				
6/Mid	1000	65 - 9	84	1108	111	1125	24	2.2	112
		65 - 10	85	1142	114				

459506 results.xlsx 8C ToD
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Table 17
Up to (Percent) 24-Hour Loss Monitoring of the 24 Jul 2018 and 25 Jul 2018 Formulations
(Analyzed 26 Jul 2018)

Group/ Strata	Conc (ppm)	Ref # (459506-)	Line # LC10-459506a	Analyzed Conc (ppm)	Percent of Target (%)	Mean Conc (ppm)	SD	RSD (%)	Mean Conc % of Target (%)	Mean Conc % of Pre-Storage (%)	% Loss (%)
1/Mid	0	12 - 1	63		----------Not Detected----------						
		12 - 2	64		----------Not Detected----------						
		12 - 3	65		----------Not Detected----------						
		12 - 4	66		----------Not Detected----------						
		12 - 5	67		----------Not Detected----------						
		12 - 6	68		----------Not Detected----------						
3/Mid	0.25	12 - 7	69	0.122	49.0	0.116	0.0048	4.2	46.4	51.4	-48.6
		12 - 8	70	0.114	45.8						
		12 - 9	71	0.112	45.0						
		12 - 10	72	0.109	43.7						
		12 - 11	73	0.120	47.9						
		12 - 12	74	0.117	46.8						
4/Mid	1.5	12 - 13	75	0.765	51.0	0.757	0.027	3.5	50.4	54.2	-45.8
		12 - 14	76	0.773	51.5						
		12 - 15	77	0.722	48.1						
		12 - 16	78	0.729	48.6						
		12 - 17	79	0.792	52.8						
		12 - 18	80	0.759	50.6						

Group	Pre-Storage Conc. (ppm)
1	NA
3	0.225
4	1.40

459506 results.xlsx 1C Loss
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Table 17
Up to (Percent) 24-Hour Loss Monitoring of the 24 Jul 2018 and 25 Jul 2018 Formulations (Continued)
(Analyzed 26 Jul 2018)

Group/ Strata	Conc (ppm)	Ref # (459506-)	Line # LC10-459506a	Analyzed Conc (ppm)	Percent of Target (%)	Mean Conc (ppm)	SD	RSD (%)	Mean Conc % of Target (%)	Mean Conc % of Pre-Storage (%)	% Loss (%)
5/Mid	500	12 - 19	81	301	60.1	306	13	4.3	61.2	59.2	-40.8
		12 - 20	82	286	57.2						
		12 - 21	83	311	62.2						
		12 - 22	84	304	60.7						
		12 - 23	85	310	61.9						
		12 - 24	86	325	65.1						
6/Mid	1000	12 - 25	87	503	50.3	533	19	3.5	53.3	51.9	-48.1
		12 - 26	88	522	52.2						
		12 - 27	89	549	54.9						
		12 - 28	90	553	55.3						
		12 - 29	91	539	53.9						
		12 - 30	92	531	53.1						

Group	Pre-Storage Conc. (ppm)
5	517
6	1027

459506 results.xlsx 1C Loss
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Table 18
Up to (Percent) 24-Hour Loss Monitoring of the 14 Aug 2018 and 15 Aug 2018 Formulations
(Analyzed 16 Aug 2018)

Group/ Strata	Conc (ppm)	Ref # (459506-)	Line # LC10-459506c	Analyzed Conc (ppm)	Percent of Target (%)	Mean Conc (ppm)	SD	RSD (%)	Mean Conc % of Target (%)	Mean Conc % of Pre-Storage (%)	% Loss (%)
5/Mid	500	59 - 19	26	342	68.3	321	14	4.5	64.2	55.8	-44.2
		59 - 20	27	327	65.5						
		59 - 21	28	313	62.5						
		59 - 22	29	299	59.9						
		59 - 23	30	324	64.9						
		59 - 24	31	319	63.8						
6/Mid	1000	59 - 25	32	513	51.3	565	42	7.5	56.5	56.3	-43.7
		59 - 26	33	545	54.5						
		59 - 27	34	555	55.5						
		59 - 28	35	574	57.4						
		59 - 29	36	640	64.0						
		59 - 30	37	561	56.1						

Group	Pre-Storage Conc. (ppm)
5	575
6	1003

Samples from Group 1&2, 3 and 4 had inteferences, hence the peak could not be quantitated

459506 results.xlsx 2C Loss
Printed: 24Oct2018 8:35 AM

Table 19
Up to (Percent) 21-Hour Loss Monitoring of the 16 Aug 2018 and 17 Aug 2018 Formulations
(Analyzed 18 Aug 2018)

Group/ Strata	Conc (ppm)	Ref # (459506-)	Line # LC10-459506c	Analyzed Conc (ppm)	Percent of Target (%)	Mean Conc (ppm)	SD	RSD (%)	Mean Conc % of Target (%)	Mean Conc % of Pre-Storage (%)	% Loss (%)
5/Mid	500	66 - 8	111	369	73.9	383	30	7.9	76.6	69.8	-30.2
		66 - 9	112	351	70.2						
		66 8a	113	390	77.9						
		66 9a	114	422	84.4						
6/Mid	1000	66 - 10	115	643	64.3	685	54	7.9	68.5	68.4	-31.6
		66 - 11	116	666	66.6						
		66 -10a	117	745	74.5						
		66 -11a	118	nd	nd						

Group	Pre-Storage Conc. (ppm)
5	549
6	1001

Samples from Group 1&2, 3 and 4 had inteferences, hence the peak could not be quantitated

nd - Not Determined due to lack of chromatography

459506 results.xlsx 3C Loss
Printed: 24Oct2018 8:35 AM

APPENDIX 1

Laboratory Method

Lab Method No.:	459.DIW1.01	Version No.:	2
Replaces Version No.:	1	Page:	1 of 8

Analytical Method for the Analysis of Trichloroethylene in DI Water by HPLC/UV

Approved by:

Date: 06 DEC 2016

Shiladitya Sen, PhD
Research Chemist, Analytical Chemistry

Prepared by:

Date: 06 Dec 2016

Joseph B. Gump, BA
Chemist III, Analytical Chemistry

Charles River Analytical Chemistry Department

Lab Method No.:	459.DIW1.01	Version No.:	2
Replaces Version No.:	1	Page:	2 of 8

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1. PURPOSE

The purpose of this method is to describe procedures to be employed for the analysis of trichloroethylene in DI water by HPLC/UV.

2. SCOPE

The procedures provided in this method are applicable for the quantitation of trichloroethylene in DI water at concentrations ranging from 0.200 to 1000 ppm trichloroethylene.

3. DEFINITIONS/ABBREVIATIONS

The following abbreviations may appear in this method:

- µL - microliter
- µg - microgram
- ACN - acetonitrile
- cm - centimeter
- CAD - charged aerosol detector
- CMC - carboxymethylcellulose
- DAD - diode array detector
- DI - deionized
- DMSO - dimethylsulfoxide
- ECD - electron capture detector
- EtOH - ethanol
- FA - formic acid
- FID - flame ionization detector
- GAA - glacial acetic acid
- GC - gas chromatography
- HPLC - high performance liquid chromatography
- HPMC - hydroxypropyl methylcellulose
- IC - ion chromatography
- IS - internal standard
- kg - kilogram
- L - liter
- M - molar
- MC - methylcellulose

Lab Method No.:	459.DIW1.01	Version No.:	2
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MeOH - methanol
mg - milligram
mL - milliliter
mm - millimeter
mM - millimolar
MS - mass spectrometry
NA - not applicable
ng - nanogram
nm - nanometer
ppm - parts per million
pg - picogram
QC - quality control
%RE - percent relative error
RI - refractive index detector
RSD - relative standard deviation
SD - standard deviation
TFA - trifluoroacetic acid
UHPLC - ultra-high performance liquid chromatography
UV - ultraviolet
v - volume
VIS - visible
VWD - variable wavelength detector
w - weight

4. EQUIPMENT AND SUPPLIES

The following equipment and/or supplies may be used while performing this method:

96-well analytical plates
Analytical balances and weighing vessels
Autosampler vials and caps with appropriate liners
Class A glass pipettes
Corning® Costar® 3635, acrylic 96-well UV plates
Disposable pipettes

Lab Method No.:	459.DIW1.01	Version No.:	2
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Laboratory glassware (*e.g.*, volumetric flasks, graduated cylinders, beakers, *etc.*)
Laboratory refrigerators, freezers, incubators, *etc.*
Laboratory sample mixing equipment (shakers, vortexers, *etc.*)
Membrane filters of 0.45-µm (or finer) porosity
pH meters
Polypropylene labware (*e.g.*, volumetric flasks, graduated cylinders, beakers, *etc.*)
Polypropylene tubes and caps with appropriate liners
Repeater pipettes with appropriately sized tips
Sonicators
Syringe-end filters of 0.45-µm (or finer) porosity
Syringes with dosing cannula or needles

5. PROCEDURE

5.1. Preparation of Reagents

Volumes of these reagents can be adjusted as long as proportionality is maintained and their preparation is documented in the study records. Expiration dates and storage conditions of prepared reagents will be assigned according to SOPs.

5.1.1. Mobile Phase: 0.1% Phosphoric Acid in 90:10 (v/v) DI Water:ACN

Combine DI water and ACN in a 90:10 (v/v) ratio and stir to mix. Add 0.1% volume of Phosphoric acid and stir to mix.

5.2. Preparation of Stock Solutions

The following preparation schemes are suggested approaches. Appropriate modifications to reach the targeted nominal calibration and QC concentrations are acceptable. For example, if the concentration of a primary stock solution is not practical for use in the preparation of calibration standards or QC samples, a secondary stock solution may be prepared. The preparation of any secondary or working stock solutions will be documented in the study records. Volumes of these stock solutions can be adjusted as long as proportionality is maintained and the preparation is documented in the study records. Expiration dates and storage conditions of stock solutions are assigned based on available stability data.

Stock solutions are corrected for purity, water content, and salt content, if applicable.

Lab Method No.:	459.DIW1.01	Version No.:	2
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5.2.1. Preparation of Calibration Stock Solution

A trichloroethylene calibration stock solution is prepared at a concentration of 1.00 mg trichloroethylene/mL as follows. Transfer 10 µL of trichloroethylene (no correction for purity) to a secondary container with of 14.59 mL of DI water. Mix and/or sonicate the preparation as necessary to achieve complete dissolution.

A secondary trichloroethylene calibration stock solution is prepared at a concentration of 0.100 mg trichloroethylene/mL by diluting the calibration stock solution 10-fold with DI water. Mix with vortex action.

5.3. Preparation of Calibration Standards

Prepare calibration standards at concentrations ranging from 0.100 and 40 µg trichloroethylene/mL by combining aliquots of the calibration stock solution and DI water. Prepare at least triplicate calibration standards at each concentration for any validation sessions; prepare at least single calibration standards at each concentration for routine analyses.

5.4. Preparation and Processing of QC Samples (Solution Formulations)

Prepare the highest concentration QC sample at a concentration of 1000 ppm trichloroethylene as follows. Dissolve approximately 10 µL of trichloroethylene (no correction for purity) to a final volume of 14.6 mL with vehicle. Mix the preparation as needed for complete dissolution. Dilute portions of the highest concentration QC sample as necessary with vehicle to prepare the mid concentration QC (20.0 ppm trichloroethylene) and the lowest concentration QC (0.200 ppm trichloroethylene) samples. Alternate QC concentrations may be prepared within the validated range and using the same general dilution schemes.

Process the QC samples in triplicate by combining aliquots of the QC samples with DI water in polypropylene tubes and mix with vortex action. Further dilute the QC samples as necessary with DI water to achieve a final diluted concentration within the calibration range. Prepare a single blank QC sample with the vehicle.

5.5. Formulation Sample Collection and Processing (Solution/Suspension/Outside Lab)

Collect or receive samples from the formulations department or from an outside laboratory. If samples are collected, use a syringe and dosing cannula and place in polypropylene tubes. Process at least 2 samples from each formulation for analysis; the remaining samples (back-up samples) are stored room temperature and, if not needed for analysis, will be discarded as indicated in the protocol or according to SOP if not designated in the protocol. Process samples by adding DI water as needed and mix with vortex action. Any remaining samples are stored room temperature and, if not needed for analysis, will be discarded as indicated in the protocol or

Lab Method No.:	459.DIW1.01	Version No.:	2
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according to SOP if not designated in the protocol. Further dilute portions of the processed samples as needed with DI water to achieve a final diluted sample concentration within the calibration range. Store processed formulation samples under appropriate conditions.

5.6. Instrumentation

Instrumentation can be substituted provided that the design parameters of the substituted instrumentation are at least comparable to those of the unit initially used.

5.6.1. HPLC Set-Up Parameters (Isocratic)

Instrument:	Agilent 1100 liquid chromatograph equipped with a variable wavelength detector, autosampler, and Dionex Chromeleon® software version 6.8, or equivalent system
Column:	Agilent 300 SB-C8, 100 mm × 3.0 mm, 3.5-µm particle-size
Mobile Phase:	0.1% Phosphoric acid in 90:10 (v/v) DI water:ACN
Flow Rate:	0.800 mL/minute
Column Temperature:	25°C
Autosampler Temperature:	Ambient
Detector:	UV at 210 nm
Injection Volume:	40 µL
Retention Time:	Approximately 5.9 minutes for trichloroethylene
Run Time:	7.0 minutes

5.7. Quantitation, Acceptance Criteria, and Data Reporting

Single injections are made of each calibration standard and processed QC and formulation sample. A calibration curve is constructed for each set of analyses. The trichloroethylene peak areas (y) and the theoretical concentrations (x) of the calibration standards are fit with least-squares regression analysis to the quadratic function with $1/x^2$ weighting:

$$y = ax^2 + bx + c$$

Concentrations are calculated from the results of the regression analysis using Dionex Chromeleon® software (version 6.80). The concentration data are transferred to a Microsoft Excel® spreadsheet, where appropriate summary statistics, *i.e.*, mean, SD, RSD, %RE, and concentration as a percent of target concentration, are calculated and presented in tabular form.

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The concentrations of QC and/or formulation samples are calculated by applying any necessary factors to correct for sample dilution or unit conversion.

The analytical results are evaluated against acceptance criteria detailed in the protocol and/or SOPs AC-047 or AC-048. Deviations from expected results are investigated according to the appropriate departmental SOP.

Data is reported to the Principal Chemist, the Study Director, and other appropriate individuals.

6. VALIDATION HISTORY/STABILITY PARAMETERS/REFERENCES/SYNONYMS

Full Validation in WIL-459504

7. REVISION HISTORY

Version 1 (Issued 16 Nov 2016) to Version 2
Section 5.6.1- Updated column description.

APPENDIX 4

Individual Animal Data

TABLE 4.1 (DAILY EXAMINATIONS)

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 1

SPONSOR:HSIA INDIVIDUAL CLINICAL OBSERVATIONS

OBSERVATION	ANIMAL	GROUP	GESTATIONAL DAY 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
NO SIGNIFICANT CLINICAL OBSERVATIONS	8791	1	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8798	1	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8817	1	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8768	1	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8843	1	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8777	1	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8779	1	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8852	1	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8871	1	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8820	1	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8812	1	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8772	1	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8883	1	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8755	1	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8926	1	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8776	1	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8803	1	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8751	1	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8825	1	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8738	1	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8894	1	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8766	1	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P			P		P		P
	8886	1	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8858	1	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8836	1	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8800	2	P	P	P	P	P	P	P	P	P	P				P			P	P				
	8851	2	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P

GRADE CODE: P = PRESENT 1 = SLIGHT 2 = MODERATE 3 = SEVERE

1- 0 PPM 2- 15 MG/KG RA 3- 0.25 PPM 4- 1.5 PPM 5- 500 PPM 6- 1000 PPM

TABLE 4.1 (DAILY EXAMINATIONS)

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 2

SPONSOR:HSIA INDIVIDUAL CLINICAL OBSERVATIONS

OBSERVATION	ANIMAL	GROUP	GESTATIONAL DAY 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
NO SIGNIFICANT CLINICAL OBSERVATIONS	8822	2	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8847	2	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		P
	8818	2	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8789	2	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8809	2	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8808	2	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8801	2	P	P	P	P	P	P	P	P	P			P	P	P	P	P	P	P	P	P	P	P
	8810	2	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8854	2	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8802	2	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		P	P	P	P
	8842	2	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P			P	P	P
	8840	2	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8756	2	P	P	P	P	P	P	P	P	P	P	P	P	P	P		P	P	P	P	P	P	P
	8757	2	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P				P	P	P
	8780	2	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8931	2	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8850	2	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8740	2	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8901	2	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8743	2	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8827	2	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		P		P	P		
	8900	2	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8930	2	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8835	3	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8853	3	P	P	P	P	P		P	P		P	P			P								
	8826	3	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8839	3	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P

GRADE CODE: P = PRESENT 1 = SLIGHT 2 = MODERATE 3 = SEVERE

1- 0 PPM 2- 15 MG/KG RA 3- 0.25 PPM 4- 1.5 PPM 5- 500 PPM 6- 1000 PPM

TABLE 4.1 (DAILY EXAMINATIONS)

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 3

SPONSOR:HSIA INDIVIDUAL CLINICAL OBSERVATIONS

OBSERVATION	ANIMAL	GROUP	GESTATIONAL DAY 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
NO SIGNIFICANT CLINICAL OBSERVATIONS	8834	3	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8773	3	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8891	3	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8869	3	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8879	3	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8897	3	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8814	3	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8849	3	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8774	3	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8758	3	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8747	3	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8913	3	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8893	3	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8767	3	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8889	3	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8764	3	P	P	P	P	P	P	P	P	P	P	P	P	P		P			P		P		
	8908	3	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8916	3	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P			P	P	P	P	P
	8807	3	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8859	3	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8910	3	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8786	4	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8813	4	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
	8806	4	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8805	4	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8765	4	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8823	4	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P

GRADE CODE: P = PRESENT 1 = SLIGHT 2 = MODERATE 3 = SEVERE

1- 0 PPM 2- 15 MG/KG RA 3- 0.25 PPM 4- 1.5 PPM 5- 500 PPM 6- 1000 PPM

TABLE 4.1 (DAILY EXAMINATIONS)

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 4

SPONSOR:HSIA INDIVIDUAL CLINICAL OBSERVATIONS

OBSERVATION	ANIMAL	GROUP	GESTATIONAL DAY 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
NO SIGNIFICANT CLINICAL OBSERVATIONS	8884	4	P	P	P	P	P	P	P	P	P	P	P	P	P	P		P	P	P	P	P	P	P
	8899	4	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8844	4	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8873	4	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8848	4	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8783	4	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8811	4	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P			P	P
	8895	4	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8881	4	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8788	4	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8890	4	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8907	4	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8942	4	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8741	4	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8792	4	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8876	4	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8941	4	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8857	4	P	P	P	P	P	P	P	P	P	P	P	P	P	P			P		P	P		
	8867	4	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8824	5	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8790	5	P	P	P	P	P			P	P					P								P
	8838	5	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8763	5	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8846	5	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8775	5	P	P	P	P	P	P		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8875	5	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8874	5	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P

GRADE CODE: P = PRESENT 1 = SLIGHT 2 = MODERATE 3 = SEVERE

1- 0 PPM 2- 15 MG/KG RA 3- 0.25 PPM 4- 1.5 PPM 5- 500 PPM 6- 1000 PPM

TABLE 4.1 (DAILY EXAMINATIONS)

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 5

SPONSOR:HSIA INDIVIDUAL CLINICAL OBSERVATIONS

OBSERVATION	ANIMAL	GROUP	GESTATIONAL DAY 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
NO SIGNIFICANT CLINICAL OBSERVATIONS	8878	5	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8828	5	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8833	5	P	P	P	P	P	P	P	P	P	P	P	P		P	P	P	P	P	P	P	P	P
	8855	5	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8937	5	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8837	5	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8864	5	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8735	5	P	P	P	P		P		P	P	P	P	P		P	P	P	P	P	P	P	P	P
	8845	5	P	P	P	P	P	P	P	P	P	P	P			P					P		P	
	8784	5	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8830	5	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8936	5	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
	8778	5	P	P	P		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8863	5	P	P	P	P	P		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8928	5	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8933	5	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8868	5	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		P	P
	8771	6	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8795	6	P	P	P	P	P	P	P	P			P	P	P		P	P	P	P	P	P	P	P
	8829	6	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8799	6	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8821	6	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8831	6	P	P	P	P	P	P	P		P		P	P	P	P		P	P	P	P	P	P	P
	8870	6	P	P	P	P	P	P	P	P			P	P	P	P	P	P	P	P	P	P	P	P
	8861	6	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8856	6	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8885	6	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P

GRADE CODE: P = PRESENT 1 = SLIGHT 2 = MODERATE 3 = SEVERE

1- 0 PPM 2- 15 MG/KG RA 3- 0.25 PPM 4- 1.5 PPM 5- 500 PPM 6- 1000 PPM

TABLE 4.1 (DAILY EXAMINATIONS)

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 6

SPONSOR:HSIA INDIVIDUAL CLINICAL OBSERVATIONS

OBSERVATION	ANIMAL	GROUP	GESTATIONAL DAY 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
NO SIGNIFICANT CLINICAL OBSERVATIONS	8769	6	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8896	6	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8760	6	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8815	6	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8888	6	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		P	P
	8793	6	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8804	6	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8785	6	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8819	6	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		P	P	P	P	P	P
	8860	6	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8865	6	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8770	6	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8739	6	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		P		P			
	8917	6	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8872	6	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
SCHEDULED EUTHANASIA; GESTATION DAY 21	8791	1																						P
	8798	1																						P
	8817	1																						P
	8768	1																						P
	8843	1																						P
	8777	1																						P
	8779	1																						P
	8852	1																						P
	8871	1																						P
	8820	1																						P
	8812	1																						P

GRADE CODE: P = PRESENT 1 = SLIGHT 2 = MODERATE 3 = SEVERE

1- 0 PPM 2- 15 MG/KG RA 3- 0.25 PPM 4- 1.5 PPM 5- 500 PPM 6- 1000 PPM

TABLE 4.1 (DAILY EXAMINATIONS)

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 7

SPONSOR:HSIA INDIVIDUAL CLINICAL OBSERVATIONS

OBSERVATION	ANIMAL	GROUP	GESTATIONAL DAY 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
SCHEDULED EUTHANASIA; GESTATION DAY 21	8772	1	P
	8883	1	P
	8755	1	P
	8926	1	P
	8776	1	P
	8803	1	P
	8751	1	P
	8825	1	P
	8738	1	P
	8894	1	P
	8886	1	P
	8858	1	P
	8836	1	P
	8800	2	P
	8851	2	P
	8822	2	P
	8847	2	P
	8818	2	P
	8789	2	P
	8809	2	P
	8808	2	P
	8801	2	P
	8810	2	P
	8854	2	P
	8802	2	P
	8842	2	P
	8840	2	P

GRADE CODE: P = PRESENT 1 = SLIGHT 2 = MODERATE 3 = SEVERE

1- 0 PPM 2- 15 MG/KG RA 3- 0.25 PPM 4- 1.5 PPM 5- 500 PPM 6- 1000 PPM

TABLE 4.1 (DAILY EXAMINATIONS)

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 8

SPONSOR:HSIA INDIVIDUAL CLINICAL OBSERVATIONS

OBSERVATION	ANIMAL	GROUP	GESTATIONAL DAY 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
SCHEDULED EUTHANASIA; GESTATION DAY 21	8756	2	P
	8757	2	P
	8780	2	P
	8931	2	P
	8850	2	P
	8740	2	P
	8901	2	P
	8743	2	P
	8827	2	P
	8900	2	P
	8930	2	P
	8835	3	P
	8853	3	P
	8826	3	P
	8839	3	P
	8834	3	P
	8773	3	P
	8891	3	P
	8869	3	P
	8879	3	P
	8897	3	P
	8814	3	P
	8849	3	P
	8774	3	P
	8758	3	P
	8747	3	P
	8913	3	P

GRADE CODE: P = PRESENT 1 = SLIGHT 2 = MODERATE 3 = SEVERE

1- 0 PPM 2- 15 MG/KG RA 3- 0.25 PPM 4- 1.5 PPM 5- 500 PPM 6- 1000 PPM

TABLE 4.1 (DAILY EXAMINATIONS)

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 9

SPONSOR:HSIA INDIVIDUAL CLINICAL OBSERVATIONS

OBSERVATION	ANIMAL	GROUP	GESTATIONAL DAY 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
			1 1 1 1 1 1 1 1 1 1 2 2
SCHEDULED EUTHANASIA; GESTATION DAY 21	8893	3	P
	8767	3	P
	8889	3	P
	8764	3	P
	8908	3	P
	8916	3	P
	8807	3	P
	8859	3	P
	8910	3	P
	8786	4	P
	8813	4	P
	8806	4	P
	8805	4	P
	8765	4	P
	8823	4	P
	8884	4	P
	8899	4	P
	8844	4	P
	8873	4	P
	8848	4	P
	8783	4	P
	8811	4	P
	8895	4	P
	8881	4	P
	8788	4	P
	8890	4	P
	8907	4	P

GRADE CODE: P = PRESENT 1 = SLIGHT 2 = MODERATE 3 = SEVERE

1- 0 PPM 2- 15 MG/KG RA 3- 0.25 PPM 4- 1.5 PPM 5- 500 PPM 6- 1000 PPM

TABLE 4.1 (DAILY EXAMINATIONS)

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 10

SPONSOR:HSIA INDIVIDUAL CLINICAL OBSERVATIONS

OBSERVATION	ANIMAL	GROUP	GESTATIONAL DAY 0 1 2 3 4 5 6 7 8 9	1 1 1 1 1 1 1 1 1 1 2 2 0 1 2 3 4 5 6 7 8 9 0 1
SCHEDULED EUTHANASIA; GESTATION DAY 21	8942	4		P
	8741	4		P
	8792	4		P
	8876	4		P
	8941	4		P
	8857	4		P
	8867	4		P
	8824	5		P
	8790	5		P
	8838	5		P
	8763	5		P
	8846	5		P
	8775	5		P
	8875	5		P
	8874	5		P
	8878	5		P
	8828	5		P
	8833	5		P
	8855	5		P
	8937	5		P
	8837	5		P
	8864	5		P
	8735	5		P
	8845	5		P
	8784	5		P
	8830	5		P
	8936	5		P

GRADE CODE: P = PRESENT 1 = SLIGHT 2 = MODERATE 3 = SEVERE

1- 0 PPM 2- 15 MG/KG RA 3- 0.25 PPM 4- 1.5 PPM 5- 500 PPM 6- 1000 PPM

TABLE 4.1 (DAILY EXAMINATIONS)

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 11
SPONSOR:HSIA INDIVIDUAL CLINICAL OBSERVATIONS

OBSERVATION	ANIMAL	GROUP	GESTATIONAL DAY 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
SCHEDULED EUTHANASIA; GESTATION DAY 21	8778	5	P
	8863	5	P
	8928	5	P
	8933	5	P
	8868	5	P
	8771	6	P
	8795	6	P
	8829	6	P
	8799	6	P
	8821	6	P
	8831	6	P
	8870	6	P
	8861	6	P
	8856	6	P
	8885	6	P
	8769	6	P
	8896	6	P
	8760	6	P
	8815	6	P
	8888	6	P
	8793	6	P
	8804	6	P
	8785	6	P
	8819	6	P
	8860	6	P
	8865	6	P
	8770	6	P

GRADE CODE: P = PRESENT 1 = SLIGHT 2 = MODERATE 3 = SEVERE

1- 0 PPM 2- 15 MG/KG RA 3- 0.25 PPM 4- 1.5 PPM 5- 500 PPM 6- 1000 PPM

TABLE 4.1 (DAILY EXAMINATIONS)

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 12

SPONSOR:HSIA INDIVIDUAL CLINICAL OBSERVATIONS

OBSERVATION	ANIMAL	GROUP	GESTATIONAL DAY 0 1 2 3 4 5 6 7 8 9	1 0	1 1 2 3 4 5 6 7 8 9	2 0	2 1
SCHEDULED EUTHANASIA; GESTATION DAY 21	8739	6					P
	8917	6					P
	8872	6					P
DELIVERED	8766	1					P
HAIR LOSS FORELIMB(S)	8766	1			P P P P P		
	8800	2			P P P P P P P P P		
	8801	2			P P P		
	8756	2			P		
	8827	2			P P P P P		P
	8853	3	P P		P P P P P P P P P		P
	8764	3			P P P P P P P		P
	8916	3			P P		
	8813	4					P
	8811	4			P		
	8857	4			P P P P P P		P
	8790	5	P P P		P P P P P P P P P		
	8845	5			P P P P P P P P P		P
	8936	5					P
	8868	5			P		
	8888	6			P		
	8739	6			P P P P P P		P
HAIR LOSS VENTRAL TRUNK	8800	2			P P		
	8853	3			P P P P		
HAIR LOSS FACIAL AREA	8847	2			P		

GRADE CODE: P = PRESENT 1 = SLIGHT 2 = MODERATE 3 = SEVERE

1- 0 PPM 2- 15 MG/KG RA 3- 0.25 PPM 4- 1.5 PPM 5- 500 PPM 6- 1000 PPM

TABLE 4.1 (DAILY EXAMINATIONS)

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 13

SPONSOR:HSIA INDIVIDUAL CLINICAL OBSERVATIONS

OBSERVATION	ANIMAL	GROUP	GESTATIONAL DAY 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
HAIR LOSS HINDLIMB(S)	8853	3	P
PUPIL DILATED LEFT EYE	8775	5	P
	8833	5	P
	8735	5	P P P
	8778	5	P
	8863	5	P
	8795	6	P P P
	8831	6	P P P
PUPIL DILATED RIGHT EYE	8775	5	P
	8833	5	P
	8735	5	P P P
	8778	5	P
	8863	5	P
	8795	6	P P P
	8831	6	P P P
RED NASAL DISCHARGE	8870	6	P
DRIED RED MATERIAL AROUND NOSE	8884	4	P
DRIED RED MATERIAL AROUND LEFT EYE	8842	2	P P
WET RED MATERIAL UROGENITAL AREA	8819	6	P
SCABBING DORSAL NECK	8757	2	P

GRADE CODE: P = PRESENT 1 = SLIGHT 2 = MODERATE 3 = SEVERE

1- 0 PPM 2- 15 MG/KG RA 3- 0.25 PPM 4- 1.5 PPM 5- 500 PPM 6- 1000 PPM

TABLE 4.1 (DAILY EXAMINATIONS)

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 14

SPONSOR:HSIA INDIVIDUAL CLINICAL OBSERVATIONS

OBSERVATION	ANIMAL	GROUP	GESTATIONAL DAY 0 1 2 3 4 5 6 7 8 9	1 1 1 1 1 1 1 1 1 1 2 2 0 1 2 3 4 5 6 7 8 9 0 1
WET RED MATERIAL AROUND MOUTH	8870	6		P
SCABBING AROUND MOUTH	8802	2		P
	8842	2		P P P
	8757	2		P P

GRADE CODE: P = PRESENT 1 = SLIGHT 2 = MODERATE 3 = SEVERE

1- 0 PPM 2- 15 MG/KG RA 3- 0.25 PPM 4- 1.5 PPM 5- 500 PPM 6- 1000 PPM

PCOv3.14
11/02/2018

TABLE 4.2 (1 HOUR POSTDOSING)

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 1

SPONSOR:HSIA INDIVIDUAL POST-DOSE OBSERVATIONS

- - - F E M A L E S - - -

OBSERVATION: 1 HOUR POST-DOSING	ANIMAL	GD GP	6	7	8	9	10	11	12	13	14	15
NORMAL												
NO SIGNIFICANT CLINICAL OBSERVATIONS	8800	2			P	P		P	P		P	P P
	8851	2	P	P	P	P	P	P	P	P	P	P P
	8822	2	P	P	P	P	P	P	P	P	P	P P
	8847	2	P	P	P	P	P	P	P	P	P	P P
	8818	2	P	P	P	P	P	P	P	P	P	P P
	8789	2			P	P	P	P			P	P P
	8809	2	P	P	P	P	P	P	P	P	P	P P
	8808	2	P	P	P	P	P	P	P	P	P	P P
	8801	2	P	P	P	P	P	P	P	P	P	P P
	8810	2	P	P	P	P	P		P	P	P	P P
	8854	2	P		P			P		P	P	P P
	8802	2	P	P	P	P	P	P	P	P	P	P P
	8842	2	P	P	P	P		P	P	P	P	P P
	8840	2	P	P	P	P	P	P	P	P	P	P P
	8756	2	P	P	P	P	P	P	P	P	P	P P
	8757	2	P		P		P	P	P	P	P	P P
	8780	2	P	P	P	P	P	P	P	P	P	P P
	8931	2	P	P	P	P	P	P	P	P	P	P P
	8850	2	P	P	P	P	P	P	P	P	P	P P
	8740	2	P	P	P	P	P	P	P	P	P	P P
	8901	2	P	P	P	P	P	P	P	P	P	P P
	8743	2		P			P	P	P	P	P	P P
	8827	2	P	P	P	P	P	P	P	P	P	P P
	8900	2	P	P	P	P	P	P	P	P	P	P P
	8930	2	P	P	P	P	P	P	P	P	P	P P
EYES/EARS/NOSE												
PUPIL DILATED LEFT EYE	8800	2	P			P			P			
	8789	2	P					P	P			
	8810	2						P				
	8854	2		P		P	P		P			

1- 0 PPM 2- 15 MG/KG RA 3- 0.25 PPM 4- 1.5 PPM 5- 500 PPM 6- 1000 PPM

GRADE CODE: P = PRESENT 1 = SLIGHT 2 = MODERATE 3 = SEVERE

TABLE 4.2 (1 HOUR POSTDOSING)

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 2

SPONSOR:HSIA INDIVIDUAL POST-DOSE OBSERVATIONS

- - - F E M A L E S - - -

OBSERVATION: 1 HOUR POST-DOSING	ANIMAL	GD GP	6	7	8	9	10	11	12	13	14	15
PUPIL DILATED LEFT EYE	8842	2					P					
	8757	2			P		P					
	8743	2	P			P	P					
PUPIL DILATED RIGHT EYE	8800	2	P				P			P		
	8789	2	P						P	P		
	8810	2							P			
	8854	2			P		P	P		P		
	8842	2					P					
	8757	2			P		P					
	8743	2	P			P	P					

1- 0 PPM 2- 15 MG/KG RA 3- 0.25 PPM 4- 1.5 PPM 5- 500 PPM 6- 1000 PPM

GRADE CODE: P = PRESENT 1 = SLIGHT 2 = MODERATE 3 = SEVERE

PCOPDv1.05
09/24/2018

TABLE 4.3

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 1

SPONSOR:HSIA INDIVIDUAL BODY WEIGHTS DURING GESTATION [G]

	PREGNANCY STATUS	DAY 0	1	2	3	4	5	6	7	8
DAMS FROM GROUP 1: 0 PPM										
8738	G	253.	266.	269.	273.	280.	280.	285.	289.	301.
8751	G	278.	283.	293.	295.	294.	302.	308.	311.	319.
8755	G	249.	258.	267.	268.	273.	282.	286.	291.	295.
8766	G	239.	252.	255.	260.	263.	271.	270.	268.	277.
8768	G	244.	256.	258.	261.	263.	265.	271.	284.	292.
8772	G	239.	241.	252.	250.	259.	272.	270.	276.	279.
8776	G	255.	261.	274.	277.	280.	284.	291.	298.	301.
8777	G	266.	268.	276.	282.	290.	292.	299.	297.	306.
8779	G	269.	277.	284.	293.	303.	307.	314.	318.	324.
8791	G	228.	245.	251.	258.	262.	272.	277.	280.	285.
8798	G	238.	248.	248.	254.	262.	262.	261.	268.	278.
8803	G	261.	269.	284.	290.	295.	302.	304.	312.	318.
8812	G	228.	237.	254.	251.	257.	261.	267.	272.	277.
8817	G	239.	248.	253.	255.	260.	265.	269.	273.	280.
8820	G	229.	239.	243.	253.	252.	259.	264.	267.	271.
8825	G	261.	272.	277.	279.	282.	291.	299.	307.	310.
8836	G	258.	263.	270.	280.	288.	290.	293.	302.	312.
8843	G	252.	263.	269.	274.	282.	281.	289.	288.	297.
8852	NG	248.	262.	259.	276.	270.	279.	286.	295.	291.
8858	G	255.	263.	270.	271.	281.	286.	293.	299.	309.
8871	G	241.	254.	259.	267.	266.	279.	279.	285.	290.
8883	G	244.	254.	263.	260.	268.	274.	278.	284.	285.
8886	G	223.	244.	245.	255.	259.	265.	267.	268.	269.
8894	G	252.	263.	272.	281.	281.	289.	297.	303.	311.
8926	G	252.	262.	267.	272.	274.	279.	280.	290.	294.
MEAN		248.	258.	265.	269.	274.	280.	284.	289.	295.
S.D.		14.0	12.0	13.2	13.6	14.0	13.6	15.0	15.4	16.2
N		24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.3

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 2

SPONSOR:HSIA INDIVIDUAL BODY WEIGHTS DURING GESTATION [G]

	PREGNANCY STATUS	DAY 9	10	11	12	13	14	15	16	17
DAMS FROM GROUP 1: 0 PPM										
8738	G	303.	313.	320.	322.	329.	333.	345.	356.	368.
8751	G	320.	331.	341.	345.	348.	353.	361.	374.	381.
8755	G	301.	309.	317.	324.	332.	337.	349.	361.	374.
8766	G	280.	287.	294.	295.	299.	294.	298.	305.	313.
8768	G	295.	301.	311.	314.	322.	333.	341.	351.	365.
8772	G	284.	292.	295.	295.	305.	308.	315.	324.	331.
8776	G	303.	310.	313.	318.	320.	327.	335.	350.	366.
8777	G	311.	324.	333.	340.	344.	350.	361.	378.	400.
8779	G	336.	339.	344.	356.	368.	373.	387.	397.	416.
8791	G	293.	299.	303.	306.	307.	317.	323.	328.	334.
8798	G	281.	291.	292.	300.	306.	312.	325.	330.	345.
8803	G	326.	330.	345.	348.	358.	370.	379.	399.	412.
8812	G	278.	286.	290.	295.	300.	308.	322.	330.	342.
8817	G	286.	286.	296.	296.	301.	315.	324.	332.	340.
8820	G	276.	279.	287.	294.	307.	312.	325.	331.	342.
8825	G	319.	325.	329.	335.	340.	349.	360.	370.	387.
8836	G	303.	309.	319.	323.	327.	330.	336.	340.	360.
8843	G	300.	304.	311.	312.	316.	323.	325.	338.	346.
8852	NG	290.	290.	300.	299.	296.	292.	287.	300.	290.
8858	G	312.	321.	329.	335.	341.	348.	356.	370.	380.
8871	G	296.	301.	313.	319.	323.	326.	334.	342.	351.
8883	G	293.	294.	300.	306.	309.	314.	316.	329.	337.
8886	G	276.	281.	291.	290.	302.	301.	316.	318.	331.
8894	G	317.	321.	329.	335.	349.	356.	369.	381.	402.
8926	G	295.	300.	296.	309.	312.	319.	320.	318.	325.
MEAN		299.	306.	312.	317.	324.	330.	338.	348.	360.
S.D.		16.6	17.1	18.3	19.4	20.1	21.3	22.6	25.8	28.7
N		24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.3

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 3

SPONSOR:HSIA INDIVIDUAL BODY WEIGHTS DURING GESTATION [G]

	PREGNANCY STATUS	DAY 18	19	20	21	
DAMS FROM GROUP 1: 0 PPM						
8738	G	385.	407.	430.	437.	SCHEDULED NECROPSY DAY 21
8751	G	391.	401.	416.	432.	SCHEDULED NECROPSY DAY 21
8755	G	389.	401.	419.	445.	SCHEDULED NECROPSY DAY 21
8766	G	330.	346.	355.	379.	SCHEDULED NECROPSY DAY 21
8768	G	378.	398.	418.	437.	SCHEDULED NECROPSY DAY 21
8772	G	350.	360.	379.	403.	SCHEDULED NECROPSY DAY 21
8776	G	383.	404.	425.	445.	SCHEDULED NECROPSY DAY 21
8777	G	419.	442.	459.	472.	SCHEDULED NECROPSY DAY 21
8779	G	437.	451.	467.	491.	SCHEDULED NECROPSY DAY 21
8791	G	347.	347.	356.	365.	SCHEDULED NECROPSY DAY 21
8798	G	365.	382.	395.	418.	SCHEDULED NECROPSY DAY 21
8803	G	434.	449.	481.	515.	SCHEDULED NECROPSY DAY 21
8812	G	357.	367.	384.	400.	SCHEDULED NECROPSY DAY 21
8817	G	358.	368.	382.	391.	SCHEDULED NECROPSY DAY 21
8820	G	360.	380.	391.	412.	SCHEDULED NECROPSY DAY 21
8825	G	402.	427.	447.	477.	SCHEDULED NECROPSY DAY 21
8836	G	382.	397.	412.	424.	SCHEDULED NECROPSY DAY 21
8843	G	356.	360.	372.	384.	SCHEDULED NECROPSY DAY 21
8852	NG	292.	294.	290.	287.	SCHEDULED NECROPSY DAY 21
8858	G	409.	428.	448.	461.	SCHEDULED NECROPSY DAY 21
8871	G	368.	380.	391.	417.	SCHEDULED NECROPSY DAY 21
8883	G	346.	357.	377.	399.	SCHEDULED NECROPSY DAY 21
8886	G	349.	361.	380.	401.	SCHEDULED NECROPSY DAY 21
8894	G	410.	432.	456.	481.	SCHEDULED NECROPSY DAY 21
8926	G	329.	333.	343.	355.	SCHEDULED NECROPSY DAY 21
MEAN		376.	391.	408.	427.	
S.D.		30.5	34.5	38.2	41.2	
N		24	24	24	24	

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.3

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 4

SPONSOR:HSIA INDIVIDUAL BODY WEIGHTS DURING GESTATION [G]

	PREGNANCY STATUS	DAY 0	1	2	3	4	5	6	7	8
DAMS FROM GROUP 2: 15 MG/KG RA										
8740	G	257.	269.	272.	279.	284.	283.	295.	297.	300.
8743	G	244.	258.	260.	267.	269.	277.	280.	278.	281.
8756	G	250.	262.	271.	267.	275.	286.	289.	285.	290.
8757	G	257.	265.	279.	279.	282.	290.	295.	293.	292.
8780	G	261.	269.	267.	275.	279.	286.	290.	292.	290.
8789	G	255.	256.	260.	267.	276.	276.	283.	284.	290.
8800	G	226.	244.	244.	254.	259.	266.	270.	271.	276.
8801	G	238.	259.	265.	277.	276.	283.	297.	289.	288.
8802	G	235.	241.	248.	251.	256.	258.	259.	265.	267.
8808	G	250.	256.	262.	268.	272.	279.	283.	276.	288.
8809	G	262.	272.	278.	285.	291.	295.	307.	301.	307.
8810	G	233.	245.	251.	252.	256.	256.	261.	262.	261.
8818	G	250.	257.	263.	268.	276.	281.	287.	285.	292.
8822	G	239.	246.	250.	247.	255.	257.	265.	262.	261.
8827	G	235.	247.	250.	256.	262.	267.	271.	272.	274.
8840	G	249.	263.	267.	267.	270.	271.	280.	277.	282.
8842	G	241.	253.	265.	269.	270.	278.	284.	279.	280.
8847	G	247.	255.	257.	261.	265.	275.	275.	268.	277.
8850	G	265.	280.	281.	287.	293.	298.	301.	305.	307.
8851	G	233.	245.	252.	255.	267.	270.	273.	279.	279.
8854	G	229.	236.	246.	248.	251.	259.	260.	259.	267.
8900	G	257.	270.	277.	279.	285.	285.	284.	281.	285.
8901	G	253.	265.	270.	274.	282.	285.	296.	293.	294.
8930	G	258.	264.	264.	273.	272.	277.	278.	278.	284.
8931	G	265.	277.	287.	287.	295.	300.	305.	304.	313.
MEAN		248.	258.	263.	268.	273.	278.	283.	281.	285.
S.D.		11.6	11.6	11.8	12.1	12.1	12.4	13.8	13.1	13.5
N		25	25	25	25	25	25	25	25	25

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.3

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 5

SPONSOR:HSIA INDIVIDUAL BODY WEIGHTS DURING GESTATION [G]

	PREGNANCY STATUS	DAY 9	10	11	12	13	14	15	16	17
DAMS FROM GROUP 2: 15 MG/KG RA										
8740	G	306.	313.	315.	321.	320.	332.	334.	344.	357.
8743	G	288.	295.	303.	309.	310.	312.	317.	320.	340.
8756	G	294.	299.	309.	312.	317.	323.	329.	341.	354.
8757	G	296.	299.	302.	309.	313.	318.	325.	328.	347.
8780	G	301.	302.	308.	303.	314.	311.	317.	331.	344.
8789	G	297.	302.	310.	309.	318.	319.	329.	337.	343.
8800	G	279.	281.	284.	293.	296.	300.	308.	311.	320.
8801	G	301.	302.	314.	314.	313.	331.	335.	342.	360.
8802	G	270.	269.	272.	283.	287.	290.	297.	309.	314.
8808	G	286.	294.	295.	297.	305.	305.	315.	325.	345.
8809	G	317.	324.	325.	326.	333.	338.	343.	350.	359.
8810	G	274.	276.	274.	283.	284.	293.	300.	311.	328.
8818	G	296.	310.	312.	316.	323.	324.	338.	349.	361.
8822	G	264.	278.	286.	280.	280.	290.	292.	296.	302.
8827	G	278.	282.	289.	296.	299.	306.	312.	325.	336.
8840	G	286.	292.	293.	301.	308.	312.	308.	317.	324.
8842	G	285.	284.	296.	291.	301.	305.	310.	323.	327.
8847	G	287.	295.	297.	299.	300.	299.	318.	334.	350.
8850	G	310.	320.	315.	331.	336.	339.	338.	349.	360.
8851	G	293.	298.	308.	311.	313.	318.	330.	338.	350.
8854	G	268.	273.	278.	279.	291.	293.	292.	292.	299.
8900	G	287.	293.	301.	300.	309.	317.	317.	333.	345.
8901	G	297.	311.	312.	319.	314.	328.	331.	343.	358.
8930	G	282.	284.	292.	294.	294.	294.	299.	303.	313.
8931	G	317.	320.	324.	324.	334.	334.	341.	351.	370.
MEAN		290.	296.	301.	304.	308.	313.	319.	328.	340.
S.D.		14.1	15.1	14.6	14.7	15.0	15.5	15.6	17.2	19.5
N		25	25	25	25	25	25	25	25	25

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.3

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 6
SPONSOR:HSIA INDIVIDUAL BODY WEIGHTS DURING GESTATION [G]

	PREGNANCY STATUS	DAY 18	19	20	21	
DAMS FROM GROUP 2: 15 MG/KG RA						
8740	G	368.	386.	395.	412.	SCHEDULED NECROPSY DAY 21
8743	G	348.	360.	371.	384.	SCHEDULED NECROPSY DAY 21
8756	G	369.	401.	419.	442.	SCHEDULED NECROPSY DAY 21
8757	G	361.	387.	406.	431.	SCHEDULED NECROPSY DAY 21
8780	G	368.	392.	414.	444.	SCHEDULED NECROPSY DAY 21
8789	G	356.	358.	369.	377.	SCHEDULED NECROPSY DAY 21
8800	G	333.	345.	364.	378.	SCHEDULED NECROPSY DAY 21
8801	G	374.	391.	404.	424.	SCHEDULED NECROPSY DAY 21
8802	G	332.	346.	364.	374.	SCHEDULED NECROPSY DAY 21
8808	G	355.	371.	394.	415.	SCHEDULED NECROPSY DAY 21
8809	G	369.	391.	400.	423.	SCHEDULED NECROPSY DAY 21
8810	G	337.	352.	377.	389.	SCHEDULED NECROPSY DAY 21
8818	G	382.	402.	422.	452.	SCHEDULED NECROPSY DAY 21
8822	G	303.	316.	327.	326.	SCHEDULED NECROPSY DAY 21
8827	G	347.	362.	378.	392.	SCHEDULED NECROPSY DAY 21
8840	G	334.	353.	361.	374.	SCHEDULED NECROPSY DAY 21
8842	G	347.	371.	394.	395.	SCHEDULED NECROPSY DAY 21
8847	G	356.	365.	378.	399.	SCHEDULED NECROPSY DAY 21
8850	G	368.	387.	403.	420.	SCHEDULED NECROPSY DAY 21
8851	G	370.	383.	393.	411.	SCHEDULED NECROPSY DAY 21
8854	G	313.	319.	327.	332.	SCHEDULED NECROPSY DAY 21
8900	G	365.	388.	412.	436.	SCHEDULED NECROPSY DAY 21
8901	G	378.	401.	412.	434.	SCHEDULED NECROPSY DAY 21
8930	G	326.	344.	354.	364.	SCHEDULED NECROPSY DAY 21
8931	G	398.	413.	435.	465.	SCHEDULED NECROPSY DAY 21
MEAN		354.	371.	387.	404.	
S.D.		22.3	25.6	27.9	35.3	
N		25	25	25	25	

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.3

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 7

SPONSOR:HSIA INDIVIDUAL BODY WEIGHTS DURING GESTATION [G]

	PREGNANCY STATUS	DAY 0	1	2	3	4	5	6	7	8
DAMS FROM GROUP 3: 0.25 PPM										
8747	G	252.	262.	266.	276.	280.	291.	295.	300.	308.
8758	G	248.	256.	267.	269.	277.	276.	282.	287.	292.
8764	G	257.	269.	276.	287.	287.	301.	302.	308.	313.
8767	G	274.	284.	295.	294.	305.	307.	312.	318.	323.
8773	G	262.	272.	257.	272.	280.	282.	289.	289.	302.
8774	G	242.	250.	252.	258.	262.	267.	271.	278.	280.
8807	G	233.	246.	249.	254.	255.	258.	262.	271.	274.
8814	G	225.	238.	240.	245.	243.	251.	251.	259.	258.
8826	G	239.	238.	239.	246.	255.	258.	258.	265.	271.
8834	G	251.	261.	262.	268.	276.	284.	288.	285.	298.
8835	G	226.	260.	265.	267.	277.	282.	288.	290.	298.
8839	G	241.	246.	255.	255.	264.	271.	275.	282.	282.
8849	G	240.	250.	258.	260.	266.	266.	272.	277.	280.
8853	G	238.	245.	253.	255.	267.	266.	275.	280.	286.
8859	G	256.	263.	271.	275.	282.	285.	291.	296.	304.
8869	G	258.	266.	272.	279.	282.	287.	291.	296.	302.
8879	G	243.	250.	256.	269.	270.	276.	278.	282.	289.
8889	G	262.	265.	273.	281.	280.	287.	297.	300.	306.
8891	G	261.	267.	276.	281.	278.	292.	290.	297.	295.
8893	G	258.	271.	278.	281.	289.	290.	301.	303.	300.
8897	G	234.	241.	245.	251.	256.	261.	264.	262.	273.
8908	G	249.	261.	264.	271.	271.	275.	283.	283.	292.
8910	G	260.	269.	276.	277.	286.	286.	290.	291.	298.
8913	NG	255.	265.	271.	268.	272.	274.	278.	276.	273.
8916	NG	239.	241.	248.	257.	259.	256.	252.	263.	270.
MEAN		248.	258.	263.	268.	273.	278.	283.	287.	292.
S.D.		12.7	12.2	13.6	13.3	13.7	14.3	15.1	14.7	15.2
N		23	23	23	23	23	23	23	23	23

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.3

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 8

SPONSOR:HSIA INDIVIDUAL BODY WEIGHTS DURING GESTATION [G]

	PREGNANCY STATUS	DAY 9	10	11	12	13	14	15	16	17
DAMS FROM GROUP 3: 0.25 PPM										
8747	G	317.	326.	330.	338.	349.	364.	375.	387.	403.
8758	G	302.	303.	312.	320.	323.	329.	340.	350.	364.
8764	G	324.	325.	337.	337.	349.	357.	370.	373.	397.
8767	G	335.	338.	345.	353.	362.	369.	379.	389.	407.
8773	G	311.	311.	317.	302.	309.	308.	307.	302.	311.
8774	G	283.	288.	297.	307.	314.	319.	318.	322.	329.
8807	G	279.	286.	290.	295.	309.	316.	328.	336.	353.
8814	G	267.	275.	275.	279.	288.	295.	299.	308.	321.
8826	G	277.	283.	287.	288.	292.	310.	314.	317.	333.
8834	G	304.	311.	315.	324.	329.	330.	341.	350.	369.
8835	G	307.	314.	320.	326.	327.	331.	341.	357.	365.
8839	G	288.	295.	306.	313.	316.	322.	337.	346.	365.
8849	G	290.	294.	302.	306.	310.	317.	322.	335.	349.
8853	G	290.	298.	308.	305.	318.	318.	328.	337.	351.
8859	G	305.	306.	314.	316.	317.	322.	330.	341.	348.
8869	G	305.	315.	318.	323.	329.	336.	344.	356.	358.
8879	G	298.	309.	312.	316.	329.	337.	345.	353.	370.
8889	G	312.	320.	325.	338.	340.	347.	356.	362.	386.
8891	G	303.	308.	314.	310.	317.	327.	331.	345.	352.
8893	G	317.	315.	318.	327.	333.	338.	346.	360.	360.
8897	G	275.	282.	293.	303.	310.	311.	320.	332.	341.
8908	G	291.	292.	300.	308.	319.	317.	324.	329.	341.
8910	G	305.	306.	316.	315.	327.	325.	340.	352.	365.
8913	NG	280.	287.	286.	283.	286.	295.	293.	288.	291.
8916	NG	273.	268.	264.	277.	283.	287.	287.	278.	291.
MEAN		299.	304.	311.	315.	322.	328.	336.	345.	358.
S.D.		16.8	15.9	16.1	17.2	17.3	18.1	20.3	22.0	24.4
N		23	23	23	23	23	23	23	23	23

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.3

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 9
SPONSOR:HSIA INDIVIDUAL BODY WEIGHTS DURING GESTATION [G]

	PREGNANCY STATUS	DAY 18	19	20	21	
DAMS FROM GROUP 3: 0.25 PPM						
8747	G	422.	439.	457.	479.	SCHEDULED NECROPSY DAY 21
8758	G	379.	400.	418.	446.	SCHEDULED NECROPSY DAY 21
8764	G	410.	426.	443.	465.	SCHEDULED NECROPSY DAY 21
8767	G	426.	442.	471.	487.	SCHEDULED NECROPSY DAY 21
8773	G	310.	312.	310.	319.	SCHEDULED NECROPSY DAY 21
8774	G	335.	341.	350.	360.	SCHEDULED NECROPSY DAY 21
8807	G	369.	383.	403.	439.	SCHEDULED NECROPSY DAY 21
8814	G	333.	350.	365.	394.	SCHEDULED NECROPSY DAY 21
8826	G	339.	349.	358.	378.	SCHEDULED NECROPSY DAY 21
8834	G	385.	399.	410.	438.	SCHEDULED NECROPSY DAY 21
8835	G	381.	394.	405.	431.	SCHEDULED NECROPSY DAY 21
8839	G	391.	399.	418.	443.	SCHEDULED NECROPSY DAY 21
8849	G	361.	375.	394.	413.	SCHEDULED NECROPSY DAY 21
8853	G	369.	379.	399.	425.	SCHEDULED NECROPSY DAY 21
8859	G	366.	380.	399.	413.	SCHEDULED NECROPSY DAY 21
8869	G	384.	392.	398.	421.	SCHEDULED NECROPSY DAY 21
8879	G	389.	408.	416.	449.	SCHEDULED NECROPSY DAY 21
8889	G	402.	421.	440.	464.	SCHEDULED NECROPSY DAY 21
8891	G	365.	376.	382.	400.	SCHEDULED NECROPSY DAY 21
8893	G	380.	389.	411.	425.	SCHEDULED NECROPSY DAY 21
8897	G	362.	378.	387.	420.	SCHEDULED NECROPSY DAY 21
8908	G	358.	371.	394.	412.	SCHEDULED NECROPSY DAY 21
8910	G	384.	405.	414.	443.	SCHEDULED NECROPSY DAY 21
8913	NG	297.	294.	293.	296.	SCHEDULED NECROPSY DAY 21
8916	NG	294.	296.	296.	301.	SCHEDULED NECROPSY DAY 21
MEAN		374.	387.	402.	425.	
S.D.		28.1	30.9	35.1	38.0	
N		23	23	23	23	

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.3

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 10

SPONSOR:HSIA INDIVIDUAL BODY WEIGHTS DURING GESTATION [G]

	PREGNANCY STATUS	DAY 0	1	2	3	4	5	6	7	8
DAMS FROM GROUP 4: 1.5 PPM										
8741	G	254.	266.	265.	274.	275.	280.	286.	292.	294.
8765	G	252.	257.	263.	268.	272.	272.	279.	283.	290.
8783	G	235.	243.	238.	255.	263.	266.	267.	279.	285.
8786	G	224.	233.	246.	245.	253.	255.	262.	264.	272.
8788	G	256.	270.	272.	274.	281.	284.	289.	291.	295.
8792	G	253.	273.	271.	282.	291.	296.	298.	312.	315.
8805	G	244.	255.	252.	250.	263.	265.	262.	274.	280.
8806	G	241.	255.	259.	263.	267.	274.	285.	285.	295.
8811	G	244.	252.	261.	258.	269.	269.	276.	280.	290.
8813	G	235.	243.	249.	253.	256.	260.	267.	275.	283.
8823	G	267.	268.	267.	276.	283.	284.	294.	300.	301.
8844	G	243.	252.	253.	265.	266.	272.	277.	286.	291.
8848	G	231.	240.	245.	246.	251.	261.	254.	265.	272.
8857	G	255.	257.	265.	269.	275.	285.	286.	289.	293.
8867	G	261.	265.	269.	273.	277.	279.	286.	283.	292.
8873	G	232.	241.	247.	255.	252.	261.	262.	266.	269.
8876	G	245.	249.	262.	268.	268.	274.	280.	282.	289.
8881	G	254.	259.	266.	263.	272.	274.	281.	284.	292.
8884	NG	281.	275.	269.	277.	276.	280.	278.	277.	290.
8890	G	261.	272.	279.	281.	287.	293.	301.	302.	312.
8895	G	246.	259.	266.	266.	275.	279.	276.	282.	290.
8899	G	244.	260.	265.	272.	269.	279.	276.	286.	291.
8907	G	267.	265.	282.	289.	291.	295.	304.	304.	313.
8941	G	250.	256.	265.	266.	274.	279.	285.	291.	296.
8942	G	262.	275.	275.	286.	290.	296.	302.	311.	315.
MEAN		248.	257.	262.	267.	272.	276.	281.	286.	292.
S.D.		11.6	11.3	11.2	12.0	11.9	11.7	13.7	13.0	12.6
N		24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.3

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 11

SPONSOR:HSIA INDIVIDUAL BODY WEIGHTS DURING GESTATION [G]

	PREGNANCY STATUS	DAY 9	10	11	12	13	14	15	16	17
DAMS FROM GROUP 4: 1.5 PPM										
8741	G	304.	309.	311.	324.	333.	334.	336.	351.	365.
8765	G	294.	302.	307.	312.	315.	321.	331.	340.	356.
8783	G	291.	300.	306.	313.	322.	329.	338.	344.	360.
8786	G	272.	278.	286.	292.	296.	305.	313.	321.	333.
8788	G	302.	309.	310.	320.	320.	326.	339.	338.	354.
8792	G	323.	325.	322.	333.	336.	341.	338.	353.	361.
8805	G	287.	296.	299.	305.	305.	311.	320.	330.	345.
8806	G	299.	306.	316.	321.	325.	331.	343.	359.	377.
8811	G	292.	298.	300.	303.	307.	309.	318.	320.	337.
8813	G	282.	290.	300.	307.	311.	315.	327.	338.	349.
8823	G	305.	310.	311.	316.	322.	328.	346.	353.	373.
8844	G	300.	307.	309.	317.	321.	339.	343.	350.	356.
8848	G	275.	280.	280.	280.	295.	295.	314.	318.	341.
8857	G	295.	307.	310.	321.	321.	316.	332.	342.	353.
8867	G	294.	296.	305.	308.	313.	312.	323.	326.	339.
8873	G	271.	284.	291.	292.	300.	314.	318.	326.	332.
8876	G	294.	301.	303.	315.	322.	326.	327.	337.	357.
8881	G	293.	302.	306.	310.	320.	320.	328.	331.	347.
8884	NG	288.	296.	298.	296.	297.	301.	306.	299.	303.
8890	G	312.	320.	326.	334.	341.	351.	359.	366.	380.
8895	G	296.	300.	306.	312.	315.	325.	327.	326.	341.
8899	G	292.	305.	310.	315.	318.	324.	339.	344.	356.
8907	G	316.	330.	331.	338.	346.	358.	371.	373.	395.
8941	G	298.	304.	311.	325.	332.	331.	344.	354.	377.
8942	G	323.	329.	333.	342.	349.	352.	353.	360.	376.
MEAN		296.	304.	308.	315.	320.	326.	334.	342.	357.
S.D.		13.7	13.5	12.5	14.6	14.4	15.3	14.3	15.2	16.5
N		24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.3

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 12
SPONSOR:HSIA INDIVIDUAL BODY WEIGHTS DURING GESTATION [G]

	PREGNANCY STATUS	DAY 18	19	20	21	
DAMS FROM GROUP 4: 1.5 PPM						
8741	G	387.	408.	417.	453.	SCHEDULED NECROPSY DAY 21
8765	G	376.	389.	402.	427.	SCHEDULED NECROPSY DAY 21
8783	G	380.	393.	411.	434.	SCHEDULED NECROPSY DAY 21
8786	G	340.	364.	381.	394.	SCHEDULED NECROPSY DAY 21
8788	G	366.	376.	400.	418.	SCHEDULED NECROPSY DAY 21
8792	G	374.	386.	390.	413.	SCHEDULED NECROPSY DAY 21
8805	G	359.	378.	391.	414.	SCHEDULED NECROPSY DAY 21
8806	G	391.	403.	421.	444.	SCHEDULED NECROPSY DAY 21
8811	G	359.	378.	399.	419.	SCHEDULED NECROPSY DAY 21
8813	G	367.	376.	388.	396.	SCHEDULED NECROPSY DAY 21
8823	G	381.	398.	421.	441.	SCHEDULED NECROPSY DAY 21
8844	G	380.	398.	408.	434.	SCHEDULED NECROPSY DAY 21
8848	G	348.	367.	391.	416.	SCHEDULED NECROPSY DAY 21
8857	G	365.	378.	397.	406.	SCHEDULED NECROPSY DAY 21
8867	G	352.	359.	372.	384.	SCHEDULED NECROPSY DAY 21
8873	G	357.	368.	387.	413.	SCHEDULED NECROPSY DAY 21
8876	G	371.	395.	412.	431.	SCHEDULED NECROPSY DAY 21
8881	G	358.	371.	381.	405.	SCHEDULED NECROPSY DAY 21
8884	NG	299.	304.	304.	298.	SCHEDULED NECROPSY DAY 21
8890	G	395.	405.	425.	450.	SCHEDULED NECROPSY DAY 21
8895	G	358.	365.	385.	403.	SCHEDULED NECROPSY DAY 21
8899	G	374.	391.	386.	402.	SCHEDULED NECROPSY DAY 21
8907	G	416.	424.	447.	471.	SCHEDULED NECROPSY DAY 21
8941	G	392.	417.	431.	452.	SCHEDULED NECROPSY DAY 21
8942	G	389.	406.	422.	442.	SCHEDULED NECROPSY DAY 21
MEAN		372.	387.	403.	423.	
S.D.		17.5	17.8	18.8	22.0	
N		24	24	24	24	

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.3

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 13

SPONSOR:HSIA INDIVIDUAL BODY WEIGHTS DURING GESTATION [G]

	PREGNANCY STATUS	DAY 0	1	2	3	4	5	6	7	8
DAMS FROM GROUP 5: 500 PPM										
8735	G	257.	265.	270.	274.	281.	279.	288.	268.	292.
8763	G	243.	246.	249.	251.	257.	263.	268.	266.	276.
8775	G	254.	262.	268.	268.	274.	275.	286.	285.	293.
8778	G	248.	258.	262.	271.	271.	281.	279.	281.	286.
8784	G	266.	280.	280.	280.	290.	289.	294.	296.	302.
8790	G	235.	256.	258.	265.	272.	277.	282.	282.	294.
8824	G	223.	229.	232.	229.	241.	240.	247.	242.	252.
8828	G	232.	236.	234.	239.	247.	255.	257.	259.	266.
8830	G	267.	278.	280.	288.	293.	301.	306.	312.	319.
8833	G	231.	243.	251.	253.	259.	265.	269.	273.	279.
8837	G	245.	260.	264.	268.	270.	271.	276.	286.	290.
8838	G	241.	252.	252.	255.	267.	267.	277.	277.	285.
8845	G	260.	272.	279.	281.	292.	293.	302.	303.	316.
8846	G	251.	258.	262.	268.	272.	271.	278.	275.	285.
8855	G	236.	244.	253.	255.	263.	264.	275.	277.	281.
8863	G	239.	247.	253.	255.	258.	268.	262.	267.	272.
8864	G	249.	260.	266.	271.	274.	275.	282.	285.	289.
8868	G	261.	266.	271.	274.	282.	289.	291.	294.	291.
8874	G	249.	261.	266.	277.	280.	290.	291.	295.	305.
8875	G	259.	265.	265.	279.	273.	286.	282.	288.	295.
8878	G	237.	245.	246.	251.	256.	259.	264.	273.	271.
8928	G	239.	252.	249.	254.	255.	264.	252.	276.	272.
8933	G	254.	265.	269.	270.	277.	279.	284.	283.	284.
8936	G	257.	277.	269.	275.	276.	282.	289.	293.	295.
8937	NG	242.	250.	245.	236.	254.	250.	248.	240.	253.
MEAN		247.	257.	260.	265.	270.	274.	278.	281.	287.
S.D.		11.8	13.1	13.0	14.2	13.5	13.8	14.8	14.9	15.2
N		24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.3

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 14

SPONSOR:HSIA INDIVIDUAL BODY WEIGHTS DURING GESTATION [G]

	PREGNANCY STATUS	DAY 9	10	11	12	13	14	15	16	17
DAMS FROM GROUP 5: 500 PPM										
8735	G	299.	306.	313.	321.	323.	333.	341.	347.	361.
8763	G	277.	284.	291.	298.	300.	305.	315.	330.	336.
8775	G	297.	305.	307.	317.	323.	326.	335.	350.	369.
8778	G	293.	298.	305.	311.	317.	316.	330.	343.	352.
8784	G	308.	315.	325.	329.	336.	342.	350.	368.	376.
8790	G	299.	305.	311.	322.	326.	332.	342.	352.	371.
8824	G	253.	259.	256.	271.	270.	275.	283.	289.	302.
8828	G	271.	275.	281.	290.	293.	300.	310.	311.	333.
8830	G	318.	329.	334.	348.	356.	360.	363.	377.	399.
8833	G	280.	286.	291.	298.	306.	312.	322.	330.	347.
8837	G	291.	301.	305.	312.	317.	325.	331.	336.	352.
8838	G	291.	292.	297.	308.	315.	316.	330.	344.	357.
8845	G	310.	311.	319.	321.	329.	332.	344.	352.	368.
8846	G	284.	295.	304.	307.	313.	320.	331.	344.	365.
8855	G	285.	291.	297.	303.	315.	319.	323.	328.	348.
8863	G	275.	285.	292.	299.	300.	307.	316.	327.	340.
8864	G	289.	293.	301.	310.	319.	324.	306.	339.	352.
8868	G	302.	306.	304.	322.	320.	318.	328.	340.	351.
8874	G	310.	317.	325.	334.	338.	342.	357.	371.	375.
8875	G	297.	301.	304.	314.	313.	317.	325.	332.	336.
8878	G	276.	283.	288.	291.	303.	306.	313.	325.	343.
8928	G	265.	283.	295.	298.	296.	295.	305.	310.	325.
8933	G	283.	294.	309.	312.	317.	312.	322.	331.	352.
8936	G	303.	312.	320.	321.	328.	331.	342.	348.	370.
8937	NG	255.	258.	251.	264.	266.	266.	257.	267.	269.
MEAN		290.	297.	303.	311.	316.	319.	328.	339.	353.
S.D.		15.7	15.2	16.4	16.1	17.3	17.5	18.0	19.6	19.9
N		24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.3

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 15
SPONSOR:HSIA INDIVIDUAL BODY WEIGHTS DURING GESTATION [G]

	PREGNANCY STATUS	DAY 18	19	20	21	
DAMS FROM GROUP 5: 500 PPM						
8735	G	377.	394.	410.	436.	SCHEDULED NECROPSY DAY 21
8763	G	360.	373.	390.	415.	SCHEDULED NECROPSY DAY 21
8775	G	384.	401.	416.	424.	SCHEDULED NECROPSY DAY 21
8778	G	368.	387.	413.	427.	SCHEDULED NECROPSY DAY 21
8784	G	391.	406.	435.	455.	SCHEDULED NECROPSY DAY 21
8790	G	391.	402.	426.	455.	SCHEDULED NECROPSY DAY 21
8824	G	315.	325.	331.	354.	SCHEDULED NECROPSY DAY 21
8828	G	352.	370.	392.	404.	SCHEDULED NECROPSY DAY 21
8830	G	407.	428.	451.	472.	SCHEDULED NECROPSY DAY 21
8833	G	364.	376.	394.	411.	SCHEDULED NECROPSY DAY 21
8837	G	370.	386.	405.	419.	SCHEDULED NECROPSY DAY 21
8838	G	367.	379.	398.	426.	SCHEDULED NECROPSY DAY 21
8845	G	391.	402.	420.	429.	SCHEDULED NECROPSY DAY 21
8846	G	382.	395.	412.	442.	SCHEDULED NECROPSY DAY 21
8855	G	371.	382.	399.	425.	SCHEDULED NECROPSY DAY 21
8863	G	359.	372.	392.	415.	SCHEDULED NECROPSY DAY 21
8864	G	368.	382.	396.	421.	SCHEDULED NECROPSY DAY 21
8868	G	372.	387.	398.	419.	SCHEDULED NECROPSY DAY 21
8874	G	399.	420.	436.	461.	SCHEDULED NECROPSY DAY 21
8875	G	349.	362.	370.	378.	SCHEDULED NECROPSY DAY 21
8878	G	352.	369.	388.	421.	SCHEDULED NECROPSY DAY 21
8928	G	342.	364.	372.	391.	SCHEDULED NECROPSY DAY 21
8933	G	369.	382.	397.	413.	SCHEDULED NECROPSY DAY 21
8936	G	393.	404.	430.	453.	SCHEDULED NECROPSY DAY 21
8937	NG	269.	260.	269.	275.	SCHEDULED NECROPSY DAY 21
MEAN		371.	385.	403.	424.	
S.D.		20.5	21.3	25.1	26.3	
N		24	24	24	24	

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.3

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 16
SPONSOR:HSIA INDIVIDUAL BODY WEIGHTS DURING GESTATION [G]

	PREGNANCY STATUS	DAY 0	1	2	3	4	5	6	7	8
DAMS FROM GROUP 6: 1000 PPM										
8739	G	236.	244.	240.	248.	249.	253.	254.	258.	264.
8760	G	240.	249.	254.	254.	255.	264.	270.	273.	276.
8769	G	232.	240.	249.	246.	255.	253.	260.	261.	262.
8770	G	242.	250.	250.	258.	255.	262.	264.	267.	274.
8771	G	231.	244.	250.	249.	254.	253.	263.	265.	275.
8785	G	271.	276.	282.	290.	289.	295.	298.	303.	303.
8793	G	256.	266.	271.	269.	281.	284.	289.	291.	296.
8795	G	238.	244.	248.	245.	246.	258.	255.	262.	269.
8799	G	241.	243.	250.	247.	248.	258.	255.	256.	267.
8804	G	258.	265.	272.	277.	282.	282.	294.	295.	299.
8815	G	247.	257.	263.	265.	275.	277.	285.	286.	294.
8819	G	264.	279.	271.	285.	288.	288.	291.	299.	308.
8821	G	251.	259.	270.	272.	275.	281.	285.	292.	294.
8829	G	239.	248.	249.	253.	261.	260.	268.	272.	279.
8831	G	254.	264.	265.	272.	273.	278.	283.	287.	295.
8856	NG	240.	249.	256.	265.	267.	274.	278.	284.	290.
8860	G	259.	265.	271.	274.	278.	284.	290.	280.	302.
8861	G	251.	260.	261.	270.	270.	272.	280.	281.	285.
8865	G	249.	264.	264.	270.	276.	291.	288.	301.	306.
8870	G	271.	276.	281.	283.	288.	292.	296.	306.	308.
8872	G	258.	255.	265.	272.	280.	285.	289.	295.	297.
8885	G	228.	237.	238.	243.	246.	247.	256.	260.	267.
8888	G	252.	263.	259.	264.	266.	279.	275.	279.	277.
8896	G	236.	246.	254.	259.	265.	266.	273.	277.	283.
8917	G	253.	258.	266.	272.	275.	279.	286.	286.	293.
MEAN		248.	256.	260.	264.	268.	273.	277.	281.	286.
S.D.		12.1	11.9	12.0	13.6	14.1	14.4	14.5	15.5	14.9
N		24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.3

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 17

SPONSOR:HSIA INDIVIDUAL BODY WEIGHTS DURING GESTATION [G]

	PREGNANCY STATUS	DAY 9	10	11	12	13	14	15	16	17
DAMS FROM GROUP 6: 1000 PPM										
8739	G	275.	274.	282.	289.	299.	302.	304.	314.	325.
8760	G	282.	290.	293.	299.	305.	304.	310.	325.	333.
8769	G	266.	275.	283.	291.	278.	303.	314.	322.	338.
8770	G	277.	285.	292.	300.	302.	307.	322.	331.	349.
8771	G	276.	285.	290.	294.	299.	306.	314.	326.	337.
8785	G	315.	325.	329.	334.	328.	336.	347.	351.	365.
8793	G	302.	306.	313.	311.	321.	324.	337.	342.	351.
8795	G	274.	285.	291.	293.	296.	304.	315.	323.	341.
8799	G	274.	277.	286.	291.	297.	300.	307.	322.	337.
8804	G	301.	318.	315.	330.	333.	345.	350.	354.	366.
8815	G	297.	302.	311.	320.	327.	338.	351.	361.	374.
8819	G	301.	319.	322.	320.	330.	332.	341.	352.	371.
8821	G	302.	312.	312.	324.	334.	342.	353.	371.	384.
8829	G	284.	295.	296.	304.	308.	318.	326.	343.	362.
8831	G	299.	312.	321.	326.	337.	339.	348.	360.	381.
8856	NG	298.	302.	303.	299.	300.	302.	297.	300.	298.
8860	G	300.	303.	310.	316.	323.	331.	339.	348.	361.
8861	G	296.	298.	306.	310.	318.	320.	332.	339.	352.
8865	G	309.	319.	322.	333.	340.	350.	358.	369.	385.
8870	G	318.	324.	333.	334.	342.	347.	372.	375.	392.
8872	G	302.	305.	322.	322.	325.	329.	334.	338.	359.
8885	G	274.	280.	292.	292.	301.	303.	315.	322.	336.
8888	G	293.	296.	301.	313.	321.	332.	337.	342.	356.
8896	G	285.	295.	303.	308.	313.	314.	321.	326.	332.
8917	G	300.	301.	313.	324.	330.	332.	339.	354.	364.
MEAN		292.	299.	306.	312.	317.	323.	333.	342.	356.
S.D.		14.5	15.7	15.0	15.3	16.8	16.5	18.0	17.6	18.9
N		24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.3

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 18

SPONSOR:HSIA INDIVIDUAL BODY WEIGHTS DURING GESTATION [G]

	PREGNANCY STATUS	DAY 18	19	20	21	
DAMS FROM GROUP 6: 1000 PPM						
8739	G	340.	357.	369.	392.	SCHEDULED NECROPSY DAY 21
8760	G	351.	370.	380.	395.	SCHEDULED NECROPSY DAY 21
8769	G	347.	368.	380.	407.	SCHEDULED NECROPSY DAY 21
8770	G	360.	373.	394.	413.	SCHEDULED NECROPSY DAY 21
8771	G	359.	373.	386.	393.	SCHEDULED NECROPSY DAY 21
8785	G	381.	399.	415.	433.	SCHEDULED NECROPSY DAY 21
8793	G	364.	372.	377.	393.	SCHEDULED NECROPSY DAY 21
8795	G	359.	370.	383.	414.	SCHEDULED NECROPSY DAY 21
8799	G	348.	362.	379.	392.	SCHEDULED NECROPSY DAY 21
8804	G	382.	399.	422.	437.	SCHEDULED NECROPSY DAY 21
8815	G	396.	413.	433.	457.	SCHEDULED NECROPSY DAY 21
8819	G	388.	404.	427.	451.	SCHEDULED NECROPSY DAY 21
8821	G	398.	412.	428.	454.	SCHEDULED NECROPSY DAY 21
8829	G	379.	396.	418.	437.	SCHEDULED NECROPSY DAY 21
8831	G	395.	414.	439.	458.	SCHEDULED NECROPSY DAY 21
8856	NG	291.	284.	292.	298.	SCHEDULED NECROPSY DAY 21
8860	G	387.	408.	423.	453.	SCHEDULED NECROPSY DAY 21
8861	G	372.	393.	410.	429.	SCHEDULED NECROPSY DAY 21
8865	G	405.	421.	447.	475.	SCHEDULED NECROPSY DAY 21
8870	G	413.	426.	437.	461.	SCHEDULED NECROPSY DAY 21
8872	G	374.	398.	412.	426.	SCHEDULED NECROPSY DAY 21
8885	G	349.	366.	385.	399.	SCHEDULED NECROPSY DAY 21
8888	G	384.	399.	420.	444.	SCHEDULED NECROPSY DAY 21
8896	G	352.	363.	379.	379.	SCHEDULED NECROPSY DAY 21
8917	G	386.	406.	423.	445.	SCHEDULED NECROPSY DAY 21
MEAN		374.	390.	407.	427.	
S.D.		20.5	21.2	24.0	27.8	
N		24	24	24	24	

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

PGBWv4.09
09/24/2018

TABLE 4.4

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 1

SPONSOR:HSIA INDIVIDUAL BODY WEIGHT CHANGES DURING GESTATION [G]

	PREGNANCY STATUS	DAY 0- 1	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 1: 0 PPM										
8738	G	13.	3.	4.	7.	0.	5.	4.	12.	2.
8751	G	5.	10.	2.	-1.	8.	6.	3.	8.	1.
8755	G	9.	9.	1.	5.	9.	4.	5.	4.	6.
8766	G	13.	3.	5.	3.	8.	-1.	-2.	9.	3.
8768	G	12.	2.	3.	2.	2.	6.	13.	8.	3.
8772	G	2.	11.	-2.	9.	13.	-2.	6.	3.	5.
8776	G	6.	13.	3.	3.	4.	7.	7.	3.	2.
8777	G	2.	8.	6.	8.	2.	7.	-2.	9.	5.
8779	G	8.	7.	9.	10.	4.	7.	4.	6.	12.
8791	G	17.	6.	7.	4.	10.	5.	3.	5.	8.
8798	G	10.	0.	6.	8.	0.	-1.	7.	10.	3.
8803	G	8.	15.	6.	5.	7.	2.	8.	6.	8.
8812	G	9.	17.	-3.	6.	4.	6.	5.	5.	1.
8817	G	9.	5.	2.	5.	5.	4.	4.	7.	6.
8820	G	10.	4.	10.	-1.	7.	5.	3.	4.	5.
8825	G	11.	5.	2.	3.	9.	8.	8.	3.	9.
8836	G	5.	7.	10.	8.	2.	3.	9.	10.	-9.
8843	G	11.	6.	5.	8.	-1.	8.	-1.	9.	3.
8852	NG	14.	-3.	17.	-6.	9.	7.	9.	-4.	-1.
8858	G	8.	7.	1.	10.	5.	7.	6.	10.	3.
8871	G	13.	5.	8.	-1.	13.	0.	6.	5.	6.
8883	G	10.	9.	-3.	8.	6.	4.	6.	1.	8.
8886	G	21.	1.	10.	4.	6.	2.	1.	1.	7.
8894	G	11.	9.	9.	0.	8.	8.	6.	8.	6.
8926	G	10.	5.	5.	2.	5.	1.	10.	4.	1.
MEAN		10.	7.	4.	5.	6.	4.	5.	6.	4.
S.D.		4.2	4.2	4.0	3.5	3.8	3.1	3.6	3.1	4.0
N		24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.4

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 2

SPONSOR:HSIA INDIVIDUAL BODY WEIGHT CHANGES DURING GESTATION [G]

	PREGNANCY STATUS	DAY 9- 10	10- 11	11- 12	12- 13	13- 14	14- 15	15- 16	16- 17	17- 18
DAMS FROM GROUP 1: 0 PPM										
8738	G	10.	7.	2.	7.	4.	12.	11.	12.	17.
8751	G	11.	10.	4.	3.	5.	8.	13.	7.	10.
8755	G	8.	8.	7.	8.	5.	12.	12.	13.	15.
8766	G	7.	7.	1.	4.	-5.	4.	7.	8.	17.
8768	G	6.	10.	3.	8.	11.	8.	10.	14.	13.
8772	G	8.	3.	0.	10.	3.	7.	9.	7.	19.
8776	G	7.	3.	5.	2.	7.	8.	15.	16.	17.
8777	G	13.	9.	7.	4.	6.	11.	17.	22.	19.
8779	G	3.	5.	12.	12.	5.	14.	10.	19.	21.
8791	G	6.	4.	3.	1.	10.	6.	5.	6.	13.
8798	G	10.	1.	8.	6.	6.	13.	5.	15.	20.
8803	G	4.	15.	3.	10.	12.	9.	20.	13.	22.
8812	G	8.	4.	5.	5.	8.	14.	8.	12.	15.
8817	G	0.	10.	0.	5.	14.	9.	8.	8.	18.
8820	G	3.	8.	7.	13.	5.	13.	6.	11.	18.
8825	G	6.	4.	6.	5.	9.	11.	10.	17.	15.
8836	G	6.	10.	4.	4.	3.	6.	4.	20.	22.
8843	G	4.	7.	1.	4.	7.	2.	13.	8.	10.
8852	NG	0.	10.	-1.	-3.	-4.	-5.	13.	-10.	2.
8858	G	9.	8.	6.	6.	7.	8.	14.	10.	29.
8871	G	5.	12.	6.	4.	3.	8.	8.	9.	17.
8883	G	1.	6.	6.	3.	5.	2.	13.	8.	9.
8886	G	5.	10.	-1.	12.	-1.	15.	2.	13.	18.
8894	G	4.	8.	6.	14.	7.	13.	12.	21.	8.
8926	G	5.	-4.	13.	3.	7.	1.	-2.	7.	4.
MEAN		6.	7.	5.	6.	6.	9.	10.	12.	16.
S.D.		3.1	4.0	3.5	3.7	4.0	4.0	4.9	4.8	5.4
N		24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.4

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 3

SPONSOR:HSIA INDIVIDUAL BODY WEIGHT CHANGES DURING GESTATION [G]

	PREGNANCY STATUS	DAY 18- 19	19- 20	20- 21	1- 6	6- 9	9- 12	12- 16	16- 21	6- 16
DAMS FROM GROUP 1: 0 PPM										
8738	G	22.	23.	7.	19.	18.	19.	34.	81.	71.
8751	G	10.	15.	16.	25.	12.	25.	29.	58.	66.
8755	G	12.	18.	26.	28.	15.	23.	37.	84.	75.
8766	G	16.	9.	24.	18.	10.	15.	10.	74.	35.
8768	G	20.	20.	19.	15.	24.	19.	37.	86.	80.
8772	G	10.	19.	24.	29.	14.	11.	29.	79.	54.
8776	G	21.	21.	20.	30.	12.	15.	32.	95.	59.
8777	G	23.	17.	13.	31.	12.	29.	38.	94.	79.
8779	G	14.	16.	24.	37.	22.	20.	41.	94.	83.
8791	G	0.	9.	9.	32.	16.	13.	22.	37.	51.
8798	G	17.	13.	23.	13.	20.	19.	30.	88.	69.
8803	G	15.	32.	34.	35.	22.	22.	51.	116.	95.
8812	G	10.	17.	16.	30.	11.	17.	35.	70.	63.
8817	G	10.	14.	9.	21.	17.	10.	36.	59.	63.
8820	G	20.	11.	21.	25.	12.	18.	37.	81.	67.
8825	G	25.	20.	30.	27.	20.	16.	35.	107.	71.
8836	G	15.	15.	12.	30.	10.	20.	17.	84.	47.
8843	G	4.	12.	12.	26.	11.	12.	26.	46.	49.
8852	NG	2.	-4.	-3.	24.	4.	9.	1.	-13.	14.
8858	G	19.	20.	13.	30.	19.	23.	35.	91.	77.
8871	G	12.	11.	26.	25.	17.	23.	23.	75.	63.
8883	G	11.	20.	22.	24.	15.	13.	23.	70.	51.
8886	G	12.	19.	21.	23.	9.	14.	28.	83.	51.
8894	G	22.	24.	25.	34.	20.	18.	46.	100.	84.
8926	G	4.	10.	12.	18.	15.	14.	9.	37.	38.
MEAN		14.	17.	19.	26.	16.	18.	31.	79.	64.
S.D.		6.5	5.4	7.1	6.3	4.4	4.8	10.1	20.1	15.2
N		24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.4

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 4
SPONSOR:HSIA INDIVIDUAL BODY WEIGHT CHANGES DURING GESTATION [G]

	PREGNANCY STATUS	DAY 1- 21	
DAMS FROM GROUP 1: 0 PPM			
8738	G	171.	SCHEDULED NECROPSY DAY 21
8751	G	149.	SCHEDULED NECROPSY DAY 21
8755	G	187.	SCHEDULED NECROPSY DAY 21
8766	G	127.	SCHEDULED NECROPSY DAY 21
8768	G	181.	SCHEDULED NECROPSY DAY 21
8772	G	162.	SCHEDULED NECROPSY DAY 21
8776	G	184.	SCHEDULED NECROPSY DAY 21
8777	G	204.	SCHEDULED NECROPSY DAY 21
8779	G	214.	SCHEDULED NECROPSY DAY 21
8791	G	120.	SCHEDULED NECROPSY DAY 21
8798	G	170.	SCHEDULED NECROPSY DAY 21
8803	G	246.	SCHEDULED NECROPSY DAY 21
8812	G	163.	SCHEDULED NECROPSY DAY 21
8817	G	143.	SCHEDULED NECROPSY DAY 21
8820	G	173.	SCHEDULED NECROPSY DAY 21
8825	G	205.	SCHEDULED NECROPSY DAY 21
8836	G	161.	SCHEDULED NECROPSY DAY 21
8843	G	121.	SCHEDULED NECROPSY DAY 21
8852	NG	25.	SCHEDULED NECROPSY DAY 21
8858	G	198.	SCHEDULED NECROPSY DAY 21
8871	G	163.	SCHEDULED NECROPSY DAY 21
8883	G	145.	SCHEDULED NECROPSY DAY 21
8886	G	157.	SCHEDULED NECROPSY DAY 21
8894	G	218.	SCHEDULED NECROPSY DAY 21
8926	G	93.	SCHEDULED NECROPSY DAY 21
MEAN		169.	
S.D.		35.3	
N		24	

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.4

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 5

SPONSOR:HSIA INDIVIDUAL BODY WEIGHT CHANGES DURING GESTATION [G]

	PREGNANCY STATUS	DAY 0- 1	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 2: 15 MG/KG RA										
8740	G	12.	3.	7.	5.	-1.	12.	2.	3.	6.
8743	G	14.	2.	7.	2.	8.	3.	-2.	3.	7.
8756	G	12.	9.	-4.	8.	11.	3.	-4.	5.	4.
8757	G	8.	14.	0.	3.	8.	5.	-2.	-1.	4.
8780	G	8.	-2.	8.	4.	7.	4.	2.	-2.	11.
8789	G	1.	4.	7.	9.	0.	7.	1.	6.	7.
8800	G	18.	0.	10.	5.	7.	4.	1.	5.	3.
8801	G	21.	6.	12.	-1.	7.	14.	-8.	-1.	13.
8802	G	6.	7.	3.	5.	2.	1.	6.	2.	3.
8808	G	6.	6.	6.	4.	7.	4.	-7.	12.	-2.
8809	G	10.	6.	7.	6.	4.	12.	-6.	6.	10.
8810	G	12.	6.	1.	4.	0.	5.	1.	-1.	13.
8818	G	7.	6.	5.	8.	5.	6.	-2.	7.	4.
8822	G	7.	4.	-3.	8.	2.	8.	-3.	-1.	3.
8827	G	12.	3.	6.	6.	5.	4.	1.	2.	4.
8840	G	14.	4.	0.	3.	1.	9.	-3.	5.	4.
8842	G	12.	12.	4.	1.	8.	6.	-5.	1.	5.
8847	G	8.	2.	4.	4.	10.	0.	-7.	9.	10.
8850	G	15.	1.	6.	6.	5.	3.	4.	2.	3.
8851	G	12.	7.	3.	12.	3.	3.	6.	0.	14.
8854	G	7.	10.	2.	3.	8.	1.	-1.	8.	1.
8900	G	13.	7.	2.	6.	0.	-1.	-3.	4.	2.
8901	G	12.	5.	4.	8.	3.	11.	-3.	1.	3.
8930	G	6.	0.	9.	-1.	5.	1.	0.	6.	-2.
8931	G	12.	10.	0.	8.	5.	5.	-1.	9.	4.
MEAN		11.	5.	4.	5.	5.	5.	-1.	4.	5.
S.D.		4.3	3.8	3.9	3.1	3.3	3.9	3.8	3.7	4.3
N		25	25	25	25	25	25	25	25	25

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.4

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 6

SPONSOR:HSIA INDIVIDUAL BODY WEIGHT CHANGES DURING GESTATION [G]

PREGNANCY STATUS		DAY 9- 10	10- 11	11- 12	12- 13	13- 14	14- 15	15- 16	16- 17	17- 18
DAMS FROM GROUP 2: 15 MG/KG RA										
8740	G	7.	2.	6.	-1.	12.	2.	10.	13.	11.
8743	G	7.	8.	6.	1.	2.	5.	3.	20.	8.
8756	G	5.	10.	3.	5.	6.	6.	12.	13.	15.
8757	G	3.	3.	7.	4.	5.	7.	3.	19.	14.
8780	G	1.	6.	-5.	11.	-3.	6.	14.	13.	24.
8789	G	5.	8.	-1.	9.	1.	10.	8.	6.	13.
8800	G	2.	3.	9.	3.	4.	8.	3.	9.	13.
8801	G	1.	12.	0.	-1.	18.	4.	7.	18.	14.
8802	G	-1.	3.	11.	4.	3.	7.	12.	5.	18.
8808	G	8.	1.	2.	8.	0.	10.	10.	20.	10.
8809	G	7.	1.	1.	7.	5.	5.	7.	9.	10.
8810	G	2.	-2.	9.	1.	9.	7.	11.	17.	9.
8818	G	14.	2.	4.	7.	1.	14.	11.	12.	21.
8822	G	14.	8.	-6.	0.	10.	2.	4.	6.	1.
8827	G	4.	7.	7.	3.	7.	6.	13.	11.	11.
8840	G	6.	1.	8.	7.	4.	-4.	9.	7.	10.
8842	G	-1.	12.	-5.	10.	4.	5.	13.	4.	20.
8847	G	8.	2.	2.	1.	-1.	19.	16.	16.	6.
8850	G	10.	-5.	16.	5.	3.	-1.	11.	11.	8.
8851	G	5.	10.	3.	2.	5.	12.	8.	12.	20.
8854	G	5.	5.	1.	12.	2.	-1.	0.	7.	14.
8900	G	6.	8.	-1.	9.	8.	0.	16.	12.	20.
8901	G	14.	1.	7.	-5.	14.	3.	12.	15.	20.
8930	G	2.	8.	2.	0.	0.	5.	4.	10.	13.
8931	G	3.	4.	0.	10.	0.	7.	10.	19.	28.
MEAN		5.	5.	3.	4.	5.	6.	9.	12.	14.
S.D.		4.3	4.3	5.3	4.4	5.0	5.0	4.3	4.9	6.1
N		25	25	25	25	25	25	25	25	25

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.4

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 7

SPONSOR:HSIA INDIVIDUAL BODY WEIGHT CHANGES DURING GESTATION [G]

	PREGNANCY STATUS	DAY 18- 19	19- 20	20- 21	1- 6	6- 9	9- 12	12- 16	16- 21	6- 16
DAMS FROM GROUP 2: 15 MG/KG RA										
8740	G	18.	9.	17.	26.	11.	15.	23.	68.	49.
8743	G	12.	11.	13.	22.	8.	21.	11.	64.	40.
8756	G	32.	18.	23.	27.	5.	18.	29.	101.	52.
8757	G	26.	19.	25.	30.	1.	13.	19.	103.	33.
8780	G	24.	22.	30.	21.	11.	2.	28.	113.	41.
8789	G	2.	11.	8.	27.	14.	12.	28.	40.	54.
8800	G	12.	19.	14.	26.	9.	14.	18.	67.	41.
8801	G	17.	13.	20.	38.	4.	13.	28.	82.	45.
8802	G	14.	18.	10.	18.	11.	13.	26.	65.	50.
8808	G	16.	23.	21.	27.	3.	11.	28.	90.	42.
8809	G	22.	9.	23.	35.	10.	9.	24.	73.	43.
8810	G	15.	25.	12.	16.	13.	9.	28.	78.	50.
8818	G	20.	20.	30.	30.	9.	20.	33.	103.	62.
8822	G	13.	11.	-1.	19.	-1.	16.	16.	30.	31.
8827	G	15.	16.	14.	24.	7.	18.	29.	67.	54.
8840	G	19.	8.	13.	17.	6.	15.	16.	57.	37.
8842	G	24.	23.	1.	31.	1.	6.	32.	72.	39.
8847	G	9.	13.	21.	20.	12.	12.	35.	65.	59.
8850	G	19.	16.	17.	21.	9.	21.	18.	71.	48.
8851	G	13.	10.	18.	28.	20.	18.	27.	73.	65.
8854	G	6.	8.	5.	24.	8.	11.	13.	40.	32.
8900	G	23.	24.	24.	14.	3.	13.	33.	103.	49.
8901	G	23.	11.	22.	31.	1.	22.	24.	91.	47.
8930	G	18.	10.	10.	14.	4.	12.	9.	61.	25.
8931	G	15.	22.	30.	28.	12.	7.	27.	114.	46.
MEAN		17.	16.	17.	25.	8.	14.	24.	76.	45.
S.D.		6.6	5.7	8.5	6.3	5.0	5.0	7.2	22.4	9.7
N		25	25	25	25	25	25	25	25	25

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.4

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 8
SPONSOR:HSIA INDIVIDUAL BODY WEIGHT CHANGES DURING GESTATION [G]

PREGNANCY STATUS	DAY 1- 21	
DAMS FROM GROUP 2: 15 MG/KG RA		
8740	G	143. SCHEDULED NECROPSY DAY 21
8743	G	126. SCHEDULED NECROPSY DAY 21
8756	G	180. SCHEDULED NECROPSY DAY 21
8757	G	166. SCHEDULED NECROPSY DAY 21
8780	G	175. SCHEDULED NECROPSY DAY 21
8789	G	121. SCHEDULED NECROPSY DAY 21
8800	G	134. SCHEDULED NECROPSY DAY 21
8801	G	165. SCHEDULED NECROPSY DAY 21
8802	G	133. SCHEDULED NECROPSY DAY 21
8808	G	159. SCHEDULED NECROPSY DAY 21
8809	G	151. SCHEDULED NECROPSY DAY 21
8810	G	144. SCHEDULED NECROPSY DAY 21
8818	G	195. SCHEDULED NECROPSY DAY 21
8822	G	80. SCHEDULED NECROPSY DAY 21
8827	G	145. SCHEDULED NECROPSY DAY 21
8840	G	111. SCHEDULED NECROPSY DAY 21
8842	G	142. SCHEDULED NECROPSY DAY 21
8847	G	144. SCHEDULED NECROPSY DAY 21
8850	G	140. SCHEDULED NECROPSY DAY 21
8851	G	166. SCHEDULED NECROPSY DAY 21
8854	G	96. SCHEDULED NECROPSY DAY 21
8900	G	166. SCHEDULED NECROPSY DAY 21
8901	G	169. SCHEDULED NECROPSY DAY 21
8930	G	100. SCHEDULED NECROPSY DAY 21
8931	G	188. SCHEDULED NECROPSY DAY 21
MEAN		146.
S.D.		28.9
N		25

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.4

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 9

SPONSOR:HSIA INDIVIDUAL BODY WEIGHT CHANGES DURING GESTATION [G]

	PREGNANCY STATUS	DAY	0- 1	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 3: 0.25 PPM											
8747	G		10.	4.	10.	4.	11.	4.	5.	8.	9.
8758	G		8.	11.	2.	8.	-1.	6.	5.	5.	10.
8764	G		12.	7.	11.	0.	14.	1.	6.	5.	11.
8767	G		10.	11.	-1.	11.	2.	5.	6.	5.	12.
8773	G		10.	-15.	15.	8.	2.	7.	0.	13.	9.
8774	G		8.	2.	6.	4.	5.	4.	7.	2.	3.
8807	G		13.	3.	5.	1.	3.	4.	9.	3.	5.
8814	G		13.	2.	5.	-2.	8.	0.	8.	-1.	9.
8826	G		-1.	1.	7.	9.	3.	0.	7.	6.	6.
8834	G		10.	1.	6.	8.	8.	4.	-3.	13.	6.
8835	G		34.	5.	2.	10.	5.	6.	2.	8.	9.
8839	G		5.	9.	0.	9.	7.	4.	7.	0.	6.
8849	G		10.	8.	2.	6.	0.	6.	5.	3.	10.
8853	G		7.	8.	2.	12.	-1.	9.	5.	6.	4.
8859	G		7.	8.	4.	7.	3.	6.	5.	8.	1.
8869	G		8.	6.	7.	3.	5.	4.	5.	6.	3.
8879	G		7.	6.	13.	1.	6.	2.	4.	7.	9.
8889	G		3.	8.	8.	-1.	7.	10.	3.	6.	6.
8891	G		6.	9.	5.	-3.	14.	-2.	7.	-2.	8.
8893	G		13.	7.	3.	8.	1.	11.	2.	-3.	17.
8897	G		7.	4.	6.	5.	5.	3.	-2.	11.	2.
8908	G		12.	3.	7.	0.	4.	8.	0.	9.	-1.
8910	G		9.	7.	1.	9.	0.	4.	1.	7.	7.
8913	NG		10.	6.	-3.	4.	2.	4.	-2.	-3.	7.
8916	NG		2.	7.	9.	2.	-3.	-4.	11.	7.	3.
MEAN			10.	5.	5.	5.	5.	5.	4.	5.	7.
S.D.			6.3	5.3	4.1	4.5	4.2	3.2	3.2	4.3	4.0
N			23	23	23	23	23	23	23	23	23

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.4

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 10

SPONSOR:HSIA INDIVIDUAL BODY WEIGHT CHANGES DURING GESTATION [G]

	PREGNANCY STATUS	DAY	9- 10	10- 11	11- 12	12- 13	13- 14	14- 15	15- 16	16- 17	17- 18
DAMS FROM GROUP 3: 0.25 PPM											
8747	G		9.	4.	8.	11.	15.	11.	12.	16.	19.
8758	G		1.	9.	8.	3.	6.	11.	10.	14.	15.
8764	G		1.	12.	0.	12.	8.	13.	3.	24.	13.
8767	G		3.	7.	8.	9.	7.	10.	10.	18.	19.
8773	G		0.	6.	-15.	7.	-1.	-1.	-5.	9.	-1.
8774	G		5.	9.	10.	7.	5.	-1.	4.	7.	6.
8807	G		7.	4.	5.	14.	7.	12.	8.	17.	16.
8814	G		8.	0.	4.	9.	7.	4.	9.	13.	12.
8826	G		6.	4.	1.	4.	18.	4.	3.	16.	6.
8834	G		7.	4.	9.	5.	1.	11.	9.	19.	16.
8835	G		7.	6.	6.	1.	4.	10.	16.	8.	16.
8839	G		7.	11.	7.	3.	6.	15.	9.	19.	26.
8849	G		4.	8.	4.	4.	7.	5.	13.	14.	12.
8853	G		8.	10.	-3.	13.	0.	10.	9.	14.	18.
8859	G		1.	8.	2.	1.	5.	8.	11.	7.	18.
8869	G		10.	3.	5.	6.	7.	8.	12.	2.	26.
8879	G		11.	3.	4.	13.	8.	8.	8.	17.	19.
8889	G		8.	5.	13.	2.	7.	9.	6.	24.	16.
8891	G		5.	6.	-4.	7.	10.	4.	14.	7.	13.
8893	G		-2.	3.	9.	6.	5.	8.	14.	0.	20.
8897	G		7.	11.	10.	7.	1.	9.	12.	9.	21.
8908	G		1.	8.	8.	11.	-2.	7.	5.	12.	17.
8910	G		1.	10.	-1.	12.	-2.	15.	12.	13.	19.
8913	NG		7.	-1.	-3.	3.	9.	-2.	-5.	3.	6.
8916	NG		-5.	-4.	13.	6.	4.	0.	-9.	13.	3.
MEAN			5.	7.	4.	7.	6.	8.	9.	13.	16.
S.D.			3.6	3.2	6.1	4.1	4.9	4.3	4.7	6.2	6.1
N			23	23	23	23	23	23	23	23	23

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.4

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 11

SPONSOR:HSIA INDIVIDUAL BODY WEIGHT CHANGES DURING GESTATION [G]

PREGNANCY STATUS		DAY 18- 19	19- 20	20- 21	1- 6	6- 9	9- 12	12- 16	16- 21	6- 16
DAMS FROM GROUP 3:		0.25 PPM								
8747	G	17.	18.	22.	33.	22.	21.	49.	92.	92.
8758	G	21.	18.	28.	26.	20.	18.	30.	96.	68.
8764	G	16.	17.	22.	33.	22.	13.	36.	92.	71.
8767	G	16.	29.	16.	28.	23.	18.	36.	98.	77.
8773	G	2.	-2.	9.	17.	22.	-9.	0.	17.	13.
8774	G	6.	9.	10.	21.	12.	24.	15.	38.	51.
8807	G	14.	20.	36.	16.	17.	16.	41.	103.	74.
8814	G	17.	15.	29.	13.	16.	12.	29.	86.	57.
8826	G	10.	9.	20.	20.	19.	11.	29.	61.	59.
8834	G	14.	11.	28.	27.	16.	20.	26.	88.	62.
8835	G	13.	11.	26.	28.	19.	19.	31.	74.	69.
8839	G	8.	19.	25.	29.	13.	25.	33.	97.	71.
8849	G	14.	19.	19.	22.	18.	16.	29.	78.	63.
8853	G	10.	20.	26.	30.	15.	15.	32.	88.	62.
8859	G	14.	19.	14.	28.	14.	11.	25.	72.	50.
8869	G	8.	6.	23.	25.	14.	18.	33.	65.	65.
8879	G	19.	8.	33.	28.	20.	18.	37.	96.	75.
8889	G	19.	19.	24.	32.	15.	26.	24.	102.	65.
8891	G	11.	6.	18.	23.	13.	7.	35.	55.	55.
8893	G	9.	22.	14.	30.	16.	10.	33.	65.	59.
8897	G	16.	9.	33.	23.	11.	28.	29.	88.	68.
8908	G	13.	23.	18.	22.	8.	17.	21.	83.	46.
8910	G	21.	9.	29.	21.	15.	10.	37.	91.	62.
8913	NG	-3.	-1.	3.	13.	2.	3.	5.	8.	10.
8916	NG	2.	0.	5.	11.	21.	4.	1.	23.	26.
MEAN		13.	15.	23.	25.	17.	16.	30.	79.	62.
S.D.		4.8	7.1	7.3	5.5	3.9	7.7	9.5	21.4	14.7
N		23	23	23	23	23	23	23	23	23

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.4

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 12
SPONSOR:HSIA INDIVIDUAL BODY WEIGHT CHANGES DURING GESTATION [G]

PREGNANCY STATUS	DAY 1- 21		
DAMS FROM GROUP 3:	0.25 PPM		
8747	G	217.	SCHEDULED NECROPSY DAY 21
8758	G	190.	SCHEDULED NECROPSY DAY 21
8764	G	196.	SCHEDULED NECROPSY DAY 21
8767	G	203.	SCHEDULED NECROPSY DAY 21
8773	G	47.	SCHEDULED NECROPSY DAY 21
8774	G	110.	SCHEDULED NECROPSY DAY 21
8807	G	193.	SCHEDULED NECROPSY DAY 21
8814	G	156.	SCHEDULED NECROPSY DAY 21
8826	G	140.	SCHEDULED NECROPSY DAY 21
8834	G	177.	SCHEDULED NECROPSY DAY 21
8835	G	171.	SCHEDULED NECROPSY DAY 21
8839	G	197.	SCHEDULED NECROPSY DAY 21
8849	G	163.	SCHEDULED NECROPSY DAY 21
8853	G	180.	SCHEDULED NECROPSY DAY 21
8859	G	150.	SCHEDULED NECROPSY DAY 21
8869	G	155.	SCHEDULED NECROPSY DAY 21
8879	G	199.	SCHEDULED NECROPSY DAY 21
8889	G	199.	SCHEDULED NECROPSY DAY 21
8891	G	133.	SCHEDULED NECROPSY DAY 21
8893	G	154.	SCHEDULED NECROPSY DAY 21
8897	G	179.	SCHEDULED NECROPSY DAY 21
8908	G	151.	SCHEDULED NECROPSY DAY 21
8910	G	174.	SCHEDULED NECROPSY DAY 21
8913	NG	31.	SCHEDULED NECROPSY DAY 21
8916	NG	60.	SCHEDULED NECROPSY DAY 21
MEAN		167.	
S.D.		36.8	
N		23	

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.4

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 13

SPONSOR:HSIA INDIVIDUAL BODY WEIGHT CHANGES DURING GESTATION [G]

	PREGNANCY STATUS	DAY 0- 1	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 4: 1.5 PPM										
8741	G	12.	-1.	9.	1.	5.	6.	6.	2.	10.
8765	G	5.	6.	5.	4.	0.	7.	4.	7.	4.
8783	G	8.	-5.	17.	8.	3.	1.	12.	6.	6.
8786	G	9.	13.	-1.	8.	2.	7.	2.	8.	0.
8788	G	14.	2.	2.	7.	3.	5.	2.	4.	7.
8792	G	20.	-2.	11.	9.	5.	2.	14.	3.	8.
8805	G	11.	-3.	-2.	13.	2.	-3.	12.	6.	7.
8806	G	14.	4.	4.	4.	7.	11.	0.	10.	4.
8811	G	8.	9.	-3.	11.	0.	7.	4.	10.	2.
8813	G	8.	6.	4.	3.	4.	7.	8.	8.	-1.
8823	G	1.	-1.	9.	7.	1.	10.	6.	1.	4.
8844	G	9.	1.	12.	1.	6.	5.	9.	5.	9.
8848	G	9.	5.	1.	5.	10.	-7.	11.	7.	3.
8857	G	2.	8.	4.	6.	10.	1.	3.	4.	2.
8867	G	4.	4.	4.	4.	2.	7.	-3.	9.	2.
8873	G	9.	6.	8.	-3.	9.	1.	4.	3.	2.
8876	G	4.	13.	6.	0.	6.	6.	2.	7.	5.
8881	G	5.	7.	-3.	9.	2.	7.	3.	8.	1.
8884	NG	-6.	-6.	8.	-1.	4.	-2.	-1.	13.	-2.
8890	G	11.	7.	2.	6.	6.	8.	1.	10.	0.
8895	G	13.	7.	0.	9.	4.	-3.	6.	8.	6.
8899	G	16.	5.	7.	-3.	10.	-3.	10.	5.	1.
8907	G	-2.	17.	7.	2.	4.	9.	0.	9.	3.
8941	G	6.	9.	1.	8.	5.	6.	6.	5.	2.
8942	G	13.	0.	11.	4.	6.	6.	9.	4.	8.
MEAN		9.	5.	5.	5.	5.	4.	5.	6.	4.
S.D.		5.1	5.4	5.1	4.1	3.0	4.6	4.4	2.6	3.1
N		24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.4

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 14

SPONSOR:HSIA INDIVIDUAL BODY WEIGHT CHANGES DURING GESTATION [G]

	PREGNANCY STATUS	DAY	9- 10	10- 11	11- 12	12- 13	13- 14	14- 15	15- 16	16- 17	17- 18
DAMS FROM GROUP 4: 1.5 PPM											
8741	G		5.	2.	13.	9.	1.	2.	15.	14.	22.
8765	G		8.	5.	5.	3.	6.	10.	9.	16.	20.
8783	G		9.	6.	7.	9.	7.	9.	6.	16.	20.
8786	G		6.	8.	6.	4.	9.	8.	8.	12.	7.
8788	G		7.	1.	10.	0.	6.	13.	-1.	16.	12.
8792	G		2.	-3.	11.	3.	5.	-3.	15.	8.	13.
8805	G		9.	3.	6.	0.	6.	9.	10.	15.	14.
8806	G		7.	10.	5.	4.	6.	12.	16.	18.	14.
8811	G		6.	2.	3.	4.	2.	9.	2.	17.	22.
8813	G		8.	10.	7.	4.	4.	12.	11.	11.	18.
8823	G		5.	1.	5.	6.	6.	18.	7.	20.	8.
8844	G		7.	2.	8.	4.	18.	4.	7.	6.	24.
8848	G		5.	0.	0.	15.	0.	19.	4.	23.	7.
8857	G		12.	3.	11.	0.	-5.	16.	10.	11.	12.
8867	G		2.	9.	3.	5.	-1.	11.	3.	13.	13.
8873	G		13.	7.	1.	8.	14.	4.	8.	6.	25.
8876	G		7.	2.	12.	7.	4.	1.	10.	20.	14.
8881	G		9.	4.	4.	10.	0.	8.	3.	16.	11.
8884	NG		8.	2.	-2.	1.	4.	5.	-7.	4.	-4.
8890	G		8.	6.	8.	7.	10.	8.	7.	14.	15.
8895	G		4.	6.	6.	3.	10.	2.	-1.	15.	17.
8899	G		13.	5.	5.	3.	6.	15.	5.	12.	18.
8907	G		14.	1.	7.	8.	12.	13.	2.	22.	21.
8941	G		6.	7.	14.	7.	-1.	13.	10.	23.	15.
8942	G		6.	4.	9.	7.	3.	1.	7.	16.	13.
MEAN			7.	4.	7.	5.	5.	9.	7.	15.	16.
S.D.			3.2	3.3	3.6	3.5	5.2	5.7	4.6	4.7	5.1
N			24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.4

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 15

SPONSOR:HSIA INDIVIDUAL BODY WEIGHT CHANGES DURING GESTATION [G]

	PREGNANCY STATUS	DAY 18- 19	19- 20	20- 21	1- 6	6- 9	9- 12	12- 16	16- 21	6- 16
DAMS FROM GROUP 4: 1.5 PPM										
8741	G	21.	9.	36.	20.	18.	20.	27.	102.	65.
8765	G	13.	13.	25.	22.	15.	18.	28.	87.	61.
8783	G	13.	18.	23.	24.	24.	22.	31.	90.	77.
8786	G	24.	17.	13.	29.	10.	20.	29.	73.	59.
8788	G	10.	24.	18.	19.	13.	18.	18.	80.	49.
8792	G	12.	4.	23.	25.	25.	10.	20.	60.	55.
8805	G	19.	13.	23.	7.	25.	18.	25.	84.	68.
8806	G	12.	18.	23.	30.	14.	22.	38.	85.	74.
8811	G	19.	21.	20.	24.	16.	11.	17.	99.	44.
8813	G	9.	12.	8.	24.	15.	25.	31.	58.	71.
8823	G	17.	23.	20.	26.	11.	11.	37.	88.	59.
8844	G	18.	10.	26.	25.	23.	17.	33.	84.	73.
8848	G	19.	24.	25.	14.	21.	5.	38.	98.	64.
8857	G	13.	19.	9.	29.	9.	26.	21.	64.	56.
8867	G	7.	13.	12.	21.	8.	14.	18.	58.	40.
8873	G	11.	19.	26.	21.	9.	21.	34.	87.	64.
8876	G	24.	17.	19.	31.	14.	21.	22.	94.	57.
8881	G	13.	10.	24.	22.	12.	17.	21.	74.	50.
8884	NG	5.	0.	-6.	3.	10.	8.	3.	-1.	21.
8890	G	10.	20.	25.	29.	11.	22.	32.	84.	65.
8895	G	7.	20.	18.	17.	20.	16.	14.	77.	50.
8899	G	17.	-5.	16.	16.	16.	23.	29.	58.	68.
8907	G	8.	23.	24.	39.	12.	22.	35.	98.	69.
8941	G	25.	14.	21.	29.	13.	27.	29.	98.	69.
8942	G	17.	16.	20.	27.	21.	19.	18.	82.	58.
MEAN		15.	16.	21.	24.	16.	19.	27.	82.	61.
S.D.		5.4	6.8	6.1	6.6	5.3	5.3	7.3	14.0	9.7
N		24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.4

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 16
SPONSOR:HSIA INDIVIDUAL BODY WEIGHT CHANGES DURING GESTATION [G]

PREGNANCY STATUS	DAY 1- 21	
DAMS FROM GROUP 4:	1.5 PPM	
8741	G	187. SCHEDULED NECROPSY DAY 21
8765	G	170. SCHEDULED NECROPSY DAY 21
8783	G	191. SCHEDULED NECROPSY DAY 21
8786	G	161. SCHEDULED NECROPSY DAY 21
8788	G	148. SCHEDULED NECROPSY DAY 21
8792	G	140. SCHEDULED NECROPSY DAY 21
8805	G	159. SCHEDULED NECROPSY DAY 21
8806	G	189. SCHEDULED NECROPSY DAY 21
8811	G	167. SCHEDULED NECROPSY DAY 21
8813	G	153. SCHEDULED NECROPSY DAY 21
8823	G	173. SCHEDULED NECROPSY DAY 21
8844	G	182. SCHEDULED NECROPSY DAY 21
8848	G	176. SCHEDULED NECROPSY DAY 21
8857	G	149. SCHEDULED NECROPSY DAY 21
8867	G	119. SCHEDULED NECROPSY DAY 21
8873	G	172. SCHEDULED NECROPSY DAY 21
8876	G	182. SCHEDULED NECROPSY DAY 21
8881	G	146. SCHEDULED NECROPSY DAY 21
8884	NG	23. SCHEDULED NECROPSY DAY 21
8890	G	178. SCHEDULED NECROPSY DAY 21
8895	G	144. SCHEDULED NECROPSY DAY 21
8899	G	142. SCHEDULED NECROPSY DAY 21
8907	G	206. SCHEDULED NECROPSY DAY 21
8941	G	196. SCHEDULED NECROPSY DAY 21
8942	G	167. SCHEDULED NECROPSY DAY 21
MEAN		167.
S.D.		21.0
N		24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.4

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 17

SPONSOR:HSIA INDIVIDUAL BODY WEIGHT CHANGES DURING GESTATION [G]

	PREGNANCY STATUS	DAY 0- 1	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 5: 500 PPM										
8735	G	8.	5.	4.	7.	-2.	9.	-20.	24.	7.
8763	G	3.	3.	2.	6.	6.	5.	-2.	10.	1.
8775	G	8.	6.	0.	6.	1.	11.	-1.	8.	4.
8778	G	10.	4.	9.	0.	10.	-2.	2.	5.	7.
8784	G	14.	0.	0.	10.	-1.	5.	2.	6.	6.
8790	G	21.	2.	7.	7.	5.	5.	0.	12.	5.
8824	G	6.	3.	-3.	12.	-1.	7.	-5.	10.	1.
8828	G	4.	-2.	5.	8.	8.	2.	2.	7.	5.
8830	G	11.	2.	8.	5.	8.	5.	6.	7.	-1.
8833	G	12.	8.	2.	6.	6.	4.	4.	6.	1.
8837	G	15.	4.	4.	2.	1.	5.	10.	4.	1.
8838	G	11.	0.	3.	12.	0.	10.	0.	8.	6.
8845	G	12.	7.	2.	11.	1.	9.	1.	13.	-6.
8846	G	7.	4.	6.	4.	-1.	7.	-3.	10.	-1.
8855	G	8.	9.	2.	8.	1.	11.	2.	4.	4.
8863	G	8.	6.	2.	3.	10.	-6.	5.	5.	3.
8864	G	11.	6.	5.	3.	1.	7.	3.	4.	0.
8868	G	5.	5.	3.	8.	7.	2.	3.	-3.	11.
8874	G	12.	5.	11.	3.	10.	1.	4.	10.	5.
8875	G	6.	0.	14.	-6.	13.	-4.	6.	7.	2.
8878	G	8.	1.	5.	5.	3.	5.	9.	-2.	5.
8928	G	13.	-3.	5.	1.	9.	-12.	24.	-4.	-7.
8933	G	11.	4.	1.	7.	2.	5.	-1.	1.	-1.
8936	G	20.	-8.	6.	1.	6.	7.	4.	2.	8.
8937	NG	8.	-5.	-9.	18.	-4.	-2.	-8.	13.	2.
MEAN		10.	3.	4.	5.	4.	4.	2.	6.	3.
S.D.		4.5	3.8	3.7	4.2	4.4	5.5	7.4	5.8	4.2
N		24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.4

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 18

SPONSOR:HSIA INDIVIDUAL BODY WEIGHT CHANGES DURING GESTATION [G]

	PREGNANCY STATUS	DAY	9- 10	10- 11	11- 12	12- 13	13- 14	14- 15	15- 16	16- 17	17- 18
DAMS FROM GROUP 5: 500 PPM											
8735	G		7.	7.	8.	2.	10.	8.	6.	14.	16.
8763	G		7.	7.	7.	2.	5.	10.	15.	6.	24.
8775	G		8.	2.	10.	6.	3.	9.	15.	19.	15.
8778	G		5.	7.	6.	6.	-1.	14.	13.	9.	16.
8784	G		7.	10.	4.	7.	6.	8.	18.	8.	15.
8790	G		6.	6.	11.	4.	6.	10.	10.	19.	20.
8824	G		6.	-3.	15.	-1.	5.	8.	6.	13.	13.
8828	G		4.	6.	9.	3.	7.	10.	1.	22.	19.
8830	G		11.	5.	14.	8.	4.	3.	14.	22.	8.
8833	G		6.	5.	7.	8.	6.	10.	8.	17.	17.
8837	G		10.	4.	7.	5.	8.	6.	5.	16.	18.
8838	G		1.	5.	11.	7.	1.	14.	14.	13.	10.
8845	G		1.	8.	2.	8.	3.	12.	8.	16.	23.
8846	G		11.	9.	3.	6.	7.	11.	13.	21.	17.
8855	G		6.	6.	6.	12.	4.	4.	5.	20.	23.
8863	G		10.	7.	7.	1.	7.	9.	11.	13.	19.
8864	G		4.	8.	9.	9.	5.	-18.	33.	13.	16.
8868	G		4.	-2.	18.	-2.	-2.	10.	12.	11.	21.
8874	G		7.	8.	9.	4.	4.	15.	14.	4.	24.
8875	G		4.	3.	10.	-1.	4.	8.	7.	4.	13.
8878	G		7.	5.	3.	12.	3.	7.	12.	18.	9.
8928	G		18.	12.	3.	-2.	-1.	10.	5.	15.	17.
8933	G		11.	15.	3.	5.	-5.	10.	9.	21.	17.
8936	G		9.	8.	1.	7.	3.	11.	6.	22.	23.
8937	NG		3.	-7.	13.	2.	0.	-9.	10.	2.	0.
MEAN			7.	6.	8.	5.	4.	8.	11.	15.	17.
S.D.			3.7	3.8	4.3	4.0	3.4	6.3	6.3	5.6	4.5
N			24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.4

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 19

SPONSOR:HSIA INDIVIDUAL BODY WEIGHT CHANGES DURING GESTATION [G]

	PREGNANCY STATUS	DAY 18- 19	19- 20	20- 21	1- 6	6- 9	9- 12	12- 16	16- 21	6- 16
DAMS FROM GROUP 5: 500 PPM										
8735	G	17.	16.	26.	23.	11.	22.	26.	89.	59.
8763	G	13.	17.	25.	22.	9.	21.	32.	85.	62.
8775	G	17.	15.	8.	24.	11.	20.	33.	74.	64.
8778	G	19.	26.	14.	21.	14.	18.	32.	84.	64.
8784	G	15.	29.	20.	14.	14.	21.	39.	87.	74.
8790	G	11.	24.	29.	26.	17.	23.	30.	103.	70.
8824	G	10.	6.	23.	18.	6.	18.	18.	65.	42.
8828	G	18.	22.	12.	21.	14.	19.	21.	93.	54.
8830	G	21.	23.	21.	28.	12.	30.	29.	95.	71.
8833	G	12.	18.	17.	26.	11.	18.	32.	81.	61.
8837	G	16.	19.	14.	16.	15.	21.	24.	83.	60.
8838	G	12.	19.	28.	25.	14.	17.	36.	82.	67.
8845	G	11.	18.	9.	30.	8.	11.	31.	77.	50.
8846	G	13.	17.	30.	20.	6.	23.	37.	98.	66.
8855	G	11.	17.	26.	31.	10.	18.	25.	97.	53.
8863	G	13.	20.	23.	15.	13.	24.	28.	88.	65.
8864	G	14.	14.	25.	22.	7.	21.	29.	82.	57.
8868	G	15.	11.	21.	25.	11.	20.	18.	79.	49.
8874	G	21.	16.	25.	30.	19.	24.	37.	90.	80.
8875	G	13.	8.	8.	17.	15.	17.	18.	46.	50.
8878	G	17.	19.	33.	19.	12.	15.	34.	96.	61.
8928	G	22.	8.	19.	0.	13.	33.	12.	81.	58.
8933	G	13.	15.	16.	19.	-1.	29.	19.	82.	47.
8936	G	11.	26.	23.	12.	14.	18.	27.	105.	59.
8937	NG	-9.	9.	6.	-2.	7.	9.	3.	8.	19.
MEAN		15.	18.	21.	21.	11.	21.	28.	85.	60.
S.D.		3.5	5.8	7.1	6.8	4.2	4.8	7.2	12.5	9.0
N		24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.4

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 20
SPONSOR:HSIA INDIVIDUAL BODY WEIGHT CHANGES DURING GESTATION [G]

PREGNANCY STATUS	DAY 1- 21	
DAMS FROM GROUP 5:	500 PPM	
8735	G	171. SCHEDULED NECROPSY DAY 21
8763	G	169. SCHEDULED NECROPSY DAY 21
8775	G	162. SCHEDULED NECROPSY DAY 21
8778	G	169. SCHEDULED NECROPSY DAY 21
8784	G	175. SCHEDULED NECROPSY DAY 21
8790	G	199. SCHEDULED NECROPSY DAY 21
8824	G	125. SCHEDULED NECROPSY DAY 21
8828	G	168. SCHEDULED NECROPSY DAY 21
8830	G	194. SCHEDULED NECROPSY DAY 21
8833	G	168. SCHEDULED NECROPSY DAY 21
8837	G	159. SCHEDULED NECROPSY DAY 21
8838	G	174. SCHEDULED NECROPSY DAY 21
8845	G	157. SCHEDULED NECROPSY DAY 21
8846	G	184. SCHEDULED NECROPSY DAY 21
8855	G	181. SCHEDULED NECROPSY DAY 21
8863	G	168. SCHEDULED NECROPSY DAY 21
8864	G	161. SCHEDULED NECROPSY DAY 21
8868	G	153. SCHEDULED NECROPSY DAY 21
8874	G	200. SCHEDULED NECROPSY DAY 21
8875	G	113. SCHEDULED NECROPSY DAY 21
8878	G	176. SCHEDULED NECROPSY DAY 21
8928	G	139. SCHEDULED NECROPSY DAY 21
8933	G	148. SCHEDULED NECROPSY DAY 21
8936	G	176. SCHEDULED NECROPSY DAY 21
8937	NG	25. SCHEDULED NECROPSY DAY 21
MEAN		166.
S.D.		20.7
N		24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.4

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 21

SPONSOR:HSIA INDIVIDUAL BODY WEIGHT CHANGES DURING GESTATION [G]

	PREGNANCY STATUS	DAY 0- 1	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 6: 1000 PPM										
8739	G	8.	-4.	8.	1.	4.	1.	4.	6.	11.
8760	G	9.	5.	0.	1.	9.	6.	3.	3.	6.
8769	G	8.	9.	-3.	9.	-2.	7.	1.	1.	4.
8770	G	8.	0.	8.	-3.	7.	2.	3.	7.	3.
8771	G	13.	6.	-1.	5.	-1.	10.	2.	10.	1.
8785	G	5.	6.	8.	-1.	6.	3.	5.	0.	12.
8793	G	10.	5.	-2.	12.	3.	5.	2.	5.	6.
8795	G	6.	4.	-3.	1.	12.	-3.	7.	7.	5.
8799	G	2.	7.	-3.	1.	10.	-3.	1.	11.	7.
8804	G	7.	7.	5.	5.	0.	12.	1.	4.	2.
8815	G	10.	6.	2.	10.	2.	8.	1.	8.	3.
8819	G	15.	-8.	14.	3.	0.	3.	8.	9.	-7.
8821	G	8.	11.	2.	3.	6.	4.	7.	2.	8.
8829	G	9.	1.	4.	8.	-1.	8.	4.	7.	5.
8831	G	10.	1.	7.	1.	5.	5.	4.	8.	4.
8856	NG	9.	7.	9.	2.	7.	4.	6.	6.	8.
8860	G	6.	6.	3.	4.	6.	6.	-10.	22.	-2.
8861	G	9.	1.	9.	0.	2.	8.	1.	4.	11.
8865	G	15.	0.	6.	6.	15.	-3.	13.	5.	3.
8870	G	5.	5.	2.	5.	4.	4.	10.	2.	10.
8872	G	-3.	10.	7.	8.	5.	4.	6.	2.	5.
8885	G	9.	1.	5.	3.	1.	9.	4.	7.	7.
8888	G	11.	-4.	5.	2.	13.	-4.	4.	-2.	16.
8896	G	10.	8.	5.	6.	1.	7.	4.	6.	2.
8917	G	5.	8.	6.	3.	4.	7.	0.	7.	7.
MEAN		8.	4.	4.	4.	5.	4.	4.	6.	5.
S.D.		3.9	4.7	4.4	3.7	4.6	4.3	4.3	4.7	4.8
N		24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.4

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 22

SPONSOR:HSIA INDIVIDUAL BODY WEIGHT CHANGES DURING GESTATION [G]

	PREGNANCY STATUS	DAY	9- 10	10- 11	11- 12	12- 13	13- 14	14- 15	15- 16	16- 17	17- 18
DAMS FROM GROUP 6: 1000 PPM											
8739	G		-1.	8.	7.	10.	3.	2.	10.	11.	15.
8760	G		8.	3.	6.	6.	-1.	6.	15.	8.	18.
8769	G		9.	8.	8.	-13.	25.	11.	8.	16.	9.
8770	G		8.	7.	8.	2.	5.	15.	9.	18.	11.
8771	G		9.	5.	4.	5.	7.	8.	12.	11.	22.
8785	G		10.	4.	5.	-6.	8.	11.	4.	14.	16.
8793	G		4.	7.	-2.	10.	3.	13.	5.	9.	13.
8795	G		11.	6.	2.	3.	8.	11.	8.	18.	18.
8799	G		3.	9.	5.	6.	3.	7.	15.	15.	11.
8804	G		17.	-3.	15.	3.	12.	5.	4.	12.	16.
8815	G		5.	9.	9.	7.	11.	13.	10.	13.	22.
8819	G		18.	3.	-2.	10.	2.	9.	11.	19.	17.
8821	G		10.	0.	12.	10.	8.	11.	18.	13.	14.
8829	G		11.	1.	8.	4.	10.	8.	17.	19.	17.
8831	G		13.	9.	5.	11.	2.	9.	12.	21.	14.
8856	NG		4.	1.	-4.	1.	2.	-5.	3.	-2.	-7.
8860	G		3.	7.	6.	7.	8.	8.	9.	13.	26.
8861	G		2.	8.	4.	8.	2.	12.	7.	13.	20.
8865	G		10.	3.	11.	7.	10.	8.	11.	16.	20.
8870	G		6.	9.	1.	8.	5.	25.	3.	17.	21.
8872	G		3.	17.	0.	3.	4.	5.	4.	21.	15.
8885	G		6.	12.	0.	9.	2.	12.	7.	14.	13.
8888	G		3.	5.	12.	8.	11.	5.	5.	14.	28.
8896	G		10.	8.	5.	5.	1.	7.	5.	6.	20.
8917	G		1.	12.	11.	6.	2.	7.	15.	10.	22.
MEAN			7.	7.	6.	5.	6.	10.	9.	14.	17.
S.D.			4.8	4.3	4.6	5.3	5.4	4.5	4.4	4.0	4.7
N			24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.4

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 23

SPONSOR:HSIA INDIVIDUAL BODY WEIGHT CHANGES DURING GESTATION [G]

	PREGNANCY STATUS	DAY 18- 19	19- 20	20- 21	1- 6	6- 9	9- 12	12- 16	16- 21	6- 16
DAMS FROM GROUP 6: 1000 PPM										
8739	G	17.	12.	23.	10.	21.	14.	25.	78.	60.
8760	G	19.	10.	15.	21.	12.	17.	26.	70.	55.
8769	G	21.	12.	27.	20.	6.	25.	31.	85.	62.
8770	G	13.	21.	19.	14.	13.	23.	31.	82.	67.
8771	G	14.	13.	7.	19.	13.	18.	32.	67.	63.
8785	G	18.	16.	18.	22.	17.	19.	17.	82.	53.
8793	G	8.	5.	16.	23.	13.	9.	31.	51.	53.
8795	G	11.	13.	31.	11.	19.	19.	30.	91.	68.
8799	G	14.	17.	13.	12.	19.	17.	31.	70.	67.
8804	G	17.	23.	15.	29.	7.	29.	24.	83.	60.
8815	G	17.	20.	24.	28.	12.	23.	41.	96.	76.
8819	G	16.	23.	24.	12.	10.	19.	32.	99.	61.
8821	G	14.	16.	26.	26.	17.	22.	47.	83.	86.
8829	G	17.	22.	19.	20.	16.	20.	39.	94.	75.
8831	G	19.	25.	19.	19.	16.	27.	34.	98.	77.
8856	NG	-7.	8.	6.	29.	20.	1.	1.	-2.	22.
8860	G	21.	15.	30.	25.	10.	16.	32.	105.	58.
8861	G	21.	17.	19.	20.	16.	14.	29.	90.	59.
8865	G	16.	26.	28.	24.	21.	24.	36.	106.	81.
8870	G	13.	11.	24.	20.	22.	16.	41.	86.	79.
8872	G	24.	14.	14.	34.	13.	20.	16.	88.	49.
8885	G	17.	19.	14.	19.	18.	18.	30.	77.	66.
8888	G	15.	21.	24.	12.	18.	20.	29.	102.	67.
8896	G	11.	16.	0.	27.	12.	23.	18.	53.	53.
8917	G	20.	17.	22.	28.	14.	24.	30.	91.	68.
MEAN		16.	17.	20.	21.	15.	20.	31.	84.	65.
S.D.		3.8	5.2	7.2	6.4	4.3	4.5	7.4	14.6	9.9
N		24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.4

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 24
SPONSOR:HSIA INDIVIDUAL BODY WEIGHT CHANGES DURING GESTATION [G]

PREGNANCY STATUS		DAY 1- 21	
DAMS FROM GROUP 6:		1000 PPM	
8739	G	148.	SCHEDULED NECROPSY DAY 21
8760	G	146.	SCHEDULED NECROPSY DAY 21
8769	G	167.	SCHEDULED NECROPSY DAY 21
8770	G	163.	SCHEDULED NECROPSY DAY 21
8771	G	149.	SCHEDULED NECROPSY DAY 21
8785	G	157.	SCHEDULED NECROPSY DAY 21
8793	G	127.	SCHEDULED NECROPSY DAY 21
8795	G	170.	SCHEDULED NECROPSY DAY 21
8799	G	149.	SCHEDULED NECROPSY DAY 21
8804	G	172.	SCHEDULED NECROPSY DAY 21
8815	G	200.	SCHEDULED NECROPSY DAY 21
8819	G	172.	SCHEDULED NECROPSY DAY 21
8821	G	195.	SCHEDULED NECROPSY DAY 21
8829	G	189.	SCHEDULED NECROPSY DAY 21
8831	G	194.	SCHEDULED NECROPSY DAY 21
8856	NG	49.	SCHEDULED NECROPSY DAY 21
8860	G	188.	SCHEDULED NECROPSY DAY 21
8861	G	169.	SCHEDULED NECROPSY DAY 21
8865	G	211.	SCHEDULED NECROPSY DAY 21
8870	G	185.	SCHEDULED NECROPSY DAY 21
8872	G	171.	SCHEDULED NECROPSY DAY 21
8885	G	162.	SCHEDULED NECROPSY DAY 21
8888	G	181.	SCHEDULED NECROPSY DAY 21
8896	G	133.	SCHEDULED NECROPSY DAY 21
8917	G	187.	SCHEDULED NECROPSY DAY 21
MEAN		170.	
S.D.		21.4	
N		24	

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

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TABLE 4.5

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 1
SPONSOR:HSIA INDIVIDUAL GRAVID UTERINE WTS. AND NET BODY WT. CHANGES [G]

DAM #	PREGNANCY STATUS	INITIAL BODY WT.	TERMINAL BODY WT.	GRAVID UTERINE WT.	NET BODY WT.	NET BODY WT. CHANGE
GROUP 1: 0 PPM						
8738	G	253.	437.	132.6	304.4	51.4
8751	G	278.	432.	76.1	355.9	77.9
8755	G	249.	445.	122.6	322.4	73.4
8766	G	239.	379.	NA	NA	NA
8768	G	244.	437.	105.0	332.0	88.0
8772	G	239.	403.	99.8	303.2	64.2
8776	G	255.	445.	130.7	314.3	59.3
8777	G	266.	472.	145.8	326.2	60.2
8779	G	269.	491.	116.3	374.7	105.7
8791	G	228.	365.	37.7	327.3	99.3
8798	G	238.	418.	111.2	306.8	68.8
8803	G	261.	515.	142.5	372.5	111.5
8812	G	228.	400.	110.7	289.3	61.3
8817	G	239.	391.	81.6	309.4	70.4
8820	G	229.	412.	102.8	309.2	80.2
8825	G	261.	477.	122.2	354.8	93.8
8836	G	258.	424.	96.6	327.4	69.4
8843	G	252.	384.	45.9	338.1	86.1
8852	NG	248.	287.	NA	NA	NA
8858	G	255.	461.	111.0	350.0	95.0
8871	G	241.	417.	96.3	320.7	79.7
8883	G	244.	399.	98.4	300.6	56.6
8886	G	223.	401.	95.9	305.1	82.1
8894	G	252.	481.	122.1	358.9	106.9
8926	G	252.	355.	27.6	327.4	75.4
MEAN		248.	421.	101.4	327.4	79.0
S.D.		13.7	49.0	30.91	23.91	17.10
N		25	25	23	23	23

G = GRAVID, NG = NONGRAVID, NOT INCLUDED IN CALCULATION OF THE MEAN
NA = NOT APPLICABLE

TABLE 4.5

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 2

SPONSOR:HSIA INDIVIDUAL GRAVID UTERINE WTS. AND NET BODY WT. CHANGES [G]

DAM #	PREGNANCY STATUS	INITIAL BODY WT.	TERMINAL BODY WT.	GRAVID UTERINE WT.	NET BODY WT.	NET BODY WT. CHANGE
GROUP 2: 15 MG/KG RA						
8740	G	257.	412.	95.9	316.1	59.1
8743	G	244.	384.	74.1	309.9	65.9
8756	G	250.	442.	132.3	309.7	59.7
8757	G	257.	431.	122.7	308.3	51.3
8780	G	261.	444.	142.7	301.3	40.3
8789	G	255.	377.	36.0	341.0	86.0
8800	G	226.	378.	97.8	280.2	54.2
8801	G	238.	424.	89.3	334.7	96.7
8802	G	235.	374.	106.2	267.8	32.8
8808	G	250.	415.	105.0	310.0	60.0
8809	G	262.	423.	96.2	326.8	64.8
8810	G	233.	389.	111.7	277.3	44.3
8818	G	250.	452.	126.2	325.8	75.8
8822	G	239.	326.	41.3	284.7	45.7
8827	G	235.	392.	90.2	301.8	66.8
8840	G	249.	374.	48.5	325.5	76.5
8842	G	241.	395.	107.0	288.0	47.0
8847	G	247.	399.	84.5	314.5	67.5
8850	G	265.	420.	105.4	314.6	49.6
8851	G	233.	411.	87.2	323.8	90.8
8854	G	229.	332.	38.9	293.1	64.1
8900	G	257.	436.	126.4	309.6	52.6
8901	G	253.	434.	114.6	319.4	66.4
8930	G	258.	364.	74.8	289.2	31.2
8931	G	265.	465.	128.6	336.4	71.4
MEAN		248.	404.	95.3	308.4	60.8
S.D.		11.6	35.3	29.87	19.43	16.68
N		25	25	25	25	25

G = GRAVID

TABLE 4.5

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 3

SPONSOR:HSIA INDIVIDUAL GRAVID UTERINE WTS. AND NET BODY WT. CHANGES [G]

DAM #	PREGNANCY STATUS	INITIAL BODY WT.	TERMINAL BODY WT.	GRAVID UTERINE WT.	NET BODY WT.	NET BODY WT. CHANGE
GROUP 3: 0.25 PPM						
8747	G	252.	479.	129.5	349.5	97.5
8758	G	248.	446.	113.5	332.5	84.5
8764	G	257.	465.	123.1	341.9	84.9
8767	G	274.	487.	123.8	363.2	89.2
8773	G	262.	319.	0.5	318.5	56.5
8774	G	242.	360.	26.0	334.0	92.0
8807	G	233.	439.	119.6	319.4	86.4
8814	G	225.	394.	102.5	291.5	66.5
8826	G	239.	378.	79.6	298.4	59.4
8834	G	251.	438.	100.5	337.5	86.5
8835	G	226.	431.	86.0	345.0	119.0
8839	G	241.	443.	116.8	326.2	85.2
8849	G	240.	413.	108.2	304.8	64.8
8853	G	238.	425.	95.2	329.8	91.8
8859	G	256.	413.	93.4	319.6	63.6
8869	G	258.	421.	75.9	345.1	87.1
8879	G	243.	449.	131.7	317.3	74.3
8889	G	262.	464.	125.1	338.9	76.9
8891	G	261.	400.	71.0	329.0	68.0
8893	G	258.	425.	88.6	336.4	78.4
8897	G	234.	420.	104.5	315.5	81.5
8908	G	249.	412.	95.7	316.3	67.3
8910	G	260.	443.	110.4	332.6	72.6
8913	NG	255.	296.	NA	NA	NA
8916	NG	239.	301.	NA	NA	NA
MEAN		248.	414.	96.6	328.0	79.7
S.D.		12.4	50.4	31.63	16.83	14.25
N		25	25	23	23	23

G = GRAVID, NG = NONGRAVID, NOT INCLUDED IN CALCULATION OF THE MEAN
NA = NOT APPLICABLE

TABLE 4.5

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 4

SPONSOR:HSIA INDIVIDUAL GRAVID UTERINE WTS. AND NET BODY WT. CHANGES [G]

DAM #	PREGNANCY STATUS	INITIAL BODY WT.	TERMINAL BODY WT.	GRAVID UTERINE WT.	NET BODY WT.	NET BODY WT. CHANGE
GROUP 4: 1.5 PPM						
8741	G	254.	453.	119.6	333.4	79.4
8765	G	252.	427.	107.9	319.1	67.1
8783	G	235.	434.	122.5	311.5	76.5
8786	G	224.	394.	103.7	290.3	66.3
8788	G	256.	418.	103.6	314.4	58.4
8792	G	253.	413.	40.4	372.6	119.6
8805	G	244.	414.	110.6	303.4	59.4
8806	G	241.	444.	114.6	329.4	88.4
8811	G	244.	419.	123.9	295.1	51.1
8813	G	235.	396.	97.4	298.6	63.6
8823	G	267.	441.	114.2	326.8	59.8
8844	G	243.	434.	102.6	331.4	88.4
8848	G	231.	416.	117.0	299.0	68.0
8857	G	255.	406.	93.0	313.0	58.0
8867	G	261.	384.	72.0	312.0	51.0
8873	G	232.	413.	109.1	303.9	71.9
8876	G	245.	431.	119.6	311.4	66.4
8881	G	254.	405.	85.8	319.2	65.2
8884	NG	281.	298.	NA	NA	NA
8890	G	261.	450.	113.0	337.0	76.0
8895	G	246.	403.	83.4	319.6	73.6
8899	G	244.	402.	102.3	299.7	55.7
8907	G	267.	471.	135.4	335.6	68.6
8941	G	250.	452.	120.4	331.6	81.6
8942	G	262.	442.	84.3	357.7	95.7
MEAN		249.	418.	104.0	319.4	71.2
S.D.		13.1	33.1	20.23	19.71	15.61
N		25	25	24	24	24

G = GRAVID, NG = NONGRAVID, NOT INCLUDED IN CALCULATION OF THE MEAN
NA = NOT APPLICABLE

TABLE 4.5

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 5

SPONSOR:HSIA INDIVIDUAL GRAVID UTERINE WTS. AND NET BODY WT. CHANGES [G]

DAM #	PREGNANCY STATUS	INITIAL BODY WT.	TERMINAL BODY WT.	GRAVID UTERINE WT.	NET BODY WT.	NET BODY WT. CHANGE
GROUP 5: 500 PPM						
8735	G	257.	436.	118.5	317.5	60.5
8763	G	243.	415.	114.4	300.6	57.6
8775	G	254.	424.	96.5	327.5	73.5
8778	G	248.	427.	116.6	310.4	62.4
8784	G	266.	455.	134.2	320.8	54.8
8790	G	235.	455.	122.0	333.0	98.0
8824	G	223.	354.	88.1	265.9	42.9
8828	G	232.	404.	116.4	287.6	55.6
8830	G	267.	472.	105.8	366.2	99.2
8833	G	231.	411.	105.6	305.4	74.4
8837	G	245.	419.	114.2	304.8	59.8
8838	G	241.	426.	99.4	326.6	85.6
8845	G	260.	429.	112.6	316.4	56.4
8846	G	251.	442.	124.2	317.8	66.8
8855	G	236.	425.	105.6	319.4	83.4
8863	G	239.	415.	108.9	306.1	67.1
8864	G	249.	421.	114.0	307.0	58.0
8868	G	261.	419.	101.4	317.6	56.6
8874	G	249.	461.	120.5	340.5	91.5
8875	G	259.	378.	55.6	322.4	63.4
8878	G	237.	421.	107.1	313.9	76.9
8928	G	239.	391.	96.3	294.7	55.7
8933	G	254.	413.	100.6	312.4	58.4
8936	G	257.	453.	140.1	312.9	55.9
8937	NG	242.	275.	NA	NA	NA
MEAN		247.	418.	109.1	314.5	67.3
S.D.		11.6	39.3	16.54	18.84	14.90
N		25	25	24	24	24

G = GRAVID, NG = NONGRAVID, NOT INCLUDED IN CALCULATION OF THE MEAN
NA = NOT APPLICABLE

TABLE 4.5

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 6

SPONSOR:HSIA INDIVIDUAL GRAVID UTERINE WTS. AND NET BODY WT. CHANGES [G]

DAM #	PREGNANCY STATUS	INITIAL BODY WT.	TERMINAL BODY WT.	GRAVID UTERINE WT.	NET BODY WT.	NET BODY WT. CHANGE
GROUP 6: 1000 PPM						
8739	G	236.	392.	100.3	291.7	55.7
8760	G	240.	395.	101.6	293.4	53.4
8769	G	232.	407.	109.8	297.2	65.2
8770	G	242.	413.	92.9	320.1	78.1
8771	G	231.	393.	104.7	288.3	57.3
8785	G	271.	433.	99.2	333.8	62.8
8793	G	256.	393.	67.8	325.2	69.2
8795	G	238.	414.	107.1	306.9	68.9
8799	G	241.	392.	101.7	290.3	49.3
8804	G	258.	437.	112.1	324.9	66.9
8815	G	247.	457.	137.7	319.3	72.3
8819	G	264.	451.	129.3	321.7	57.7
8821	G	251.	454.	129.1	324.9	73.9
8829	G	239.	437.	141.1	295.9	56.9
8831	G	254.	458.	129.8	328.2	74.2
8856	NG	240.	298.	NA	NA	NA
8860	G	259.	453.	119.8	333.2	74.2
8861	G	251.	429.	113.3	315.7	64.7
8865	G	249.	475.	131.1	343.9	94.9
8870	G	271.	461.	118.3	342.7	71.7
8872	G	258.	426.	95.8	330.2	72.2
8885	G	228.	399.	107.5	291.5	63.5
8888	G	252.	444.	131.6	312.4	60.4
8896	G	236.	379.	91.2	287.8	51.8
8917	G	253.	445.	119.2	325.8	72.8
MEAN		248.	421.	112.2	314.4	66.2
S.D.		11.9	37.4	17.38	18.14	10.17
N		25	25	24	24	24

G = GRAVID, NG = NONGRAVID, NOT INCLUDED IN CALCULATION OF THE MEAN
NA = NOT APPLICABLE

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TABLE 4.6

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 1

SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 0- 1	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 1: 0 PPM										
8738	G	17.	18.	19.	19.	17.	21.	20.	25.	20.
8751	G	14.	20.	20.	16.	19.	19.	21.	22.	20.
8755	G	15.	19.	16.	16.	20.	19.	20.	19.	20.
8766	G	15.	19.	15.	17.	20.	16.	13.	21.	19.
8768	G	14.	14.	16.	13.	17.	16.	20.	22.	22.
8772	G	11.	16.	15.	19.	21.	17.	20.	18.	17.
8776	G	14.	21.	21.	17.	18.	20.	22.	21.	21.
8777	G	16.	20.	19.	22.	20.	21.	13.	24.	23.
8779	G	18.	21.	22.	21.	24.	24.	18.	24.	26.
8791	G	17.	19.	18.	15.	20.	18.	18.	19.	22.
8798	G	17.	18.	16.	20.	16.	16.	15.	20.	19.
8803	G	14.	20.	19.	19.	20.	20.	23.	21.	23.
8812	G	14.	21.	19.	18.	16.	21.	23.	18.	17.
8817	G	17.	18.	15.	15.	19.	17.	15.	19.	21.
8820	G	15.	19.	19.	17.	19.	18.	19.	21.	18.
8825	G	17.	19.	18.	17.	23.	23.	23.	23.	23.
8836	G	19.	19.	20.	21.	20.	20.	23.	26.	16.
8843	G	14.	16.	19.	19.	19.	22.	14.	23.	20.
8852	NG	17.	13.	20.	15.	20.	18.	22.	18.	16.
8858	G	16.	18.	16.	20.	19.	21.	20.	23.	21.
8871	G	17.	19.	21.	18.	23.	15.	21.	21.	22.
8883	G	17.	18.	19.	20.	21.	20.	23.	18.	22.
8886	G	15.	15.	19.	16.	18.	17.	18.	16.	19.
8894	G	13.	23.	20.	17.	21.	22.	12.	24.	22.
8926	G	16.	17.	20.	18.	17.	15.	21.	19.	19.
MEAN		16.	19.	18.	18.	19.	19.	19.	21.	21.
S.D.		1.8	2.0	2.1	2.2	2.1	2.6	3.5	2.6	2.3
N		24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.6

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 2

SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 1: 0 PPM										
8738	G	21.	22.	22.	23.	24.	22.	27.	23.	26.
8751	G	22.	22.	21.	23.	22.	24.	27.	23.	25.
8755	G	20.	22.	21.	23.	24.	25.	26.	26.	26.
8766	G	18.	19.	20.	18.	16.	19.	20.	18.	19.
8768	G	21.	24.	22.	25.	25.	25.	24.	28.	26.
8772	G	20.	16.	16.	20.	18.	21.	20.	19.	24.
8776	G	20.	17.	18.	21.	21.	22.	23.	24.	25.
8777	G	25.	26.	26.	25.	20.	27.	26.	29.	28.
8779	G	21.	21.	26.	28.	26.	33.	29.	36.	31.
8791	G	22.	20.	19.	20.	23.	20.	23.	22.	27.
8798	G	21.	18.	22.	22.	17.	25.	22.	24.	28.
8803	G	23.	26.	20.	24.	25.	23.	30.	28.	31.
8812	G	22.	21.	18.	21.	21.	25.	22.	25.	25.
8817	G	18.	21.	18.	21.	25.	26.	25.	24.	26.
8820	G	19.	20.	21.	26.	23.	27.	21.	24.	28.
8825	G	23.	19.	23.	23.	27.	26.	27.	28.	31.
8836	G	17.	24.	21.	25.	22.	23.	23.	29.	31.
8843	G	18.	21.	16.	17.	20.	20.	24.	24.	25.
8852	NG	13.	20.	18.	11.	16.	10.	20.	11.	15.
8858	G	21.	23.	21.	23.	23.	22.	27.	26.	30.
8871	G	21.	24.	24.	20.	22.	20.	27.	23.	27.
8883	G	18.	20.	20.	21.	20.	17.	23.	22.	23.
8886	G	18.	19.	17.	22.	15.	25.	18.	24.	22.
8894	G	22.	21.	24.	27.	26.	28.	27.	33.	25.
8926	G	20.	12.	21.	23.	22.	21.	18.	23.	22.
MEAN		20.	21.	21.	23.	22.	24.	24.	25.	26.
S.D.		2.0	3.2	2.7	2.7	3.2	3.5	3.3	4.0	3.1
N		24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.6

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 3

SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 18-19	19-20	20-21	1- 6	6- 9	9-12	12-16	16-21	6-16
DAMS FROM GROUP 1: 0 PPM										
8738	G	27.	27.	19.	19.	22.	22.	24.	24.	23.
8751	G	25.	27.	24.	19.	21.	22.	24.	25.	22.
8755	G	24.	24.	24.	18.	20.	21.	25.	25.	22.
8766	G	24.	16.	23.	17.	18.	19.	18.	20.	18.
8768	G	29.	31.	24.	15.	21.	22.	25.	28.	23.
8772	G	22.	24.	25.	18.	18.	17.	20.	23.	19.
8776	G	22.	24.	27.	19.	21.	18.	22.	24.	21.
8777	G	27.	26.	24.	20.	20.	26.	25.	27.	24.
8779	G	33.	29.	19.	22.	23.	23.	29.	30.	25.
8791	G	18.	26.	20.	18.	20.	20.	22.	23.	21.
8798	G	23.	23.	23.	17.	18.	20.	22.	24.	20.
8803	G	31.	29.	18.	20.	22.	23.	26.	27.	24.
8812	G	20.	23.	20.	19.	19.	20.	22.	23.	21.
8817	G	25.	26.	23.	17.	18.	19.	24.	25.	21.
8820	G	27.	22.	22.	18.	19.	20.	24.	25.	22.
8825	G	31.	30.	21.	20.	23.	22.	26.	28.	24.
8836	G	27.	27.	26.	20.	22.	21.	23.	28.	22.
8843	G	20.	24.	23.	19.	19.	18.	20.	23.	19.
8852	NG	10.	17.	13.	17.	19.	17.	14.	13.	16.
8858	G	30.	27.	24.	19.	21.	22.	24.	27.	22.
8871	G	27.	20.	27.	19.	21.	23.	22.	25.	22.
8883	G	21.	25.	24.	20.	21.	19.	20.	23.	20.
8886	G	22.	23.	25.	17.	18.	18.	20.	23.	19.
8894	G	29.	32.	30.	21.	19.	22.	27.	30.	23.
8926	G	21.	24.	22.	17.	20.	18.	21.	22.	20.
MEAN		25.	25.	23.	19.	20.	21.	23.	25.	22.
S.D.		4.0	3.5	2.8	1.6	1.6	2.2	2.6	2.6	1.8
N		24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.6

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 4
SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 1-21
DAMS FROM GROUP 1:		0 PPM
8738	G	22. SCHEDULED NECROPSY DAY 21
8751	G	22. SCHEDULED NECROPSY DAY 21
8755	G	22. SCHEDULED NECROPSY DAY 21
8766	G	19. SCHEDULED NECROPSY DAY 21
8768	G	22. SCHEDULED NECROPSY DAY 21
8772	G	19. SCHEDULED NECROPSY DAY 21
8776	G	21. SCHEDULED NECROPSY DAY 21
8777	G	24. SCHEDULED NECROPSY DAY 21
8779	G	26. SCHEDULED NECROPSY DAY 21
8791	G	20. SCHEDULED NECROPSY DAY 21
8798	G	20. SCHEDULED NECROPSY DAY 21
8803	G	24. SCHEDULED NECROPSY DAY 21
8812	G	21. SCHEDULED NECROPSY DAY 21
8817	G	21. SCHEDULED NECROPSY DAY 21
8820	G	22. SCHEDULED NECROPSY DAY 21
8825	G	24. SCHEDULED NECROPSY DAY 21
8836	G	23. SCHEDULED NECROPSY DAY 21
8843	G	20. SCHEDULED NECROPSY DAY 21
8852	NG	16. SCHEDULED NECROPSY DAY 21
8858	G	23. SCHEDULED NECROPSY DAY 21
8871	G	22. SCHEDULED NECROPSY DAY 21
8883	G	21. SCHEDULED NECROPSY DAY 21
8886	G	19. SCHEDULED NECROPSY DAY 21
8894	G	24. SCHEDULED NECROPSY DAY 21
8926	G	20. SCHEDULED NECROPSY DAY 21
MEAN		22.
S.D.		1.9
N		24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.6

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 5

SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 0- 1	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 2: 15 MG/KG RA										
8740	G	16.	20.	20.	17.	18.	24.	16.	19.	17.
8743	G	17.	18.	17.	15.	19.	19.	12.	17.	18.
8756	G	17.	20.	17.	17.	20.	22.	12.	16.	16.
8757	G	15.	21.	22.	16.	18.	21.	14.	12.	15.
8780	G	13.	14.	21.	17.	17.	20.	15.	13.	18.
8789	G	18.	17.	19.	17.	18.	17.	14.	21.	21.
8800	G	18.	17.	20.	18.	20.	19.	12.	17.	17.
8801	G	20.	19.	22.	21.	20.	22.	15.	14.	20.
8802	G	11.	17.	17.	16.	17.	17.	15.	12.	14.
8808	G	11.	20.	15.	21.	18.	19.	12.	17.	11.
8809	G	19.	19.	19.	22.	16.	20.	16.	16.	16.
8810	G	16.	18.	15.	20.	17.	17.	18.	11.	15.
8818	G	19.	19.	22.	20.	22.	19.	15.	19.	20.
8822	G	20.	17.	16.	17.	19.	19.	10.	10.	9.
8827	G	14.	15.	17.	15.	20.	19.	15.	15.	15.
8840	G	15.	18.	20.	16.	15.	22.	13.	18.	19.
8842	G	14.	19.	22.	17.	16.	21.	11.	12.	14.
8847	G	16.	19.	15.	16.	21.	17.	9.	16.	16.
8850	G	14.	19.	19.	17.	22.	19.	15.	17.	16.
8851	G	11.	21.	18.	20.	19.	19.	16.	15.	23.
8854	G	12.	17.	18.	16.	18.	19.	13.	17.	15.
8900	G	19.	19.	18.	21.	17.	15.	9.	15.	9.
8901	G	15.	20.	15.	18.	20.	23.	14.	17.	15.
8930	G	16.	16.	18.	19.	19.	18.	14.	18.	12.
8931	G	18.	21.	19.	21.	18.	22.	15.	17.	19.
MEAN		16.	18.	18.	18.	19.	20.	14.	16.	16.
S.D.		2.8	1.8	2.3	2.1	1.8	2.2	2.3	2.7	3.5
N		25	25	25	25	25	25	25	25	25

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.6

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 6

SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 2: 15 MG/KG RA										
8740	G	18.	14.	12.	19.	20.	16.	17.	21.	23.
8743	G	13.	18.	12.	21.	16.	16.	16.	22.	21.
8756	G	15.	16.	16.	14.	21.	16.	19.	22.	24.
8757	G	14.	15.	16.	17.	22.	21.	16.	24.	22.
8780	G	14.	14.	13.	12.	16.	15.	19.	19.	23.
8789	G	17.	20.	16.	21.	17.	18.	27.	26.	28.
8800	G	14.	17.	16.	19.	16.	14.	18.	21.	20.
8801	G	16.	21.	15.	12.	18.	20.	18.	29.	21.
8802	G	10.	12.	18.	13.	16.	14.	18.	17.	21.
8808	G	15.	14.	10.	19.	11.	19.	12.	25.	21.
8809	G	22.	17.	15.	18.	17.	21.	17.	25.	21.
8810	G	14.	11.	15.	13.	14.	19.	18.	23.	17.
8818	G	23.	19.	19.	19.	16.	21.	24.	23.	24.
8822	G	16.	17.	12.	12.	13.	13.	18.	20.	18.
8827	G	13.	15.	16.	21.	20.	15.	18.	22.	20.
8840	G	17.	13.	20.	16.	21.	14.	17.	19.	24.
8842	G	10.	15.	11.	14.	19.	15.	16.	19.	24.
8847	G	19.	17.	12.	14.	9.	16.	23.	26.	21.
8850	G	16.	12.	18.	NA	13.	13.	15.	21.	18.
8851	G	19.	24.	18.	19.	16.	17.	24.	23.	32.
8854	G	12.	13.	15.	14.	20.	14.	16.	17.	21.
8900	G	13.	11.	17.	20.	19.	18.	23.	29.	27.
8901	G	18.	15.	20.	19.	23.	22.	20.	27.	25.
8930	G	10.	13.	16.	12.	13.	13.	12.	15.	9.
8931	G	20.	16.	16.	14.	18.	20.	21.	21.	27.
MEAN		16.	16.	15.	16.	17.	17.	18.	22.	22.
S.D.		3.5	3.2	2.8	3.3	3.5	2.9	3.6	3.6	4.3
N		25	25	25	24	25	25	25	25	25

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 4.6

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 7

SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 18-19	19-20	20-21	1- 6	6- 9	9-12	12-16	16-21	6-16
DAMS FROM GROUP 2: 15 MG/KG RA										
8740	G	23.	22.	19.	20.	17.	15.	18.	22.	17.
8743	G	20.	21.	19.	18.	16.	14.	17.	21.	16.
8756	G	26.	25.	20.	19.	15.	16.	18.	23.	16.
8757	G	23.	26.	23.	20.	14.	15.	19.	24.	16.
8780	G	24.	23.	17.	18.	15.	14.	16.	21.	15.
8789	G	25.	28.	21.	18.	19.	18.	21.	26.	19.
8800	G	18.	22.	17.	19.	15.	16.	17.	20.	16.
8801	G	25.	20.	22.	21.	16.	17.	17.	23.	17.
8802	G	19.	21.	14.	17.	14.	13.	15.	18.	14.
8808	G	24.	25.	21.	19.	13.	13.	15.	23.	14.
8809	G	30.	25.	24.	19.	16.	18.	18.	25.	18.
8810	G	23.	24.	14.	17.	15.	13.	16.	20.	15.
8818	G	25.	25.	13.	20.	18.	20.	20.	22.	20.
8822	G	21.	23.	15.	18.	10.	15.	14.	19.	13.
8827	G	25.	23.	23.	17.	15.	15.	19.	23.	16.
8840	G	28.	22.	NA	18.	17.	17.	17.	23.	17.
8842	G	26.	1.	14.	19.	12.	12.	16.	17.	14.
8847	G	22.	24.	22.	18.	14.	16.	16.	23.	15.
8850	G	16.	22.	19.	19.	16.	15.	14.	19.	15.
8851	G	25.	26.	24.	19.	18.	20.	19.	26.	19.
8854	G	18.	18.	16.	18.	15.	13.	16.	18.	15.
8900	G	28.	30.	25.	18.	11.	14.	20.	28.	15.
8901	G	29.	25.	18.	19.	15.	18.	21.	25.	18.
8930	G	14.	29.	14.	18.	15.	13.	13.	16.	13.
8931	G	24.	26.	23.	20.	17.	17.	18.	24.	18.
MEAN		23.	23.	19.	19.	15.	15.	17.	22.	16.
S.D.		4.0	5.4	3.8	1.0	2.1	2.2	2.2	3.0	1.9
N		25	25	24	25	25	25	25	25	25

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 4.6

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 8
SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

PREGNANCY STATUS	DAY 1-21	
DAMS FROM GROUP 2: 15 MG/KG RA		
8740	G	19. SCHEDULED NECROPSY DAY 21
8743	G	18. SCHEDULED NECROPSY DAY 21
8756	G	19. SCHEDULED NECROPSY DAY 21
8757	G	19. SCHEDULED NECROPSY DAY 21
8780	G	17. SCHEDULED NECROPSY DAY 21
8789	G	20. SCHEDULED NECROPSY DAY 21
8800	G	18. SCHEDULED NECROPSY DAY 21
8801	G	20. SCHEDULED NECROPSY DAY 21
8802	G	16. SCHEDULED NECROPSY DAY 21
8808	G	17. SCHEDULED NECROPSY DAY 21
8809	G	20. SCHEDULED NECROPSY DAY 21
8810	G	17. SCHEDULED NECROPSY DAY 21
8818	G	20. SCHEDULED NECROPSY DAY 21
8822	G	16. SCHEDULED NECROPSY DAY 21
8827	G	18. SCHEDULED NECROPSY DAY 21
8840	G	19. SCHEDULED NECROPSY DAY 21
8842	G	16. SCHEDULED NECROPSY DAY 21
8847	G	18. SCHEDULED NECROPSY DAY 21
8850	G	17. SCHEDULED NECROPSY DAY 21
8851	G	21. SCHEDULED NECROPSY DAY 21
8854	G	16. SCHEDULED NECROPSY DAY 21
8900	G	19. SCHEDULED NECROPSY DAY 21
8901	G	20. SCHEDULED NECROPSY DAY 21
8930	G	15. SCHEDULED NECROPSY DAY 21
8931	G	20. SCHEDULED NECROPSY DAY 21
MEAN		18.
S.D.		1.7
N		25

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.6

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 9

SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 0- 1	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 3: 0.25 PPM										
8747	G	16.	15.	23.	17.	23.	21.	21.	22.	25.
8758	G	10.	17.	20.	18.	20.	21.	21.	20.	24.
8764	G	12.	20.	17.	17.	23.	21.	20.	22.	23.
8767	G	18.	21.	20.	19.	23.	24.	22.	25.	27.
8773	G	19.	11.	21.	21.	19.	17.	19.	25.	25.
8774	G	13.	17.	21.	16.	20.	20.	19.	19.	20.
8807	G	15.	20.	15.	17.	20.	18.	20.	20.	18.
8814	G	8.	21.	15.	15.	15.	17.	20.	16.	19.
8826	G	13.	14.	16.	15.	18.	11.	19.	21.	20.
8834	G	18.	19.	20.	21.	25.	19.	20.	23.	21.
8835	G	21.	22.	22.	20.	22.	20.	19.	26.	25.
8839	G	16.	20.	18.	20.	23.	17.	23.	17.	21.
8849	G	13.	18.	18.	16.	17.	20.	18.	17.	22.
8853	G	19.	22.	17.	23.	20.	19.	23.	21.	21.
8859	G	19.	17.	22.	23.	21.	22.	21.	23.	21.
8869	G	17.	19.	19.	20.	16.	21.	20.	21.	20.
8879	G	15.	17.	22.	21.	18.	18.	20.	23.	22.
8889	G	15.	20.	18.	19.	21.	22.	21.	23.	22.
8891	G	16.	19.	20.	18.	22.	19.	21.	18.	21.
8893	G	14.	19.	20.	18.	18.	25.	21.	17.	23.
8897	G	15.	16.	16.	20.	16.	20.	15.	22.	16.
8908	G	15.	20.	17.	17.	20.	23.	20.	23.	18.
8910	G	20.	17.	18.	21.	18.	20.	17.	19.	22.
8913	NG	15.	19.	17.	15.	18.	20.	19.	18.	19.
8916	NG	10.	17.	19.	17.	15.	15.	21.	22.	20.
MEAN		16.	18.	19.	19.	20.	20.	20.	21.	22.
S.D.		3.2	2.7	2.4	2.3	2.6	2.9	1.8	2.8	2.6
N		23	23	23	23	23	23	23	23	23

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.6

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 10

SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 3: 0.25 PPM										
8747	G	24.	23.	23.	31.	27.	29.	32.	26.	30.
8758	G	18.	20.	21.	25.	21.	24.	26.	22.	25.
8764	G	18.	23.	21.	25.	24.	25.	18.	28.	27.
8767	G	20.	25.	19.	29.	24.	28.	25.	25.	28.
8773	G	23.	25.	15.	21.	17.	20.	15.	20.	22.
8774	G	20.	21.	21.	24.	23.	21.	24.	21.	21.
8807	G	20.	17.	20.	27.	22.	28.	22.	27.	25.
8814	G	20.	16.	18.	20.	21.	18.	20.	22.	21.
8826	G	19.	18.	15.	18.	22.	24.	19.	24.	19.
8834	G	21.	22.	23.	25.	17.	27.	24.	28.	26.
8835	G	25.	24.	26.	23.	19.	27.	28.	27.	31.
8839	G	22.	24.	22.	23.	20.	27.	22.	26.	32.
8849	G	16.	21.	18.	22.	19.	20.	22.	20.	22.
8853	G	15.	23.	19.	26.	15.	25.	25.	29.	31.
8859	G	17.	21.	20.	19.	22.	20.	24.	20.	26.
8869	G	24.	20.	22.	18.	25.	22.	26.	22.	28.
8879	G	24.	22.	24.	23.	25.	24.	27.	25.	26.
8889	G	24.	20.	28.	22.	26.	27.	19.	31.	24.
8891	G	20.	19.	18.	19.	27.	20.	29.	24.	22.
8893	G	18.	17.	18.	28.	20.	25.	29.	20.	24.
8897	G	21.	20.	24.	19.	22.	22.	24.	24.	23.
8908	G	19.	21.	25.	25.	21.	24.	20.	23.	25.
8910	G	16.	21.	17.	24.	22.	24.	25.	25.	25.
8913	NG	22.	19.	13.	20.	21.	21.	15.	15.	21.
8916	NG	18.	13.	19.	22.	22.	23.	13.	23.	23.
MEAN		20.	21.	21.	23.	22.	24.	24.	24.	25.
S.D.		2.9	2.5	3.4	3.6	3.2	3.1	4.0	3.2	3.5
N		23	23	23	23	23	23	23	23	23

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.6

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 11

SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 18-19	19-20	20-21	1- 6	6- 9	9-12	12-16	16-21	6-16
DAMS FROM GROUP 3: 0.25 PPM										
8747	G	30.	27.	27.	20.	23.	23.	30.	28.	26.
8758	G	25.	24.	24.	19.	22.	20.	24.	24.	22.
8764	G	24.	25.	26.	20.	22.	21.	23.	26.	22.
8767	G	28.	33.	28.	21.	25.	21.	27.	28.	24.
8773	G	18.	18.	23.	18.	23.	21.	18.	20.	21.
8774	G	22.	24.	24.	19.	19.	21.	23.	22.	21.
8807	G	26.	27.	27.	18.	19.	19.	25.	26.	21.
8814	G	22.	21.	14.	17.	18.	18.	20.	20.	19.
8826	G	17.	21.	18.	15.	20.	17.	21.	20.	20.
8834	G	24.	24.	30.	21.	21.	22.	23.	26.	22.
8835	G	27.	23.	28.	21.	23.	25.	24.	27.	24.
8839	G	23.	26.	25.	20.	20.	23.	23.	26.	22.
8849	G	21.	24.	24.	18.	19.	18.	21.	22.	20.
8853	G	23.	29.	29.	20.	22.	19.	23.	28.	21.
8859	G	24.	24.	24.	21.	22.	19.	21.	24.	21.
8869	G	25.	22.	28.	19.	20.	22.	23.	25.	22.
8879	G	29.	16.	19.	19.	22.	23.	25.	23.	23.
8889	G	29.	24.	30.	20.	22.	24.	24.	28.	23.
8891	G	25.	21.	23.	20.	20.	19.	24.	23.	21.
8893	G	24.	29.	13.	20.	20.	18.	26.	22.	22.
8897	G	27.	22.	26.	18.	18.	22.	22.	24.	21.
8908	G	24.	27.	24.	19.	20.	22.	23.	25.	22.
8910	G	28.	19.	28.	19.	19.	18.	24.	25.	21.
8913	NG	16.	17.	16.	18.	19.	18.	19.	17.	19.
8916	NG	23.	18.	18.	17.	21.	17.	20.	21.	19.
MEAN		25.	24.	24.	19.	21.	21.	23.	24.	22.
S.D.		3.3	3.8	4.6	1.4	1.8	2.2	2.4	2.6	1.5
N		23	23	23	23	23	23	23	23	23

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.6

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 12
SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

PREGNANCY STATUS	DAY 1-21	
DAMS FROM GROUP 3:	0.25 PPM	
8747	G	25. SCHEDULED NECROPSY DAY 21
8758	G	22. SCHEDULED NECROPSY DAY 21
8764	G	22. SCHEDULED NECROPSY DAY 21
8767	G	25. SCHEDULED NECROPSY DAY 21
8773	G	20. SCHEDULED NECROPSY DAY 21
8774	G	21. SCHEDULED NECROPSY DAY 21
8807	G	22. SCHEDULED NECROPSY DAY 21
8814	G	19. SCHEDULED NECROPSY DAY 21
8826	G	18. SCHEDULED NECROPSY DAY 21
8834	G	23. SCHEDULED NECROPSY DAY 21
8835	G	24. SCHEDULED NECROPSY DAY 21
8839	G	23. SCHEDULED NECROPSY DAY 21
8849	G	20. SCHEDULED NECROPSY DAY 21
8853	G	23. SCHEDULED NECROPSY DAY 21
8859	G	22. SCHEDULED NECROPSY DAY 21
8869	G	22. SCHEDULED NECROPSY DAY 21
8879	G	22. SCHEDULED NECROPSY DAY 21
8889	G	24. SCHEDULED NECROPSY DAY 21
8891	G	21. SCHEDULED NECROPSY DAY 21
8893	G	21. SCHEDULED NECROPSY DAY 21
8897	G	21. SCHEDULED NECROPSY DAY 21
8908	G	22. SCHEDULED NECROPSY DAY 21
8910	G	21. SCHEDULED NECROPSY DAY 21
8913	NG	18. SCHEDULED NECROPSY DAY 21
8916	NG	19. SCHEDULED NECROPSY DAY 21
MEAN		22.
S.D.		1.7
N		23

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.6

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 13

SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 0- 1	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 4: 1.5 PPM										
8741	G	15.	18.	18.	19.	18.	18.	20.	18.	21.
8765	G	17.	19.	19.	17.	17.	16.	22.	20.	21.
8783	G	15.	17.	22.	20.	19.	21.	21.	20.	23.
8786	G	16.	18.	22.	22.	21.	19.	21.	23.	19.
8788	G	17.	18.	19.	16.	20.	20.	23.	21.	21.
8792	G	24.	18.	22.	22.	24.	23.	27.	25.	25.
8805	G	17.	17.	12.	21.	18.	10.	22.	22.	23.
8806	G	18.	20.	17.	17.	21.	20.	21.	24.	22.
8811	G	12.	21.	20.	17.	16.	20.	19.	23.	21.
8813	G	18.	21.	19.	16.	20.	17.	24.	20.	20.
8823	G	18.	16.	20.	19.	21.	18.	21.	20.	19.
8844	G	16.	18.	21.	21.	16.	20.	25.	23.	24.
8848	G	13.	18.	19.	14.	22.	16.	22.	20.	20.
8857	G	16.	11.	17.	21.	23.	20.	21.	19.	18.
8867	G	17.	14.	19.	18.	17.	19.	18.	21.	18.
8873	G	17.	18.	22.	19.	17.	18.	18.	20.	17.
8876	G	12.	21.	18.	19.	22.	21.	20.	23.	23.
8881	G	12.	17.	17.	18.	18.	19.	19.	20.	22.
8884	NG	11.	13.	17.	15.	14.	15.	14.	19.	17.
8890	G	17.	20.	22.	20.	24.	23.	22.	23.	23.
8895	G	16.	20.	19.	19.	20.	17.	18.	22.	20.
8899	G	17.	18.	19.	17.	18.	17.	22.	22.	18.
8907	G	15.	17.	22.	14.	20.	21.	19.	20.	21.
8941	G	16.	17.	19.	19.	22.	19.	24.	23.	21.
8942	G	14.	21.	21.	22.	23.	25.	25.	25.	24.
MEAN		16.	18.	19.	19.	20.	19.	21.	22.	21.
S.D.		2.5	2.3	2.3	2.3	2.5	2.9	2.4	1.9	2.1
N		24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.6

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 14

SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 4: 1.5 PPM										
8741	G	20.	16.	27.	25.	20.	23.	24.	24.	22.
8765	G	14.	21.	22.	20.	23.	24.	22.	28.	NA
8783	G	22.	23.	21.	23.	23.	23.	28.	20.	26.
8786	G	20.	20.	23.	21.	23.	24.	24.	26.	27.
8788	G	21.	17.	20.	20.	21.	23.	21.	20.	23.
8792	G	24.	16.	23.	21.	27.	29.	26.	23.	31.
8805	G	22.	21.	21.	18.	20.	24.	21.	24.	27.
8806	G	22.	23.	22.	22.	22.	26.	24.	25.	27.
8811	G	19.	18.	18.	22.	17.	21.	23.	21.	27.
8813	G	21.	23.	23.	24.	21.	24.	25.	21.	29.
8823	G	20.	17.	19.	23.	18.	28.	22.	28.	25.
8844	G	29.	25.	26.	22.	29.	24.	24.	26.	27.
8848	G	19.	17.	16.	23.	19.	30.	24.	26.	20.
8857	G	22.	22.	24.	21.	22.	23.	22.	25.	22.
8867	G	15.	20.	20.	21.	22.	19.	21.	23.	21.
8873	G	21.	19.	20.	21.	23.	22.	20.	25.	24.
8876	G	22.	21.	26.	24.	24.	27.	21.	29.	23.
8881	G	20.	20.	21.	27.	20.	25.	23.	23.	25.
8884	NG	21.	19.	16.	15.	18.	18.	13.	20.	12.
8890	G	24.	22.	20.	29.	25.	24.	30.	23.	25.
8895	G	20.	21.	20.	23.	22.	20.	23.	22.	25.
8899	G	23.	20.	22.	19.	21.	25.	21.	25.	23.
8907	G	23.	19.	22.	25.	25.	26.	27.	27.	12.
8941	G	19.	21.	26.	23.	25.	20.	24.	27.	23.
8942	G	25.	22.	26.	25.	22.	27.	22.	25.	25.
MEAN		21.	20.	22.	23.	22.	24.	23.	24.	24.
S.D.		3.0	2.4	2.8	2.5	2.7	2.8	2.4	2.5	3.7
N		24	24	24	24	24	24	24	24	23

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 4.6

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 15

SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 18-19	19-20	20-21	1- 6	6- 9	9-12	12-16	16-21	6-16
DAMS FROM GROUP 4: 1.5 PPM										
8741	G	27.	24.	25.	18.	20.	21.	23.	24.	21.
8765	G	24.	22.	25.	18.	21.	19.	22.	25.	21.
8783	G	22.	20.	23.	20.	21.	22.	24.	22.	23.
8786	G	23.	26.	23.	20.	21.	21.	23.	25.	22.
8788	G	21.	23.	22.	19.	22.	19.	21.	22.	21.
8792	G	29.	24.	27.	22.	26.	21.	26.	27.	24.
8805	G	22.	21.	22.	16.	22.	21.	21.	23.	21.
8806	G	25.	31.	25.	19.	22.	22.	24.	27.	23.
8811	G	23.	26.	25.	19.	21.	18.	21.	24.	20.
8813	G	19.	22.	15.	19.	21.	22.	24.	21.	23.
8823	G	24.	25.	22.	19.	20.	19.	23.	25.	21.
8844	G	28.	24.	28.	19.	24.	27.	25.	27.	25.
8848	G	24.	28.	27.	18.	21.	17.	24.	25.	21.
8857	G	25.	22.	22.	18.	19.	23.	22.	23.	21.
8867	G	20.	22.	23.	17.	19.	18.	21.	22.	20.
8873	G	21.	21.	25.	19.	18.	20.	22.	23.	20.
8876	G	30.	25.	26.	20.	22.	23.	24.	27.	23.
8881	G	23.	22.	24.	18.	20.	20.	24.	23.	22.
8884	NG	18.	14.	13.	15.	17.	19.	16.	15.	17.
8890	G	26.	24.	31.	22.	23.	22.	27.	26.	24.
8895	G	20.	26.	23.	19.	20.	20.	22.	23.	21.
8899	G	2.	22.	17.	18.	21.	22.	22.	18.	21.
8907	G	27.	26.	21.	19.	20.	21.	26.	23.	23.
8941	G	28.	25.	26.	19.	23.	22.	23.	26.	23.
8942	G	26.	24.	25.	22.	25.	24.	24.	25.	24.
MEAN		23.	24.	24.	19.	21.	21.	23.	24.	22.
S.D.		5.4	2.5	3.3	1.5	1.9	2.2	1.7	2.2	1.4
N		24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.6

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 16
SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

PREGNANCY STATUS	DAY 1-21	
DAMS FROM GROUP 4:	1.5 PPM	
8741	G	21. SCHEDULED NECROPSY DAY 21
8765	G	21. SCHEDULED NECROPSY DAY 21
8783	G	22. SCHEDULED NECROPSY DAY 21
8786	G	22. SCHEDULED NECROPSY DAY 21
8788	G	21. SCHEDULED NECROPSY DAY 21
8792	G	24. SCHEDULED NECROPSY DAY 21
8805	G	20. SCHEDULED NECROPSY DAY 21
8806	G	23. SCHEDULED NECROPSY DAY 21
8811	G	21. SCHEDULED NECROPSY DAY 21
8813	G	21. SCHEDULED NECROPSY DAY 21
8823	G	21. SCHEDULED NECROPSY DAY 21
8844	G	24. SCHEDULED NECROPSY DAY 21
8848	G	21. SCHEDULED NECROPSY DAY 21
8857	G	21. SCHEDULED NECROPSY DAY 21
8867	G	20. SCHEDULED NECROPSY DAY 21
8873	G	21. SCHEDULED NECROPSY DAY 21
8876	G	23. SCHEDULED NECROPSY DAY 21
8881	G	21. SCHEDULED NECROPSY DAY 21
8884	NG	16. SCHEDULED NECROPSY DAY 21
8890	G	24. SCHEDULED NECROPSY DAY 21
8895	G	21. SCHEDULED NECROPSY DAY 21
8899	G	20. SCHEDULED NECROPSY DAY 21
8907	G	22. SCHEDULED NECROPSY DAY 21
8941	G	23. SCHEDULED NECROPSY DAY 21
8942	G	24. SCHEDULED NECROPSY DAY 21
MEAN		22.
S.D.		1.3
N		24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.6

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 17

SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 0- 1	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 5: 500 PPM										
8735	G	14.	17.	18.	17.	14.	20.	13.	21.	20.
8763	G	17.	17.	16.	17.	17.	17.	17.	19.	18.
8775	G	19.	20.	18.	19.	18.	20.	19.	19.	21.
8778	G	15.	21.	20.	16.	19.	16.	16.	19.	20.
8784	G	18.	17.	18.	19.	15.	18.	18.	20.	19.
8790	G	18.	19.	19.	19.	22.	19.	17.	22.	21.
8824	G	13.	16.	15.	18.	15.	17.	12.	19.	15.
8828	G	13.	14.	15.	18.	18.	14.	18.	16.	17.
8830	G	14.	20.	21.	20.	23.	22.	21.	25.	21.
8833	G	14.	15.	20.	15.	18.	21.	18.	20.	17.
8837	G	19.	21.	22.	18.	17.	21.	21.	23.	21.
8838	G	18.	17.	17.	19.	17.	19.	16.	18.	19.
8845	G	17.	20.	20.	22.	19.	23.	21.	24.	19.
8846	G	18.	19.	19.	17.	17.	17.	15.	21.	18.
8855	G	12.	16.	18.	17.	17.	19.	18.	17.	18.
8863	G	13.	20.	14.	16.	18.	15.	17.	17.	17.
8864	G	17.	19.	23.	17.	18.	20.	20.	18.	16.
8868	G	19.	20.	18.	20.	22.	18.	22.	16.	21.
8874	G	17.	20.	25.	24.	25.	19.	21.	26.	23.
8875	G	13.	14.	19.	15.	19.	15.	17.	18.	17.
8878	G	12.	16.	15.	20.	16.	20.	20.	16.	18.
8928	G	14.	13.	14.	17.	18.	15.	21.	17.	9.
8933	G	21.	18.	19.	20.	20.	19.	18.	22.	17.
8936	G	20.	16.	19.	16.	20.	20.	20.	21.	20.
8937	NG	14.	13.	9.	17.	15.	14.	11.	17.	17.
MEAN		16.	18.	18.	18.	18.	19.	18.	20.	18.
S.D.		2.7	2.4	2.8	2.2	2.6	2.4	2.6	2.8	2.8
N		24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.6

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 18

SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 5: 500 PPM										
8735	G	21.	21.	22.	23.	22.	24.	27.	23.	28.
8763	G	19.	19.	21.	18.	19.	22.	22.	20.	29.
8775	G	19.	21.	22.	21.	18.	24.	24.	26.	32.
8778	G	19.	20.	21.	20.	15.	26.	17.	21.	21.
8784	G	20.	20.	18.	13.	20.	22.	31.	20.	25.
8790	G	19.	21.	25.	20.	21.	24.	23.	28.	27.
8824	G	17.	16.	19.	16.	16.	18.	17.	20.	22.
8828	G	18.	17.	19.	17.	19.	19.	17.	27.	19.
8830	G	24.	21.	28.	26.	28.	28.	26.	27.	29.
8833	G	21.	19.	20.	23.	20.	24.	25.	21.	23.
8837	G	22.	19.	21.	21.	23.	24.	25.	25.	28.
8838	G	16.	18.	22.	20.	17.	23.	25.	23.	24.
8845	G	17.	18.	17.	21.	18.	25.	28.	24.	27.
8846	G	20.	21.	20.	20.	22.	23.	25.	29.	29.
8855	G	18.	17.	21.	21.	18.	18.	22.	22.	25.
8863	G	19.	19.	19.	20.	19.	25.	19.	22.	24.
8864	G	18.	18.	24.	22.	22.	18.	29.	20.	15.
8868	G	20.	16.	25.	22.	22.	18.	23.	24.	27.
8874	G	26.	26.	24.	25.	25.	27.	28.	29.	29.
8875	G	18.	14.	20.	18.	21.	19.	23.	21.	20.
8878	G	18.	17.	17.	21.	21.	19.	22.	27.	20.
8928	G	20.	20.	19.	17.	16.	20.	16.	19.	22.
8933	G	22.	26.	21.	24.	22.	21.	21.	29.	25.
8936	G	22.	20.	21.	22.	20.	27.	19.	25.	26.
8937	NG	17.	12.	18.	17.	17.	14.	19.	15.	17.
MEAN		20.	19.	21.	20.	20.	22.	23.	24.	25.
S.D.		2.3	2.8	2.7	2.9	3.0	3.2	4.1	3.3	4.0
N		24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.6

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 19

SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 18-19	19-20	20-21	1- 6	6- 9	9-12	12-16	16-21	6-16
DAMS FROM GROUP 5: 500 PPM										
8735	G	23.	25.	19.	17.	18.	21.	24.	24.	21.
8763	G	19.	22.	24.	17.	18.	20.	20.	23.	19.
8775	G	24.	18.	15.	19.	20.	21.	22.	23.	21.
8778	G	20.	25.	19.	18.	18.	20.	20.	21.	19.
8784	G	21.	30.	8.	17.	19.	19.	22.	21.	20.
8790	G	23.	26.	11.	20.	20.	22.	22.	23.	21.
8824	G	19.	17.	18.	16.	15.	17.	17.	19.	17.
8828	G	24.	24.	21.	16.	17.	18.	18.	23.	18.
8830	G	32.	31.	26.	21.	22.	24.	27.	29.	25.
8833	G	20.	24.	22.	18.	18.	20.	23.	22.	21.
8837	G	24.	27.	25.	20.	22.	21.	23.	26.	22.
8838	G	22.	24.	22.	18.	18.	19.	21.	23.	19.
8845	G	23.	22.	18.	21.	21.	17.	23.	23.	21.
8846	G	23.	26.	27.	18.	18.	20.	23.	27.	21.
8855	G	20.	24.	27.	17.	18.	19.	20.	24.	19.
8863	G	23.	24.	23.	17.	17.	19.	21.	23.	19.
8864	G	24.	22.	24.	19.	18.	20.	23.	21.	21.
8868	G	27.	22.	25.	20.	20.	20.	21.	25.	21.
8874	G	31.	28.	31.	23.	23.	25.	26.	30.	25.
8875	G	24.	22.	19.	16.	17.	17.	20.	21.	19.
8878	G	23.	24.	31.	17.	18.	17.	21.	25.	19.
8928	G	24.	21.	22.	15.	16.	20.	17.	22.	18.
8933	G	17.	22.	22.	19.	19.	23.	22.	23.	21.
8936	G	23.	26.	20.	18.	20.	21.	22.	24.	21.
8937	NG	14.	16.	18.	14.	15.	16.	17.	16.	16.
MEAN		23.	24.	22.	18.	19.	20.	22.	24.	20.
S.D.		3.4	3.2	5.4	1.9	1.9	2.1	2.4	2.5	1.9
N		24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.6

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 20
SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

PREGNANCY STATUS	DAY 1-21	
DAMS FROM GROUP 5:	500 PPM	
8735	G	21. SCHEDULED NECROPSY DAY 21
8763	G	20. SCHEDULED NECROPSY DAY 21
8775	G	21. SCHEDULED NECROPSY DAY 21
8778	G	20. SCHEDULED NECROPSY DAY 21
8784	G	20. SCHEDULED NECROPSY DAY 21
8790	G	21. SCHEDULED NECROPSY DAY 21
8824	G	17. SCHEDULED NECROPSY DAY 21
8828	G	19. SCHEDULED NECROPSY DAY 21
8830	G	25. SCHEDULED NECROPSY DAY 21
8833	G	20. SCHEDULED NECROPSY DAY 21
8837	G	22. SCHEDULED NECROPSY DAY 21
8838	G	20. SCHEDULED NECROPSY DAY 21
8845	G	21. SCHEDULED NECROPSY DAY 21
8846	G	21. SCHEDULED NECROPSY DAY 21
8855	G	20. SCHEDULED NECROPSY DAY 21
8863	G	20. SCHEDULED NECROPSY DAY 21
8864	G	20. SCHEDULED NECROPSY DAY 21
8868	G	21. SCHEDULED NECROPSY DAY 21
8874	G	26. SCHEDULED NECROPSY DAY 21
8875	G	19. SCHEDULED NECROPSY DAY 21
8878	G	20. SCHEDULED NECROPSY DAY 21
8928	G	18. SCHEDULED NECROPSY DAY 21
8933	G	21. SCHEDULED NECROPSY DAY 21
8936	G	21. SCHEDULED NECROPSY DAY 21
8937	NG	15. SCHEDULED NECROPSY DAY 21
MEAN		21.
S.D.		1.9
N		24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.6

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 21

SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 0- 1	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 6: 1000 PPM										
8739	G	15.	13.	15.	12.	17.	15.	14.	17.	21.
8760	G	17.	16.	18.	16.	19.	NA	22.	20.	21.
8769	G	14.	20.	17.	19.	15.	18.	19.	15.	19.
8770	G	15.	19.	17.	13.	18.	18.	17.	21.	16.
8771	G	17.	19.	17.	17.	16.	17.	17.	21.	19.
8785	G	15.	21.	19.	16.	20.	18.	19.	19.	23.
8793	G	13.	17.	18.	20.	17.	20.	19.	19.	21.
8795	G	18.	16.	14.	13.	21.	13.	17.	20.	21.
8799	G	13.	19.	17.	14.	19.	15.	15.	19.	19.
8804	G	12.	20.	20.	16.	15.	20.	21.	19.	21.
8815	G	18.	13.	26.	21.	17.	22.	20.	20.	22.
8819	G	18.	16.	21.	18.	18.	21.	19.	22.	17.
8821	G	16.	20.	16.	17.	19.	16.	18.	20.	20.
8829	G	19.	19.	17.	21.	20.	20.	19.	25.	21.
8831	G	18.	18.	19.	17.	21.	16.	17.	20.	23.
8856	NG	13.	19.	19.	20.	20.	17.	21.	24.	21.
8860	G	13.	19.	17.	16.	21.	20.	15.	23.	19.
8861	G	16.	18.	17.	17.	14.	19.	19.	20.	21.
8865	G	15.	17.	17.	17.	23.	21.	23.	24.	23.
8870	G	16.	22.	19.	21.	19.	19.	24.	22.	22.
8872	G	12.	17.	21.	23.	23.	21.	25.	21.	20.
8885	G	14.	14.	15.	17.	14.	19.	17.	20.	19.
8888	G	17.	16.	19.	15.	22.	15.	19.	17.	25.
8896	G	13.	20.	19.	18.	17.	20.	20.	20.	22.
8917	G	17.	19.	17.	19.	19.	20.	18.	21.	21.
MEAN		15.	18.	18.	17.	19.	18.	19.	20.	21.
S.D.		2.1	2.4	2.4	2.8	2.6	2.4	2.7	2.2	2.0
N		24	24	24	24	24	23	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 4.6

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 22

SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 6: 1000 PPM										
8739	G	15.	18.	23.	22.	20.	18.	23.	22.	22.
8760	G	23.	19.	19.	23.	18.	20.	27.	22.	26.
8769	G	22.	19.	19.	19.	27.	23.	24.	25.	23.
8770	G	17.	19.	23.	19.	20.	23.	21.	26.	22.
8771	G	18.	22.	19.	20.	19.	23.	23.	23.	26.
8785	G	21.	20.	21.	18.	23.	23.	19.	25.	25.
8793	G	19.	22.	16.	23.	19.	24.	24.	21.	24.
8795	G	21.	20.	18.	19.	18.	23.	21.	23.	25.
8799	G	15.	20.	17.	19.	17.	21.	23.	24.	20.
8804	G	25.	16.	21.	21.	25.	22.	23.	23.	21.
8815	G	24.	20.	22.	23.	22.	27.	25.	23.	26.
8819	G	24.	17.	19.	23.	20.	23.	22.	25.	25.
8821	G	21.	19.	25.	22.	23.	24.	26.	24.	20.
8829	G	22.	21.	22.	20.	22.	24.	24.	27.	26.
8831	G	20.	21.	23.	26.	22.	24.	22.	31.	24.
8856	NG	21.	19.	15.	12.	21.	14.	19.	15.	13.
8860	G	20.	19.	19.	21.	23.	23.	24.	23.	29.
8861	G	19.	24.	18.	21.	20.	22.	21.	23.	23.
8865	G	23.	18.	26.	22.	25.	25.	25.	24.	27.
8870	G	23.	25.	24.	22.	24.	30.	24.	28.	29.
8872	G	19.	29.	23.	22.	21.	19.	22.	27.	28.
8885	G	20.	22.	19.	19.	21.	23.	22.	22.	22.
8888	G	18.	20.	24.	24.	23.	22.	21.	24.	26.
8896	G	21.	20.	17.	23.	18.	24.	21.	19.	22.
8917	G	17.	23.	24.	23.	24.	23.	24.	25.	26.
MEAN		20.	21.	21.	21.	21.	23.	23.	24.	24.
S.D.		2.7	2.8	2.8	2.0	2.6	2.4	1.9	2.5	2.6
N		24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.6

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 23

SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 18-19	19-20	20-21	1- 6	6- 9	9-12	12-16	16-21	6-16
DAMS FROM GROUP 6: 1000 PPM										
8739	G	24.	20.	23.	14.	17.	19.	21.	22.	19.
8760	G	25.	22.	19.	17.	21.	20.	22.	23.	21.
8769	G	26.	24.	21.	18.	18.	20.	23.	24.	21.
8770	G	23.	28.	25.	17.	18.	20.	21.	25.	20.
8771	G	23.	23.	17.	17.	19.	20.	21.	22.	20.
8785	G	28.	23.	24.	19.	20.	21.	21.	25.	21.
8793	G	23.	23.	21.	18.	20.	19.	23.	22.	21.
8795	G	23.	20.	25.	15.	19.	20.	20.	23.	20.
8799	G	21.	24.	17.	17.	18.	17.	20.	21.	19.
8804	G	24.	28.	22.	18.	20.	21.	23.	24.	21.
8815	G	25.	26.	23.	20.	21.	22.	24.	25.	23.
8819	G	25.	24.	28.	19.	19.	20.	22.	25.	21.
8821	G	20.	23.	26.	18.	19.	22.	24.	23.	22.
8829	G	24.	25.	22.	19.	22.	22.	23.	25.	22.
8831	G	28.	27.	23.	18.	20.	21.	24.	27.	22.
8856	NG	10.	17.	17.	19.	22.	18.	17.	14.	19.
8860	G	25.	26.	28.	19.	19.	19.	23.	26.	21.
8861	G	26.	22.	20.	17.	20.	20.	21.	23.	21.
8865	G	25.	29.	25.	19.	23.	22.	24.	26.	23.
8870	G	27.	24.	25.	20.	23.	24.	25.	27.	24.
8872	G	28.	24.	26.	21.	22.	24.	21.	27.	22.
8885	G	25.	23.	23.	16.	19.	20.	21.	23.	20.
8888	G	24.	24.	23.	17.	20.	21.	23.	24.	21.
8896	G	18.	6.	14.	19.	21.	19.	22.	16.	21.
8917	G	28.	25.	23.	19.	20.	21.	24.	25.	22.
MEAN		25.	23.	23.	18.	20.	21.	22.	24.	21.
S.D.		2.5	4.4	3.4	1.6	1.6	1.6	1.4	2.4	1.2
N		24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.6

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 24
SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

PREGNANCY STATUS	DAY 1-21	
DAMS FROM GROUP 6:	1000 PPM	
8739	G	19. SCHEDULED NECROPSY DAY 21
8760	G	21. SCHEDULED NECROPSY DAY 21
8769	G	21. SCHEDULED NECROPSY DAY 21
8770	G	20. SCHEDULED NECROPSY DAY 21
8771	G	20. SCHEDULED NECROPSY DAY 21
8785	G	21. SCHEDULED NECROPSY DAY 21
8793	G	21. SCHEDULED NECROPSY DAY 21
8795	G	20. SCHEDULED NECROPSY DAY 21
8799	G	19. SCHEDULED NECROPSY DAY 21
8804	G	21. SCHEDULED NECROPSY DAY 21
8815	G	22. SCHEDULED NECROPSY DAY 21
8819	G	21. SCHEDULED NECROPSY DAY 21
8821	G	21. SCHEDULED NECROPSY DAY 21
8829	G	22. SCHEDULED NECROPSY DAY 21
8831	G	22. SCHEDULED NECROPSY DAY 21
8856	NG	18. SCHEDULED NECROPSY DAY 21
8860	G	22. SCHEDULED NECROPSY DAY 21
8861	G	20. SCHEDULED NECROPSY DAY 21
8865	G	23. SCHEDULED NECROPSY DAY 21
8870	G	24. SCHEDULED NECROPSY DAY 21
8872	G	23. SCHEDULED NECROPSY DAY 21
8885	G	20. SCHEDULED NECROPSY DAY 21
8888	G	21. SCHEDULED NECROPSY DAY 21
8896	G	19. SCHEDULED NECROPSY DAY 21
8917	G	22. SCHEDULED NECROPSY DAY 21
MEAN		21.
S.D.		1.3
N		24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

PGFWv4.11
11/02/2018

TABLE 4.7

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 1

SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY 0- 1	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 1: 0 PPM										
8738	G	65.	67.	70.	69.	61.	74.	70.	85.	66.
8751	G	50.	69.	68.	54.	64.	62.	68.	70.	63.
8755	G	59.	72.	60.	59.	72.	67.	69.	65.	67.
8766	G	61.	75.	58.	65.	75.	59.	48.	77.	68.
8768	G	56.	54.	62.	50.	64.	60.	72.	76.	75.
8772	G	46.	65.	60.	75.	79.	63.	73.	65.	60.
8776	G	54.	78.	76.	61.	64.	69.	75.	70.	70.
8777	G	60.	74.	68.	77.	69.	71.	44.	79.	74.
8779	G	66.	75.	76.	70.	79.	77.	57.	75.	79.
8791	G	72.	77.	71.	58.	75.	65.	65.	67.	76.
8798	G	70.	73.	64.	78.	61.	61.	57.	73.	68.
8803	G	53.	72.	66.	65.	67.	66.	75.	67.	71.
8812	G	60.	85.	75.	71.	62.	80.	85.	65.	61.
8817	G	70.	72.	59.	58.	72.	64.	55.	69.	74.
8820	G	64.	79.	77.	67.	74.	69.	71.	78.	66.
8825	G	64.	69.	65.	60.	80.	78.	76.	74.	73.
8836	G	73.	71.	73.	74.	69.	68.	77.	85.	52.
8843	G	54.	60.	70.	68.	67.	77.	48.	78.	67.
8852	NG	67.	50.	75.	55.	73.	64.	76.	61.	55.
8858	G	62.	67.	59.	72.	67.	72.	68.	76.	68.
8871	G	69.	74.	80.	67.	84.	54.	74.	73.	75.
8883	G	68.	69.	73.	76.	77.	72.	82.	63.	76.
8886	G	64.	61.	76.	62.	69.	64.	67.	59.	70.
8894	G	50.	86.	72.	60.	74.	75.	40.	78.	70.
8926	G	62.	64.	74.	66.	61.	54.	74.	65.	64.
MEAN		61.	71.	69.	66.	70.	68.	66.	72.	69.
S.D.		7.4	7.4	6.7	7.5	6.7	7.3	12.1	6.9	6.1
N		24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.7

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 2

SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY 9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 1: 0 PPM										
8738	G	68.	69.	69.	71.	73.	65.	77.	64.	69.
8751	G	67.	65.	61.	66.	63.	67.	73.	61.	65.
8755	G	66.	70.	65.	70.	72.	73.	73.	71.	68.
8766	G	63.	65.	68.	61.	54.	64.	66.	58.	59.
8768	G	70.	78.	70.	79.	76.	74.	69.	78.	70.
8772	G	69.	54.	54.	67.	59.	67.	63.	58.	70.
8776	G	65.	54.	57.	66.	65.	66.	67.	67.	67.
8777	G	79.	79.	77.	73.	58.	76.	70.	75.	68.
8779	G	62.	61.	74.	77.	70.	87.	74.	88.	73.
8791	G	74.	66.	62.	65.	74.	63.	71.	66.	79.
8798	G	73.	62.	74.	73.	55.	78.	67.	71.	79.
8803	G	70.	77.	58.	68.	69.	61.	77.	69.	73.
8812	G	78.	73.	61.	70.	69.	79.	67.	74.	71.
8817	G	63.	72.	61.	70.	81.	81.	76.	71.	74.
8820	G	68.	71.	72.	86.	74.	85.	64.	71.	80.
8825	G	71.	58.	69.	68.	78.	73.	74.	74.	78.
8836	G	56.	76.	65.	77.	67.	69.	68.	83.	84.
8843	G	60.	68.	51.	54.	63.	62.	72.	70.	71.
8852	NG	45.	68.	60.	37.	54.	34.	68.	37.	52.
8858	G	66.	71.	63.	68.	67.	63.	74.	69.	76.
8871	G	70.	78.	76.	62.	68.	61.	80.	66.	75.
8883	G	61.	67.	66.	68.	64.	54.	71.	66.	67.
8886	G	65.	66.	58.	74.	50.	81.	57.	74.	65.
8894	G	69.	65.	72.	79.	74.	77.	72.	84.	62.
8926	G	67.	40.	69.	74.	70.	66.	56.	71.	67.
MEAN		68.	67.	66.	70.	67.	71.	70.	71.	71.
S.D.		5.4	9.1	7.0	6.8	7.9	8.6	5.9	7.5	6.1
N		24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.7

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 3

SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY 18-19	19-20	20-21	1- 6	6- 9	9-12	12-16	16-21	6-16
DAMS FROM GROUP 1: 0 PPM										
8738	G	68.	64.	44.	69.	75.	70.	71.	60.	72.
8751	G	63.	66.	57.	64.	67.	66.	67.	63.	65.
8755	G	61.	59.	56.	66.	68.	67.	73.	63.	69.
8766	G	71.	46.	63.	65.	66.	66.	60.	59.	63.
8768	G	75.	76.	56.	57.	73.	72.	75.	72.	74.
8772	G	62.	65.	64.	70.	65.	58.	65.	64.	64.
8776	G	56.	58.	62.	68.	70.	58.	67.	61.	67.
8777	G	63.	58.	52.	70.	66.	80.	70.	63.	73.
8779	G	74.	63.	40.	74.	71.	67.	77.	68.	71.
8791	G	52.	74.	55.	69.	70.	67.	70.	66.	70.
8798	G	61.	59.	57.	66.	66.	69.	70.	64.	68.
8803	G	70.	62.	36.	69.	70.	68.	70.	60.	70.
8812	G	55.	61.	51.	75.	69.	70.	71.	63.	72.
8817	G	69.	69.	59.	66.	65.	65.	76.	69.	71.
8820	G	73.	57.	55.	71.	70.	70.	76.	68.	75.
8825	G	75.	69.	45.	71.	74.	67.	74.	67.	73.
8836	G	69.	67.	62.	71.	73.	67.	69.	73.	69.
8843	G	56.	66.	61.	69.	65.	59.	62.	64.	61.
8852	NG	34.	58.	45.	63.	65.	58.	47.	45.	55.
8858	G	72.	62.	53.	69.	69.	68.	69.	65.	67.
8871	G	72.	52.	67.	71.	73.	75.	67.	67.	71.
8883	G	60.	68.	62.	75.	74.	64.	63.	64.	66.
8886	G	62.	62.	64.	66.	67.	63.	66.	64.	66.
8894	G	69.	72.	64.	75.	62.	67.	75.	70.	69.
8926	G	63.	71.	63.	63.	69.	60.	66.	66.	66.
MEAN		65.	64.	56.	69.	69.	67.	70.	65.	69.
S.D.		6.8	6.9	8.1	4.2	3.5	5.1	4.6	3.6	3.6
N		24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.7

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 4
SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/KG/DAY]

PREGNANCY STATUS	DAY 1-21	
DAMS FROM GROUP 1:	0 PPM	
8738	G	67. SCHEDULED NECROPSY DAY 21
8751	G	64. SCHEDULED NECROPSY DAY 21
8755	G	67. SCHEDULED NECROPSY DAY 21
8766	G	64. SCHEDULED NECROPSY DAY 21
8768	G	69. SCHEDULED NECROPSY DAY 21
8772	G	63. SCHEDULED NECROPSY DAY 21
8776	G	64. SCHEDULED NECROPSY DAY 21
8777	G	70. SCHEDULED NECROPSY DAY 21
8779	G	72. SCHEDULED NECROPSY DAY 21
8791	G	66. SCHEDULED NECROPSY DAY 21
8798	G	65. SCHEDULED NECROPSY DAY 21
8803	G	67. SCHEDULED NECROPSY DAY 21
8812	G	70. SCHEDULED NECROPSY DAY 21
8817	G	69. SCHEDULED NECROPSY DAY 21
8820	G	73. SCHEDULED NECROPSY DAY 21
8825	G	70. SCHEDULED NECROPSY DAY 21
8836	G	70. SCHEDULED NECROPSY DAY 21
8843	G	64. SCHEDULED NECROPSY DAY 21
8852	NG	56. SCHEDULED NECROPSY DAY 21
8858	G	68. SCHEDULED NECROPSY DAY 21
8871	G	70. SCHEDULED NECROPSY DAY 21
8883	G	68. SCHEDULED NECROPSY DAY 21
8886	G	64. SCHEDULED NECROPSY DAY 21
8894	G	70. SCHEDULED NECROPSY DAY 21
8926	G	66. SCHEDULED NECROPSY DAY 21
MEAN		68.
S.D.		2.8
N		24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.7

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 5

SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY	0- 1	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 2: 15 MG/KG RA											
8740	G		61.	74.	72.	60.	63.	83.	54.	64.	56.
8743	G		68.	69.	64.	56.	70.	68.	43.	61.	63.
8756	G		66.	75.	63.	63.	71.	76.	42.	56.	55.
8757	G		57.	77.	79.	57.	63.	72.	48.	41.	51.
8780	G		49.	52.	77.	61.	60.	69.	52.	45.	61.
8789	G		70.	66.	72.	63.	65.	61.	49.	73.	71.
8800	G		77.	70.	80.	70.	76.	71.	44.	62.	61.
8801	G		80.	73.	81.	76.	71.	76.	51.	48.	68.
8802	G		46.	69.	68.	63.	66.	66.	57.	45.	52.
8808	G		43.	77.	57.	78.	65.	68.	43.	60.	38.
8809	G		71.	69.	67.	76.	55.	66.	53.	53.	51.
8810	G		67.	73.	60.	79.	66.	66.	69.	42.	56.
8818	G		75.	73.	83.	74.	79.	67.	52.	66.	68.
8822	G		82.	69.	64.	68.	74.	73.	38.	38.	34.
8827	G		58.	60.	67.	58.	75.	71.	55.	55.	54.
8840	G		59.	68.	75.	59.	55.	80.	47.	64.	67.
8842	G		57.	73.	82.	63.	58.	75.	39.	43.	49.
8847	G		64.	74.	58.	61.	78.	62.	33.	59.	57.
8850	G		51.	68.	67.	59.	74.	63.	50.	56.	52.
8851	G		46.	84.	71.	77.	71.	70.	58.	54.	80.
8854	G		52.	71.	73.	64.	71.	73.	50.	65.	56.
8900	G		72.	69.	65.	74.	60.	53.	32.	53.	31.
8901	G		58.	75.	55.	65.	70.	79.	47.	58.	51.
8930	G		61.	61.	67.	70.	69.	65.	50.	64.	42.
8931	G		66.	74.	66.	72.	60.	73.	49.	55.	60.
MEAN			62.	71.	69.	67.	67.	70.	48.	55.	55.
S.D.			10.8	6.3	8.0	7.3	6.9	6.6	8.0	9.1	11.4
N			25	25	25	25	25	25	25	25	25

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.7

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 6

SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY 9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 2: 15 MG/KG RA										
8740	G	58.	45.	38.	59.	61.	48.	50.	60.	63.
8743	G	45.	60.	39.	68.	51.	51.	50.	67.	61.
8756	G	51.	53.	51.	44.	66.	49.	57.	63.	66.
8757	G	47.	50.	52.	55.	70.	65.	49.	71.	62.
8780	G	46.	46.	42.	39.	51.	48.	59.	56.	65.
8789	G	57.	65.	52.	67.	53.	56.	81.	76.	80.
8800	G	50.	60.	55.	64.	54.	46.	58.	66.	61.
8801	G	53.	68.	48.	38.	56.	60.	53.	83.	57.
8802	G	37.	44.	65.	46.	55.	48.	59.	54.	65.
8808	G	52.	47.	34.	63.	36.	61.	38.	75.	60.
8809	G	69.	52.	46.	55.	51.	62.	49.	70.	58.
8810	G	51.	40.	54.	46.	48.	64.	59.	72.	51.
8818	G	76.	61.	61.	59.	49.	63.	70.	65.	65.
8822	G	59.	60.	42.	43.	46.	45.	61.	67.	59.
8827	G	46.	52.	55.	70.	66.	49.	56.	66.	58.
8840	G	59.	44.	67.	52.	68.	45.	54.	59.	73.
8842	G	35.	52.	37.	47.	63.	49.	50.	58.	71.
8847	G	65.	57.	40.	47.	30.	52.	71.	76.	59.
8850	G	51.	38.	56.	NA	38.	38.	44.	59.	49.
8851	G	64.	79.	58.	61.	51.	52.	72.	67.	89.
8854	G	44.	47.	54.	49.	68.	48.	55.	57.	69.
8900	G	45.	37.	56.	66.	61.	57.	71.	86.	76.
8901	G	59.	48.	63.	60.	72.	67.	59.	77.	68.
8930	G	35.	45.	55.	41.	44.	44.	40.	49.	28.
8931	G	63.	50.	49.	43.	54.	59.	61.	58.	70.
MEAN		53.	52.	51.	53.	54.	53.	57.	66.	63.
S.D.		10.3	9.9	9.1	10.0	10.9	7.8	10.3	9.3	11.4
N		25	25	25	24	25	25	25	25	25

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 4.7

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 7

SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY 18-19	19-20	20-21	1- 6	6- 9	9-12	12-16	16-21	6-16
DAMS FROM GROUP 2: 15 MG/KG RA										
8740	G	61.	56.	47.	71.	57.	48.	55.	58.	54.
8743	G	56.	57.	50.	67.	57.	47.	54.	59.	54.
8756	G	68.	61.	46.	69.	52.	53.	56.	59.	52.
8757	G	61.	65.	55.	71.	48.	50.	60.	64.	52.
8780	G	63.	57.	40.	65.	51.	46.	51.	55.	49.
8789	G	70.	77.	56.	67.	66.	59.	65.	73.	62.
8800	G	53.	62.	46.	74.	55.	56.	56.	58.	56.
8801	G	65.	50.	53.	76.	54.	55.	52.	60.	55.
8802	G	56.	59.	38.	67.	53.	47.	51.	53.	50.
8808	G	66.	65.	52.	70.	46.	44.	49.	63.	47.
8809	G	79.	63.	58.	66.	52.	56.	53.	65.	55.
8810	G	67.	66.	37.	67.	57.	47.	54.	57.	54.
8818	G	64.	61.	30.	74.	62.	65.	61.	56.	64.
8822	G	68.	71.	46.	71.	38.	54.	49.	61.	47.
8827	G	70.	62.	60.	66.	55.	52.	62.	64.	55.
8840	G	81.	62.	NA	67.	60.	58.	55.	67.	57.
8842	G	72.	3.	35.	70.	43.	42.	52.	47.	48.
8847	G	61.	65.	57.	68.	51.	54.	52.	63.	51.
8850	G	42.	56.	46.	66.	52.	47.	41.	50.	46.
8851	G	66.	67.	60.	73.	64.	66.	59.	70.	63.
8854	G	57.	56.	48.	72.	57.	47.	55.	57.	54.
8900	G	74.	75.	59.	64.	39.	47.	63.	74.	50.
8901	G	74.	61.	43.	68.	51.	58.	64.	64.	58.
8930	G	42.	83.	39.	66.	53.	45.	44.	48.	45.
8931	G	59.	61.	51.	68.	55.	53.	53.	59.	56.
MEAN		64.	61.	48.	69.	53.	52.	55.	60.	53.
S.D.		9.6	14.1	8.5	3.1	6.8	6.3	5.9	6.9	5.1
N		25	25	24	25	25	25	25	25	25

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 4.7

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 8
SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/KG/DAY]

PREGNANCY STATUS	DAY 1-21
DAMS FROM GROUP 2: 15 MG/KG RA	
8740 G	59. SCHEDULED NECROPSY DAY 21
8743 G	59. SCHEDULED NECROPSY DAY 21
8756 G	59. SCHEDULED NECROPSY DAY 21
8757 G	60. SCHEDULED NECROPSY DAY 21
8780 G	53. SCHEDULED NECROPSY DAY 21
8789 G	65. SCHEDULED NECROPSY DAY 21
8800 G	61. SCHEDULED NECROPSY DAY 21
8801 G	62. SCHEDULED NECROPSY DAY 21
8802 G	56. SCHEDULED NECROPSY DAY 21
8808 G	55. SCHEDULED NECROPSY DAY 21
8809 G	61. SCHEDULED NECROPSY DAY 21
8810 G	58. SCHEDULED NECROPSY DAY 21
8818 G	62. SCHEDULED NECROPSY DAY 21
8822 G	57. SCHEDULED NECROPSY DAY 21
8827 G	60. SCHEDULED NECROPSY DAY 21
8840 G	63. SCHEDULED NECROPSY DAY 21
8842 G	52. SCHEDULED NECROPSY DAY 21
8847 G	59. SCHEDULED NECROPSY DAY 21
8850 G	52. SCHEDULED NECROPSY DAY 21
8851 G	68. SCHEDULED NECROPSY DAY 21
8854 G	57. SCHEDULED NECROPSY DAY 21
8900 G	60. SCHEDULED NECROPSY DAY 21
8901 G	62. SCHEDULED NECROPSY DAY 21
8930 G	51. SCHEDULED NECROPSY DAY 21
8931 G	59. SCHEDULED NECROPSY DAY 21
MEAN	59.
S.D.	4.1
N	25

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.7

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 9

SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY 0- 1	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 3: 0.25 PPM										
8747	G	62.	57.	85.	61.	80.	72.	70.	72.	80.
8758	G	40.	65.	75.	66.	72.	75.	74.	69.	81.
8764	G	46.	73.	60.	59.	78.	70.	66.	71.	72.
8767	G	65.	72.	68.	63.	75.	77.	70.	78.	82.
8773	G	71.	42.	79.	76.	68.	59.	66.	84.	81.
8774	G	53.	68.	82.	62.	75.	74.	69.	68.	71.
8807	G	63.	81.	60.	67.	78.	69.	75.	73.	65.
8814	G	34.	88.	62.	61.	61.	68.	78.	62.	72.
8826	G	54.	59.	66.	60.	70.	43.	73.	78.	73.
8834	G	70.	73.	75.	77.	89.	66.	70.	79.	70.
8835	G	86.	84.	83.	74.	79.	70.	66.	88.	83.
8839	G	66.	80.	71.	77.	86.	62.	82.	60.	74.
8849	G	53.	71.	69.	61.	64.	74.	65.	61.	77.
8853	G	79.	88.	67.	88.	75.	70.	83.	74.	73.
8859	G	73.	64.	81.	82.	74.	76.	71.	77.	69.
8869	G	65.	71.	69.	71.	56.	73.	68.	70.	66.
8879	G	61.	67.	84.	78.	66.	65.	71.	80.	75.
8889	G	57.	74.	65.	68.	74.	75.	70.	76.	71.
8891	G	61.	70.	72.	64.	77.	65.	71.	61.	70.
8893	G	53.	69.	71.	63.	62.	84.	70.	56.	74.
8897	G	63.	66.	65.	79.	62.	76.	57.	82.	58.
8908	G	59.	76.	63.	63.	73.	82.	71.	80.	62.
8910	G	75.	62.	65.	74.	63.	69.	58.	64.	73.
8913	NG	58.	71.	63.	56.	66.	72.	69.	65.	69.
8916	NG	42.	69.	75.	66.	58.	59.	81.	82.	74.
MEAN		61.	70.	71.	69.	72.	70.	70.	72.	73.
S.D.		12.0	10.4	7.9	8.3	8.3	8.4	6.1	8.6	6.3
N		23	23	23	23	23	23	23	23	23

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.7

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 10

SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 3: 0.25 PPM											
8747	G		75.	70.	69.	90.	76.	78.	84.	66.	73.
8758	G		59.	65.	66.	78.	64.	72.	75.	62.	67.
8764	G		55.	69.	62.	73.	68.	69.	48.	73.	67.
8767	G		59.	73.	54.	81.	66.	75.	65.	63.	67.
8773	G		74.	80.	48.	69.	55.	65.	49.	65.	71.
8774	G		70.	72.	70.	77.	73.	66.	75.	64.	63.
8807	G		71.	59.	68.	89.	70.	87.	66.	78.	69.
8814	G		74.	58.	65.	70.	72.	61.	66.	70.	64.
8826	G		68.	63.	52.	62.	73.	77.	60.	74.	57.
8834	G		68.	70.	72.	76.	52.	80.	69.	78.	69.
8835	G		80.	76.	80.	70.	58.	80.	80.	75.	83.
8839	G		75.	80.	71.	73.	63.	82.	64.	73.	85.
8849	G		55.	70.	59.	71.	61.	63.	67.	58.	62.
8853	G		51.	76.	62.	83.	47.	77.	75.	84.	86.
8859	G		56.	68.	63.	60.	69.	61.	71.	58.	73.
8869	G		77.	63.	69.	55.	75.	65.	74.	62.	75.
8879	G		79.	71.	76.	71.	75.	70.	77.	69.	68.
8889	G		76.	62.	84.	65.	76.	77.	53.	83.	61.
8891	G		65.	61.	58.	61.	84.	61.	86.	69.	61.
8893	G		57.	54.	56.	85.	60.	73.	82.	56.	65.
8897	G		75.	69.	81.	62.	71.	70.	74.	71.	65.
8908	G		65.	71.	82.	80.	66.	75.	61.	69.	71.
8910	G		52.	68.	54.	75.	67.	72.	72.	70.	67.
8913	NG		77.	66.	46.	70.	72.	71.	52.	52.	71.
8916	NG		66.	49.	70.	79.	77.	80.	46.	81.	78.
MEAN			67.	68.	66.	73.	67.	72.	69.	69.	69.
S.D.			9.4	6.8	10.1	9.4	8.7	7.3	10.3	7.6	7.5
N			23	23	23	23	23	23	23	23	23

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.7

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 11

SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY 18-19	19-20	20-21	1- 6	6- 9	9-12	12-16	16-21	6-16
DAMS FROM GROUP 3: 0.25 PPM										
8747	G	70.	60.	58.	72.	75.	70.	83.	65.	78.
8758	G	64.	59.	56.	70.	76.	65.	72.	61.	70.
8764	G	57.	57.	57.	70.	71.	63.	64.	62.	65.
8767	G	65.	72.	58.	70.	78.	61.	73.	64.	69.
8773	G	58.	58.	73.	65.	77.	68.	59.	64.	69.
8774	G	65.	69.	68.	73.	68.	71.	73.	65.	70.
8807	G	69.	69.	64.	71.	70.	66.	79.	68.	71.
8814	G	64.	59.	37.	69.	69.	66.	68.	58.	68.
8826	G	49.	59.	49.	60.	75.	60.	69.	58.	70.
8834	G	61.	59.	71.	77.	71.	70.	69.	66.	70.
8835	G	70.	58.	67.	77.	78.	79.	71.	69.	75.
8839	G	58.	64.	58.	77.	71.	76.	70.	66.	72.
8849	G	57.	62.	59.	69.	68.	60.	66.	59.	67.
8853	G	61.	75.	70.	77.	78.	63.	72.	74.	69.
8859	G	64.	62.	59.	76.	74.	61.	65.	64.	67.
8869	G	64.	56.	68.	68.	67.	70.	68.	65.	69.
8879	G	73.	39.	44.	71.	77.	74.	74.	58.	73.
8889	G	70.	56.	66.	71.	72.	74.	69.	68.	70.
8891	G	67.	55.	59.	71.	68.	61.	74.	62.	67.
8893	G	62.	73.	31.	70.	66.	56.	76.	57.	68.
8897	G	73.	57.	64.	71.	67.	76.	70.	65.	72.
8908	G	66.	70.	60.	70.	70.	74.	72.	68.	73.
8910	G	71.	46.	65.	68.	64.	58.	72.	63.	67.
8913	NG	54.	58.	54.	66.	69.	63.	66.	58.	67.
8916	NG	78.	61.	60.	67.	79.	63.	71.	72.	70.
MEAN		64.	61.	59.	71.	72.	67.	71.	64.	70.
S.D.		5.9	8.4	10.5	4.1	4.3	6.5	5.0	4.2	2.9
N		23	23	23	23	23	23	23	23	23

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.7

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 12
SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY 1-21	
DAMS FROM GROUP 3:		0.25 PPM	
8747	G	72.	SCHEDULED NECROPSY DAY 21
8758	G	68.	SCHEDULED NECROPSY DAY 21
8764	G	64.	SCHEDULED NECROPSY DAY 21
8767	G	70.	SCHEDULED NECROPSY DAY 21
8773	G	67.	SCHEDULED NECROPSY DAY 21
8774	G	70.	SCHEDULED NECROPSY DAY 21
8807	G	72.	SCHEDULED NECROPSY DAY 21
8814	G	66.	SCHEDULED NECROPSY DAY 21
8826	G	61.	SCHEDULED NECROPSY DAY 21
8834	G	71.	SCHEDULED NECROPSY DAY 21
8835	G	74.	SCHEDULED NECROPSY DAY 21
8839	G	72.	SCHEDULED NECROPSY DAY 21
8849	G	65.	SCHEDULED NECROPSY DAY 21
8853	G	74.	SCHEDULED NECROPSY DAY 21
8859	G	69.	SCHEDULED NECROPSY DAY 21
8869	G	67.	SCHEDULED NECROPSY DAY 21
8879	G	68.	SCHEDULED NECROPSY DAY 21
8889	G	71.	SCHEDULED NECROPSY DAY 21
8891	G	66.	SCHEDULED NECROPSY DAY 21
8893	G	64.	SCHEDULED NECROPSY DAY 21
8897	G	69.	SCHEDULED NECROPSY DAY 21
8908	G	71.	SCHEDULED NECROPSY DAY 21
8910	G	64.	SCHEDULED NECROPSY DAY 21
8913	NG	64.	SCHEDULED NECROPSY DAY 21
8916	NG	70.	SCHEDULED NECROPSY DAY 21
MEAN		68.	
S.D.		3.5	
N		23	

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.7

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 13

SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY 0- 1	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 4: 1.5 PPM										
8741	G	58.	68.	67.	69.	65.	64.	69.	61.	70.
8765	G	67.	73.	71.	63.	63.	58.	78.	70.	72.
8783	G	63.	71.	89.	77.	72.	79.	77.	71.	80.
8786	G	70.	75.	89.	88.	83.	73.	80.	86.	70.
8788	G	65.	66.	70.	58.	71.	70.	79.	72.	70.
8792	G	91.	66.	79.	77.	82.	77.	89.	80.	78.
8805	G	68.	67.	48.	82.	68.	38.	82.	79.	81.
8806	G	73.	78.	65.	64.	77.	71.	74.	83.	74.
8811	G	48.	82.	77.	64.	59.	73.	68.	81.	72.
8813	G	75.	85.	76.	63.	78.	64.	89.	72.	71.
8823	G	67.	60.	74.	68.	74.	62.	71.	66.	63.
8844	G	65.	71.	81.	79.	59.	73.	89.	80.	81.
8848	G	55.	74.	77.	56.	86.	62.	85.	74.	73.
8857	G	63.	42.	64.	77.	82.	70.	73.	65.	61.
8867	G	65.	52.	70.	65.	61.	67.	63.	73.	61.
8873	G	72.	74.	88.	75.	66.	69.	68.	75.	63.
8876	G	49.	82.	68.	71.	81.	76.	71.	80.	79.
8881	G	47.	65.	64.	67.	66.	68.	67.	69.	75.
8884	NG	40.	48.	62.	54.	50.	54.	50.	67.	59.
8890	G	64.	72.	79.	70.	83.	77.	73.	75.	74.
8895	G	63.	76.	71.	70.	72.	61.	65.	77.	68.
8899	G	67.	68.	71.	63.	66.	61.	78.	76.	62.
8907	G	56.	62.	77.	48.	68.	70.	63.	65.	67.
8941	G	63.	65.	71.	70.	79.	67.	83.	78.	71.
8942	G	52.	76.	75.	76.	78.	84.	81.	80.	75.
MEAN		64.	70.	73.	69.	72.	68.	76.	75.	71.
S.D.		9.7	9.5	9.0	8.9	8.3	9.1	8.1	6.3	6.2
N		24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.7

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 14

SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY 9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 4: 1.5 PPM										
8741	G	65.	52.	85.	76.	60.	69.	70.	67.	59.
8765	G	47.	69.	71.	64.	72.	74.	65.	80.	NA
8783	G	74.	76.	68.	72.	71.	69.	82.	57.	70.
8786	G	73.	71.	80.	71.	76.	78.	76.	80.	80.
8788	G	69.	55.	63.	63.	65.	69.	62.	58.	64.
8792	G	74.	49.	70.	63.	80.	85.	75.	64.	84.
8805	G	75.	70.	70.	59.	65.	76.	65.	71.	77.
8806	G	73.	74.	69.	68.	67.	77.	68.	68.	70.
8811	G	64.	60.	60.	72.	55.	67.	72.	64.	78.
8813	G	73.	78.	76.	78.	67.	75.	75.	61.	81.
8823	G	65.	55.	61.	72.	55.	83.	63.	77.	66.
8844	G	95.	81.	83.	69.	88.	70.	69.	74.	73.
8848	G	68.	61.	57.	80.	64.	98.	76.	79.	58.
8857	G	73.	71.	76.	65.	69.	71.	65.	72.	61.
8867	G	51.	66.	65.	68.	70.	60.	65.	69.	61.
8873	G	76.	66.	68.	71.	75.	70.	62.	76.	70.
8876	G	74.	70.	84.	75.	74.	83.	63.	84.	63.
8881	G	67.	66.	68.	86.	63.	77.	70.	68.	71.
8884	NG	72.	64.	54.	51.	60.	59.	43.	66.	40.
8890	G	76.	68.	61.	86.	72.	68.	83.	62.	64.
8895	G	67.	69.	65.	73.	69.	61.	70.	66.	71.
8899	G	77.	65.	70.	60.	65.	75.	61.	71.	63.
8907	G	71.	57.	66.	73.	71.	71.	73.	70.	30.
8941	G	63.	68.	82.	70.	75.	59.	69.	74.	60.
8942	G	77.	66.	77.	72.	63.	76.	62.	68.	65.
MEAN		70.	66.	71.	71.	69.	73.	69.	70.	67.
S.D.		9.2	8.1	8.1	7.0	7.5	8.6	6.3	7.1	11.0
N		24	24	24	24	24	24	24	24	23

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 4.7

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 15

SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY 18-19	19-20	20-21	1- 6	6- 9	9-12	12-16	16-21	6-16
DAMS FROM GROUP 4: 1.5 PPM										
8741	G	68.	58.	57.	66.	68.	67.	68.	60.	66.
8765	G	63.	56.	60.	67.	73.	63.	68.	65.	68.
8783	G	57.	50.	54.	78.	75.	73.	73.	57.	75.
8786	G	65.	70.	59.	80.	78.	74.	75.	70.	77.
8788	G	57.	59.	54.	68.	75.	61.	64.	59.	67.
8792	G	76.	62.	67.	77.	83.	64.	76.	71.	73.
8805	G	60.	55.	55.	62.	80.	71.	67.	62.	71.
8806	G	63.	75.	58.	71.	76.	71.	71.	68.	73.
8811	G	62.	67.	61.	72.	74.	60.	68.	65.	67.
8813	G	51.	58.	38.	75.	76.	75.	75.	57.	77.
8823	G	62.	61.	51.	68.	67.	61.	69.	63.	66.
8844	G	72.	60.	67.	72.	83.	88.	75.	70.	80.
8848	G	67.	74.	67.	72.	79.	61.	80.	69.	74.
8857	G	67.	57.	55.	66.	65.	75.	67.	61.	68.
8867	G	56.	60.	61.	62.	66.	60.	66.	62.	66.
8873	G	58.	56.	63.	75.	67.	70.	71.	63.	69.
8876	G	78.	62.	62.	75.	77.	76.	74.	70.	75.
8881	G	63.	59.	61.	67.	69.	66.	75.	63.	72.
8884	NG	60.	46.	43.	54.	60.	64.	53.	50.	58.
8890	G	65.	58.	71.	77.	75.	68.	77.	64.	73.
8895	G	55.	69.	58.	70.	70.	66.	69.	63.	69.
8899	G	5.	57.	43.	67.	73.	72.	67.	48.	68.
8907	G	64.	60.	46.	66.	65.	64.	73.	55.	69.
8941	G	69.	59.	59.	70.	78.	71.	68.	64.	73.
8942	G	65.	58.	58.	77.	80.	72.	68.	63.	72.
MEAN		61.	61.	58.	71.	74.	69.	71.	63.	71.
S.D.		13.6	6.0	7.7	5.1	5.6	6.6	4.2	5.4	3.9
N		24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.7

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 16
SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY 1-21
DAMS FROM GROUP 4:		1.5 PPM
8741	G	64. SCHEDULED NECROPSY DAY 21
8765	G	66. SCHEDULED NECROPSY DAY 21
8783	G	70. SCHEDULED NECROPSY DAY 21
8786	G	75. SCHEDULED NECROPSY DAY 21
8788	G	65. SCHEDULED NECROPSY DAY 21
8792	G	73. SCHEDULED NECROPSY DAY 21
8805	G	65. SCHEDULED NECROPSY DAY 21
8806	G	71. SCHEDULED NECROPSY DAY 21
8811	G	68. SCHEDULED NECROPSY DAY 21
8813	G	69. SCHEDULED NECROPSY DAY 21
8823	G	64. SCHEDULED NECROPSY DAY 21
8844	G	75. SCHEDULED NECROPSY DAY 21
8848	G	71. SCHEDULED NECROPSY DAY 21
8857	G	66. SCHEDULED NECROPSY DAY 21
8867	G	65. SCHEDULED NECROPSY DAY 21
8873	G	70. SCHEDULED NECROPSY DAY 21
8876	G	73. SCHEDULED NECROPSY DAY 21
8881	G	67. SCHEDULED NECROPSY DAY 21
8884	NG	55. SCHEDULED NECROPSY DAY 21
8890	G	71. SCHEDULED NECROPSY DAY 21
8895	G	67. SCHEDULED NECROPSY DAY 21
8899	G	63. SCHEDULED NECROPSY DAY 21
8907	G	64. SCHEDULED NECROPSY DAY 21
8941	G	70. SCHEDULED NECROPSY DAY 21
8942	G	71. SCHEDULED NECROPSY DAY 21
MEAN		68.
S.D.		3.6
N		24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.7

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 17

SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY	0- 1	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 5: 500 PPM											
8735	G		54.	63.	66.	61.	50.	70.	47.	75.	68.
8763	G		69.	69.	64.	67.	65.	64.	64.	70.	65.
8775	G		74.	75.	67.	70.	65.	71.	66.	66.	71.
8778	G		59.	81.	75.	59.	69.	57.	57.	67.	69.
8784	G		66.	61.	64.	67.	52.	62.	61.	67.	62.
8790	G		73.	74.	73.	71.	80.	68.	60.	76.	71.
8824	G		58.	69.	65.	77.	62.	70.	49.	77.	59.
8828	G		56.	60.	63.	74.	72.	55.	70.	61.	63.
8830	G		51.	72.	74.	69.	77.	72.	68.	79.	66.
8833	G		59.	61.	79.	59.	69.	79.	66.	72.	61.
8837	G		75.	80.	83.	67.	63.	77.	75.	80.	72.
8838	G		73.	67.	67.	73.	64.	70.	58.	64.	66.
8845	G		64.	72.	71.	77.	65.	77.	69.	77.	61.
8846	G		71.	73.	72.	63.	63.	62.	54.	75.	63.
8855	G		50.	64.	71.	66.	64.	70.	65.	61.	64.
8863	G		53.	80.	55.	62.	68.	57.	64.	63.	62.
8864	G		67.	72.	86.	62.	65.	72.	70.	63.	55.
8868	G		72.	74.	66.	72.	77.	62.	75.	55.	71.
8874	G		67.	76.	92.	86.	88.	65.	72.	87.	75.
8875	G		50.	53.	70.	54.	68.	53.	60.	62.	57.
8878	G		50.	65.	60.	79.	62.	76.	74.	59.	66.
8928	G		57.	52.	56.	67.	69.	58.	80.	62.	33.
8933	G		81.	67.	70.	73.	72.	67.	63.	77.	60.
8936	G		75.	59.	70.	58.	72.	70.	69.	71.	67.
8937	NG		57.	52.	37.	69.	60.	56.	45.	69.	67.
MEAN			64.	68.	70.	68.	68.	67.	65.	69.	64.
S.D.			9.6	8.1	8.8	7.6	8.1	7.4	8.2	8.1	8.2
N			24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.7

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 18

SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY 9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 5: 500 PPM										
8735	G	69.	68.	69.	71.	67.	71.	78.	65.	76.
8763	G	68.	66.	71.	60.	63.	71.	68.	60.	83.
8775	G	63.	69.	71.	66.	55.	73.	70.	72.	85.
8778	G	64.	66.	68.	64.	47.	80.	50.	60.	58.
8784	G	64.	63.	55.	39.	59.	64.	86.	54.	65.
8790	G	63.	68.	79.	62.	64.	71.	66.	77.	71.
8824	G	66.	62.	72.	59.	59.	65.	59.	68.	71.
8828	G	66.	61.	66.	58.	64.	62.	55.	84.	55.
8830	G	74.	63.	82.	74.	78.	77.	70.	70.	72.
8833	G	74.	66.	68.	76.	65.	76.	77.	62.	65.
8837	G	74.	63.	68.	67.	72.	73.	75.	73.	78.
8838	G	55.	61.	73.	64.	54.	71.	74.	66.	66.
8845	G	55.	57.	53.	65.	54.	74.	80.	67.	71.
8846	G	69.	70.	65.	65.	69.	71.	74.	82.	78.
8855	G	63.	58.	70.	68.	57.	56.	67.	65.	69.
8863	G	68.	66.	64.	67.	63.	80.	59.	66.	69.
8864	G	62.	61.	78.	70.	68.	57.	90.	58.	42.
8868	G	66.	52.	80.	69.	69.	56.	69.	69.	75.
8874	G	83.	81.	73.	74.	74.	77.	77.	78.	75.
8875	G	60.	46.	65.	57.	67.	59.	70.	63.	58.
8878	G	64.	59.	59.	71.	69.	61.	69.	81.	57.
8928	G	73.	69.	64.	57.	54.	67.	52.	60.	66.
8933	G	76.	86.	68.	76.	70.	66.	64.	85.	69.
8936	G	71.	63.	65.	68.	61.	80.	55.	70.	68.
8937	NG	66.	47.	70.	64.	64.	53.	73.	56.	63.
MEAN		67.	64.	69.	65.	63.	69.	69.	69.	68.
S.D.		6.5	8.1	7.2	8.0	7.5	7.7	10.3	8.6	9.6
N		24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.7

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 19

SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY 18-19	19-20	20-21	1- 6	6- 9	9-12	12-16	16-21	6-16
DAMS FROM GROUP 5: 500 PPM										
8735	G	60.	62.	45.	62.	63.	68.	72.	62.	67.
8763	G	52.	58.	60.	66.	66.	69.	65.	63.	65.
8775	G	61.	44.	36.	70.	69.	68.	67.	59.	68.
8778	G	53.	63.	45.	67.	63.	66.	62.	55.	62.
8784	G	53.	71.	18.	59.	63.	60.	64.	52.	62.
8790	G	58.	63.	25.	75.	69.	71.	66.	58.	67.
8824	G	59.	52.	52.	68.	60.	65.	61.	60.	65.
8828	G	66.	63.	53.	65.	65.	65.	60.	64.	64.
8830	G	77.	70.	56.	72.	70.	72.	75.	69.	74.
8833	G	54.	62.	55.	70.	65.	69.	73.	59.	71.
8837	G	63.	68.	61.	75.	77.	70.	71.	69.	72.
8838	G	59.	62.	53.	69.	64.	64.	65.	61.	63.
8845	G	58.	54.	42.	73.	68.	54.	68.	58.	65.
8846	G	59.	64.	63.	67.	64.	67.	71.	69.	69.
8855	G	53.	61.	66.	66.	64.	65.	63.	64.	64.
8863	G	63.	63.	57.	66.	63.	66.	68.	63.	65.
8864	G	64.	57.	59.	70.	63.	67.	72.	56.	69.
8868	G	71.	56.	61.	72.	68.	65.	64.	66.	68.
8874	G	76.	65.	69.	83.	77.	78.	75.	73.	77.
8875	G	67.	60.	51.	58.	58.	56.	63.	59.	62.
8878	G	64.	63.	77.	67.	66.	60.	68.	68.	66.
8928	G	68.	57.	58.	59.	60.	70.	56.	63.	63.
8933	G	45.	56.	54.	69.	67.	77.	69.	61.	69.
8936	G	58.	62.	45.	65.	68.	67.	66.	60.	66.
8937	NG	53.	60.	66.	57.	60.	62.	64.	60.	62.
MEAN		61.	61.	53.	68.	66.	67.	67.	62.	67.
S.D.		7.6	5.9	13.2	5.6	4.6	5.5	4.9	5.0	3.9
N		24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.7

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 20
SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/KG/DAY]

PREGNANCY STATUS	DAY 1-21	
DAMS FROM GROUP 5:	500 PPM	
8735	G	65. SCHEDULED NECROPSY DAY 21
8763	G	66. SCHEDULED NECROPSY DAY 21
8775	G	65. SCHEDULED NECROPSY DAY 21
8778	G	63. SCHEDULED NECROPSY DAY 21
8784	G	60. SCHEDULED NECROPSY DAY 21
8790	G	65. SCHEDULED NECROPSY DAY 21
8824	G	63. SCHEDULED NECROPSY DAY 21
8828	G	65. SCHEDULED NECROPSY DAY 21
8830	G	72. SCHEDULED NECROPSY DAY 21
8833	G	66. SCHEDULED NECROPSY DAY 21
8837	G	70. SCHEDULED NECROPSY DAY 21
8838	G	64. SCHEDULED NECROPSY DAY 21
8845	G	63. SCHEDULED NECROPSY DAY 21
8846	G	66. SCHEDULED NECROPSY DAY 21
8855	G	65. SCHEDULED NECROPSY DAY 21
8863	G	66. SCHEDULED NECROPSY DAY 21
8864	G	64. SCHEDULED NECROPSY DAY 21
8868	G	66. SCHEDULED NECROPSY DAY 21
8874	G	77. SCHEDULED NECROPSY DAY 21
8875	G	61. SCHEDULED NECROPSY DAY 21
8878	G	66. SCHEDULED NECROPSY DAY 21
8928	G	61. SCHEDULED NECROPSY DAY 21
8933	G	67. SCHEDULED NECROPSY DAY 21
8936	G	64. SCHEDULED NECROPSY DAY 21
8937	NG	58. SCHEDULED NECROPSY DAY 21
MEAN		65.
S.D.		3.6
N		24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.7

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 21
SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY 0- 1	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 6: 1000 PPM										
8739	G	63.	54.	61.	48.	68.	59.	55.	65.	78.
8760	G	69.	63.	71.	63.	73.	NA	81.	73.	75.
8769	G	59.	82.	69.	76.	59.	70.	73.	57.	72.
8770	G	61.	76.	67.	51.	69.	68.	64.	77.	58.
8771	G	71.	77.	68.	67.	63.	66.	64.	78.	69.
8785	G	55.	75.	66.	55.	68.	61.	63.	63.	74.
8793	G	50.	63.	67.	73.	60.	70.	66.	65.	70.
8795	G	75.	65.	57.	53.	83.	51.	66.	75.	77.
8799	G	54.	77.	68.	56.	75.	58.	59.	73.	70.
8804	G	46.	74.	73.	57.	53.	69.	71.	64.	70.
8815	G	71.	50.	98.	78.	62.	78.	70.	69.	74.
8819	G	66.	58.	76.	63.	63.	72.	64.	72.	56.
8821	G	63.	75.	59.	62.	68.	57.	62.	68.	67.
8829	G	78.	76.	68.	82.	77.	76.	70.	91.	74.
8831	G	69.	68.	71.	62.	76.	57.	60.	69.	77.
8856	NG	53.	75.	73.	75.	74.	62.	75.	84.	71.
8860	G	50.	71.	62.	58.	75.	70.	53.	79.	63.
8861	G	63.	69.	64.	63.	52.	69.	68.	71.	72.
8865	G	58.	64.	64.	62.	81.	72.	78.	79.	75.
8870	G	58.	79.	67.	73.	66.	65.	80.	72.	70.
8872	G	47.	65.	78.	83.	81.	73.	86.	71.	67.
8885	G	60.	59.	62.	69.	57.	75.	66.	76.	70.
8888	G	66.	61.	73.	57.	81.	54.	69.	61.	88.
8896	G	54.	80.	74.	69.	64.	74.	73.	71.	77.
8917	G	66.	73.	63.	69.	69.	71.	63.	72.	71.
MEAN		61.	69.	69.	65.	68.	67.	68.	71.	71.
S.D.		8.6	8.7	8.2	9.6	9.0	7.6	8.0	7.1	6.6
N		24	24	24	24	24	23	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 4.7

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 22

SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY 9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 6: 1000 PPM										
8739	G	55.	65.	80.	75.	66.	59.	74.	69.	66.
8760	G	80.	65.	64.	76.	59.	65.	85.	67.	76.
8769	G	81.	68.	66.	67.	93.	74.	75.	76.	67.
8770	G	60.	66.	78.	63.	66.	73.	64.	76.	62.
8771	G	64.	76.	65.	67.	63.	74.	72.	69.	75.
8785	G	66.	61.	63.	54.	69.	67.	54.	70.	67.
8793	G	63.	71.	51.	73.	59.	73.	71.	61.	67.
8795	G	75.	69.	62.	64.	60.	74.	66.	69.	71.
8799	G	54.	71.	59.	65.	57.	69.	73.	73.	58.
8804	G	81.	50.	65.	63.	74.	63.	65.	64.	56.
8815	G	80.	65.	70.	71.	66.	78.	70.	63.	68.
8819	G	77.	53.	59.	71.	60.	68.	63.	69.	66.
8821	G	68.	61.	79.	67.	68.	69.	72.	63.	51.
8829	G	76.	71.	73.	65.	70.	75.	72.	76.	70.
8831	G	65.	66.	71.	78.	65.	70.	62.	84.	62.
8856	NG	70.	63.	50.	40.	70.	47.	64.	50.	44.
8860	G	66.	62.	61.	66.	70.	69.	70.	65.	78.
8861	G	64.	79.	58.	67.	63.	67.	63.	66.	64.
8865	G	73.	56.	79.	65.	72.	71.	69.	64.	68.
8870	G	72.	76.	72.	65.	70.	83.	64.	73.	72.
8872	G	63.	92.	71.	68.	64.	57.	65.	77.	76.
8885	G	72.	77.	65.	64.	70.	74.	69.	67.	64.
8888	G	61.	67.	78.	76.	70.	66.	62.	69.	70.
8896	G	72.	67.	56.	74.	57.	75.	65.	58.	64.
8917	G	56.	75.	75.	70.	73.	68.	69.	70.	69.
MEAN		69.	68.	68.	68.	67.	70.	68.	69.	67.
S.D.		8.4	9.0	8.2	5.4	7.5	5.8	6.1	5.9	6.4
N		24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.7

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 23

SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY 18-19	19-20	20-21	1- 6	6- 9	9-12	12-16	16-21	6-16
DAMS FROM GROUP 6: 1000 PPM										
8739	G	69.	55.	60.	56.	65.	68.	70.	63.	67.
8760	G	69.	59.	49.	66.	76.	69.	71.	64.	72.
8769	G	73.	64.	53.	72.	69.	72.	76.	67.	74.
8770	G	63.	73.	62.	66.	66.	69.	67.	68.	68.
8771	G	63.	61.	44.	67.	70.	70.	68.	61.	69.
8785	G	72.	57.	57.	66.	66.	64.	62.	64.	65.
8793	G	63.	61.	55.	65.	68.	62.	70.	60.	67.
8795	G	63.	53.	63.	60.	72.	70.	65.	63.	69.
8799	G	59.	65.	44.	68.	68.	60.	66.	59.	67.
8804	G	61.	68.	51.	65.	67.	66.	67.	61.	65.
8815	G	62.	61.	52.	74.	72.	71.	71.	62.	73.
8819	G	63.	58.	64.	67.	63.	63.	66.	63.	66.
8821	G	49.	55.	59.	66.	65.	70.	70.	56.	69.
8829	G	62.	61.	51.	74.	80.	75.	72.	64.	74.
8831	G	69.	63.	51.	66.	69.	67.	70.	66.	69.
8856	NG	35.	59.	58.	72.	76.	60.	57.	48.	64.
8860	G	63.	63.	64.	69.	65.	62.	69.	65.	67.
8861	G	68.	55.	48.	63.	70.	66.	65.	60.	69.
8865	G	61.	67.	54.	69.	76.	69.	69.	62.	70.
8870	G	64.	56.	56.	70.	75.	73.	71.	65.	72.
8872	G	73.	59.	62.	77.	74.	77.	64.	70.	70.
8885	G	70.	61.	59.	65.	72.	70.	68.	64.	70.
8888	G	61.	59.	53.	63.	71.	70.	70.	61.	69.
8896	G	50.	16.	37.	73.	75.	64.	70.	45.	70.
8917	G	71.	60.	53.	70.	69.	68.	71.	63.	70.
MEAN		64.	59.	54.	67.	70.	68.	69.	62.	69.
S.D.		6.2	10.2	6.9	4.7	4.3	4.2	3.0	4.8	2.5
N		24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.7

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 24
SPONSOR:HSIA INDIVIDUAL FOOD CONSUMPTION DURING GESTATION [G/KG/DAY]

PREGNANCY STATUS	DAY 1-21	
DAMS FROM GROUP 6:	1000 PPM	
8739	G	65. SCHEDULED NECROPSY DAY 21
8760	G	70. SCHEDULED NECROPSY DAY 21
8769	G	71. SCHEDULED NECROPSY DAY 21
8770	G	66. SCHEDULED NECROPSY DAY 21
8771	G	67. SCHEDULED NECROPSY DAY 21
8785	G	63. SCHEDULED NECROPSY DAY 21
8793	G	66. SCHEDULED NECROPSY DAY 21
8795	G	67. SCHEDULED NECROPSY DAY 21
8799	G	64. SCHEDULED NECROPSY DAY 21
8804	G	64. SCHEDULED NECROPSY DAY 21
8815	G	67. SCHEDULED NECROPSY DAY 21
8819	G	63. SCHEDULED NECROPSY DAY 21
8821	G	63. SCHEDULED NECROPSY DAY 21
8829	G	71. SCHEDULED NECROPSY DAY 21
8831	G	66. SCHEDULED NECROPSY DAY 21
8856	NG	63. SCHEDULED NECROPSY DAY 21
8860	G	67. SCHEDULED NECROPSY DAY 21
8861	G	63. SCHEDULED NECROPSY DAY 21
8865	G	68. SCHEDULED NECROPSY DAY 21
8870	G	70. SCHEDULED NECROPSY DAY 21
8872	G	71. SCHEDULED NECROPSY DAY 21
8885	G	68. SCHEDULED NECROPSY DAY 21
8888	G	66. SCHEDULED NECROPSY DAY 21
8896	G	63. SCHEDULED NECROPSY DAY 21
8917	G	68. SCHEDULED NECROPSY DAY 21
MEAN		67.
S.D.		2.7
N		24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

PGFWv4.11
11/02/2018

TABLE 4.8

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 1
SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 0- 1	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 1: 0 PPM										
8738	G	25.	31.	33.	33.	37.	35.	34.	38.	32.
8751	G	20.	29.	29.	23.	30.	29.	28.	32.	40.
8755	G	24.	34.	32.	33.	35.	31.	32.	33.	36.
8766	G	25.	30.	33.	29.	32.	28.	28.	32.	31.
8768	G	23.	18.	22.	25.	24.	24.	33.	30.	26.
8772	G	NA	27.	22.	31.	29.	27.	27.	24.	29.
8776	G	23.	31.	31.	32.	28.	33.	31.	32.	34.
8777	G	29.	34.	34.	35.	38.	34.	28.	39.	38.
8779	G	24.	28.	28.	28.	33.	30.	29.	28.	34.
8791	G	34.	31.	30.	22.	30.	30.	27.	25.	31.
8798	G	24.	26.	24.	23.	NA	21.	28.	25.	25.
8803	G	26.	32.	35.	36.	32.	35.	40.	41.	45.
8812	G	24.	30.	31.	32.	30.	32.	29.	30.	29.
8817	G	27.	26.	23.	26.	28.	29.	26.	30.	33.
8820	G	20.	29.	35.	32.	35.	30.	30.	29.	34.
8825	G	27.	31.	29.	29.	30.	34.	31.	36.	35.
8836	G	35.	33.	32.	39.	32.	38.	39.	45.	32.
8843	G	31.	33.	36.	33.	37.	38.	34.	38.	38.
8852	NG	34.	29.	41.	33.	35.	42.	NA	38.	33.
8858	G	42.	27.	27.	31.	29.	31.	31.	33.	34.
8871	G	32.	31.	31.	31.	35.	32.	30.	38.	35.
8883	G	28.	36.	36.	39.	36.	34.	35.	36.	42.
8886	G	32.	NA	43.	35.	32.	36.	35.	37.	37.
8894	G	25.	38.	36.	34.	35.	36.	35.	38.	50.
8926	G	25.	31.	33.	30.	30.	26.	31.	33.	32.
MEAN		27.	30.	31.	31.	32.	31.	31.	33.	35.
S.D.		5.2	4.0	5.0	4.6	3.5	4.3	3.7	5.3	5.7
N		23	23	24	24	23	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 4.8

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 2

SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 1: 0 PPM										
8738	G	41.	36.	37.	35.	34.	45.	43.	46.	46.
8751	G	30.	34.	28.	31.	33.	33.	41.	35.	51.
8755	G	35.	40.	34.	39.	36.	41.	47.	50.	52.
8766	G	34.	34.	35.	40.	34.	39.	42.	37.	46.
8768	G	33.	33.	37.	39.	35.	35.	43.	45.	49.
8772	G	28.	30.	27.	32.	31.	33.	37.	43.	43.
8776	G	30.	30.	35.	35.	34.	35.	40.	43.	43.
8777	G	41.	41.	40.	38.	36.	44.	46.	52.	53.
8779	G	30.	32.	38.	42.	35.	43.	48.	46.	52.
8791	G	27.	33.	31.	36.	32.	37.	42.	40.	44.
8798	G	29.	27.	26.	29.	28.	33.	34.	33.	45.
8803	G	39.	50.	34.	45.	43.	49.	57.	57.	56.
8812	G	33.	33.	29.	NA	34.	40.	44.	45.	43.
8817	G	31.	38.	35.	36.	41.	40.	42.	41.	48.
8820	G	34.	34.	37.	41.	38.	37.	45.	36.	45.
8825	G	34.	32.	34.	35.	41.	67.	46.	52.	60.
8836	G	34.	41.	41.	42.	42.	49.	44.	52.	51.
8843	G	41.	39.	40.	44.	43.	42.	48.	47.	56.
8852	NG	31.	38.	39.	36.	31.	28.	41.	32.	31.
8858	G	33.	40.	34.	34.	35.	37.	42.	46.	52.
8871	G	38.	38.	41.	37.	37.	41.	43.	45.	45.
8883	G	36.	47.	37.	43.	39.	40.	49.	50.	43.
8886	G	41.	37.	45.	46.	42.	47.	50.	55.	58.
8894	G	41.	39.	42.	46.	48.	54.	51.	58.	50.
8926	G	61.	31.	41.	41.	42.	41.	42.	41.	45.
MEAN		36.	36.	36.	39.	37.	42.	44.	46.	49.
S.D.		7.0	5.4	5.0	4.8	4.7	7.6	4.8	6.8	5.1
N		24	24	24	23	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 4.8

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 3

SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 18-19	19-20	20-21	1- 6	6- 9	9-12	12-16	16-21	6-16
DAMS FROM GROUP 1: 0 PPM										
8738	G	47.	43.	34.	34.	35.	38.	39.	43.	38.
8751	G	40.	36.	38.	28.	33.	31.	35.	40.	33.
8755	G	46.	46.	46.	33.	34.	36.	41.	48.	37.
8766	G	38.	36.	45.	30.	30.	34.	39.	40.	35.
8768	G	47.	44.	42.	23.	30.	34.	38.	45.	34.
8772	G	39.	39.	41.	27.	27.	28.	33.	41.	30.
8776	G	47.	47.	42.	31.	32.	32.	36.	44.	34.
8777	G	33.	50.	44.	35.	35.	41.	41.	46.	39.
8779	G	53.	50.	50.	29.	30.	33.	42.	50.	36.
8791	G	45.	41.	37.	29.	28.	30.	37.	41.	32.
8798	G	37.	38.	42.	24.	26.	27.	31.	39.	28.
8803	G	56.	56.	55.	34.	42.	41.	49.	56.	44.
8812	G	37.	39.	32.	31.	29.	32.	39.	39.	33.
8817	G	45.	46.	42.	26.	30.	35.	40.	44.	35.
8820	G	47.	40.	40.	32.	31.	35.	40.	42.	36.
8825	G	54.	49.	54.	31.	34.	33.	47.	54.	39.
8836	G	48.	47.	42.	35.	39.	39.	44.	48.	41.
8843	G	43.	49.	42.	35.	37.	40.	44.	47.	41.
8852	NG	25.	37.	22.	36.	36.	36.	34.	29.	35.
8858	G	49.	46.	41.	29.	33.	36.	37.	47.	35.
8871	G	53.	44.	41.	32.	34.	39.	40.	46.	38.
8883	G	50.	49.	39.	36.	38.	40.	43.	46.	40.
8886	G	48.	50.	46.	37.	36.	41.	46.	51.	42.
8894	G	52.	49.	47.	36.	41.	41.	50.	51.	44.
8926	G	41.	43.	45.	30.	32.	44.	42.	43.	40.
MEAN		46.	45.	43.	31.	33.	36.	41.	45.	37.
S.D.		6.1	5.1	5.4	3.8	4.2	4.6	4.7	4.6	4.2
N		24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.8

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 4
SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 1-21
DAMS FROM GROUP 1:		0 PPM
8738	G	38. SCHEDULED NECROPSY DAY 21
8751	G	34. SCHEDULED NECROPSY DAY 21
8755	G	39. SCHEDULED NECROPSY DAY 21
8766	G	35. SCHEDULED NECROPSY DAY 21
8768	G	34. SCHEDULED NECROPSY DAY 21
8772	G	32. SCHEDULED NECROPSY DAY 21
8776	G	36. SCHEDULED NECROPSY DAY 21
8777	G	40. SCHEDULED NECROPSY DAY 21
8779	G	38. SCHEDULED NECROPSY DAY 21
8791	G	34. SCHEDULED NECROPSY DAY 21
8798	G	30. SCHEDULED NECROPSY DAY 21
8803	G	45. SCHEDULED NECROPSY DAY 21
8812	G	34. SCHEDULED NECROPSY DAY 21
8817	G	35. SCHEDULED NECROPSY DAY 21
8820	G	36. SCHEDULED NECROPSY DAY 21
8825	G	41. SCHEDULED NECROPSY DAY 21
8836	G	41. SCHEDULED NECROPSY DAY 21
8843	G	41. SCHEDULED NECROPSY DAY 21
8852	NG	34. SCHEDULED NECROPSY DAY 21
8858	G	37. SCHEDULED NECROPSY DAY 21
8871	G	38. SCHEDULED NECROPSY DAY 21
8883	G	41. SCHEDULED NECROPSY DAY 21
8886	G	43. SCHEDULED NECROPSY DAY 21
8894	G	44. SCHEDULED NECROPSY DAY 21
8926	G	38. SCHEDULED NECROPSY DAY 21
MEAN		38.
S.D.		3.8
N		24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.8

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 5
SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 0- 1	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 2: 15 MG/KG RA										
8740	G	25.	27.	31.	28.	33.	31.	30.	27.	25.
8743	G	27.	30.	32.	30.	31.	33.	21.	30.	26.
8756	G	26.	24.	22.	29.	30.	26.	18.	26.	26.
8757	G	29.	41.	48.	41.	39.	37.	29.	27.	35.
8780	G	22.	20.	35.	26.	34.	36.	27.	25.	34.
8789	G	27.	30.	31.	29.	32.	37.	30.	41.	38.
8800	G	27.	29.	27.	28.	30.	28.	26.	52.	31.
8801	G	36.	33.	36.	39.	41.	36.	35.	30.	35.
8802	G	22.	27.	32.	29.	27.	29.	24.	20.	23.
8808	G	23.	29.	28.	35.	32.	31.	41.	30.	25.
8809	G	34.	35.	40.	48.	44.	42.	31.	36.	37.
8810	G	NA	27.	28.	37.	33.	31.	31.	27.	35.
8818	G	26.	33.	34.	35.	38.	38.	26.	40.	34.
8822	G	28.	40.	34.	36.	35.	35.	25.	30.	22.
8827	G	22.	30.	29.	28.	32.	33.	26.	30.	29.
8840	G	31.	32.	38.	34.	32.	39.	30.	30.	33.
8842	G	34.	38.	44.	46.	39.	52.	37.	30.	30.
8847	G	28.	29.	29.	32.	38.	37.	30.	40.	36.
8850	G	27.	30.	33.	38.	32.	32.	29.	29.	25.
8851	G	26.	29.	33.	31.	33.	33.	28.	40.	33.
8854	G	22.	33.	38.	36.	32.	44.	28.	29.	27.
8900	G	35.	33.	34.	31.	29.	26.	19.	28.	30.
8901	G	28.	32.	30.	12.	33.	35.	26.	28.	24.
8930	G	31.	33.	30.	34.	33.	34.	28.	27.	31.
8931	G	26.	31.	31.	34.	29.	29.	25.	36.	34.
MEAN		28.	31.	33.	33.	34.	35.	28.	32.	30.
S.D.		4.2	4.6	5.5	7.1	4.1	5.8	5.1	6.8	4.8
N		24	25	25	25	25	25	25	25	25

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 4.8

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 6

SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 2: 15 MG/KG RA										
8740	G	31.	26.	30.	27.	33.	33.	35.	42.	48.
8743	G	36.	28.	38.	33.	34.	42.	37.	45.	45.
8756	G	31.	34.	26.	25.	29.	29.	36.	41.	46.
8757	G	32.	47.	37.	41.	41.	50.	48.	53.	56.
8780	G	27.	50.	24.	34.	36.	46.	52.	58.	53.
8789	G	37.	38.	38.	46.	46.	69.	63.	47.	64.
8800	G	27.	32.	37.	48.	25.	70.	46.	39.	49.
8801	G	32.	40.	43.	28.	50.	36.	36.	48.	50.
8802	G	26.	33.	31.	32.	28.	46.	38.	39.	39.
8808	G	35.	28.	54.	35.	34.	35.	38.	55.	49.
8809	G	47.	47.	63.	45.	70.	61.	60.	68.	70.
8810	G	30.	34.	46.	32.	44.	41.	41.	52.	49.
8818	G	39.	36.	40.	42.	43.	44.	49.	53.	58.
8822	G	34.	35.	32.	55.	37.	36.	44.	40.	55.
8827	G	30.	34.	39.	35.	32.	37.	37.	45.	44.
8840	G	34.	43.	38.	41.	38.	37.	43.	52.	53.
8842	G	25.	53.	23.	40.	33.	39.	52.	57.	59.
8847	G	40.	34.	37.	47.	24.	53.	49.	54.	49.
8850	G	32.	26.	38.	37.	38.	34.	38.	49.	NA
8851	G	39.	39.	42.	49.	49.	47.	53.	62.	54.
8854	G	34.	39.	49.	36.	37.	33.	35.	32.	39.
8900	G	34.	39.	41.	47.	50.	48.	56.	66.	61.
8901	G	39.	31.	34.	28.	41.	38.	44.	42.	84.
8930	G	30.	36.	30.	26.	31.	32.	34.	38.	40.
8931	G	32.	39.	30.	51.	37.	40.	44.	NA	NA
MEAN		33.	37.	38.	38.	38.	43.	44.	49.	53.
S.D.		5.0	7.1	9.1	8.6	9.8	10.8	8.3	9.2	10.4
N		25	25	25	25	25	25	25	24	23

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 4.8

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 7

SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 18-19	19-20	20-21	1- 6	6- 9	9-12	12-16	16-21	6-16
DAMS FROM GROUP 2: 15 MG/KG RA										
8740	G	44.	40.	40.	30.	27.	29.	32.	43.	30.
8743	G	42.	45.	38.	31.	26.	34.	37.	43.	33.
8756	G	57.	46.	41.	26.	23.	30.	30.	46.	28.
8757	G	66.	57.	49.	41.	30.	39.	45.	56.	39.
8780	G	99.	54.	53.	30.	29.	34.	42.	63.	36.
8789	G	53.	61.	44.	32.	36.	38.	56.	54.	45.
8800	G	46.	46.	39.	28.	36.	32.	47.	44.	39.
8801	G	47.	50.	40.	37.	33.	38.	38.	47.	37.
8802	G	41.	35.	27.	29.	22.	30.	36.	36.	30.
8808	G	48.	57.	45.	31.	32.	39.	36.	51.	36.
8809	G	73.	64.	58.	42.	35.	52.	59.	67.	50.
8810	G	44.	NA	35.	31.	31.	37.	40.	45.	36.
8818	G	63.	65.	57.	36.	33.	38.	45.	59.	39.
8822	G	49.	56.	34.	36.	26.	34.	43.	47.	35.
8827	G	41.	46.	41.	30.	28.	34.	35.	43.	33.
8840	G	56.	49.	39.	35.	31.	38.	40.	50.	37.
8842	G	69.	NA	51.	44.	32.	34.	41.	59.	36.
8847	G	50.	50.	48.	33.	35.	37.	43.	50.	39.
8850	G	47.	40.	41.	33.	28.	32.	37.	44.	33.
8851	G	51.	50.	41.	32.	34.	40.	50.	52.	42.
8854	G	36.	33.	30.	37.	28.	41.	35.	34.	35.
8900	G	68.	59.	54.	31.	26.	38.	50.	62.	39.
8901	G	51.	41.	40.	28.	26.	35.	38.	52.	33.
8930	G	43.	39.	35.	33.	29.	32.	31.	39.	31.
8931	G	62.	61.	63.	31.	32.	34.	43.	62.	37.
MEAN		54.	50.	43.	33.	30.	36.	41.	50.	36.
S.D.		13.7	9.3	8.9	4.5	3.9	4.7	7.3	8.7	4.8
N		25	23	25	25	25	25	25	25	25

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 4.8

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 8
SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

PREGNANCY STATUS	DAY 1-21	
DAMS FROM GROUP 2:	15 MG/KG RA	
8740	G	33. SCHEDULED NECROPSY DAY 21
8743	G	35. SCHEDULED NECROPSY DAY 21
8756	G	32. SCHEDULED NECROPSY DAY 21
8757	G	44. SCHEDULED NECROPSY DAY 21
8780	G	41. SCHEDULED NECROPSY DAY 21
8789	G	44. SCHEDULED NECROPSY DAY 21
8800	G	38. SCHEDULED NECROPSY DAY 21
8801	G	39. SCHEDULED NECROPSY DAY 21
8802	G	31. SCHEDULED NECROPSY DAY 21
8808	G	38. SCHEDULED NECROPSY DAY 21
8809	G	52. SCHEDULED NECROPSY DAY 21
8810	G	37. SCHEDULED NECROPSY DAY 21
8818	G	43. SCHEDULED NECROPSY DAY 21
8822	G	38. SCHEDULED NECROPSY DAY 21
8827	G	35. SCHEDULED NECROPSY DAY 21
8840	G	40. SCHEDULED NECROPSY DAY 21
8842	G	43. SCHEDULED NECROPSY DAY 21
8847	G	40. SCHEDULED NECROPSY DAY 21
8850	G	35. SCHEDULED NECROPSY DAY 21
8851	G	42. SCHEDULED NECROPSY DAY 21
8854	G	35. SCHEDULED NECROPSY DAY 21
8900	G	43. SCHEDULED NECROPSY DAY 21
8901	G	37. SCHEDULED NECROPSY DAY 21
8930	G	33. SCHEDULED NECROPSY DAY 21
8931	G	39. SCHEDULED NECROPSY DAY 21
MEAN		39.
S.D.		4.7
N		25

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.8

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 9

SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 0- 1	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 3: 0.25 PPM										
8747	G	28.	25.	38.	32.	30.	34.	35.	36.	43.
8758	G	21.	30.	32.	30.	27.	26.	33.	29.	31.
8764	G	28.	33.	34.	29.	38.	37.	40.	38.	39.
8767	G	37.	36.	36.	36.	32.	38.	35.	36.	39.
8773	G	31.	23.	47.	42.	47.	42.	35.	40.	44.
8774	G	26.	29.	32.	27.	31.	29.	30.	31.	32.
8807	G	28.	26.	30.	26.	27.	33.	27.	29.	29.
8814	G	20.	25.	23.	26.	27.	22.	26.	25.	25.
8826	G	27.	27.	32.	34.	37.	33.	35.	31.	35.
8834	G	34.	34.	34.	40.	39.	37.	31.	37.	39.
8835	G	35.	37.	41.	35.	40.	36.	39.	37.	42.
8839	G	28.	34.	32.	33.	34.	30.	31.	28.	41.
8849	G	24.	27.	30.	27.	22.	25.	29.	29.	28.
8853	G	37.	31.	41.	42.	38.	40.	34.	36.	44.
8859	G	34.	37.	31.	38.	34.	39.	39.	40.	39.
8869	G	24.	28.	30.	31.	32.	34.	33.	34.	34.
8879	G	25.	30.	33.	36.	31.	33.	29.	33.	36.
8889	G	26.	33.	34.	27.	30.	34.	31.	34.	36.
8891	G	20.	24.	24.	27.	29.	22.	26.	26.	23.
8893	G	25.	30.	32.	31.	29.	32.	33.	27.	40.
8897	G	23.	26.	23.	29.	27.	24.	21.	29.	25.
8908	G	27.	31.	35.	32.	33.	36.	34.	33.	33.
8910	G	29.	26.	24.	39.	25.	26.	25.	29.	25.
8913	NG	25.	30.	29.	32.	29.	32.	35.	28.	35.
8916	NG	20.	28.	30.	24.	26.	23.	32.	34.	26.
MEAN		28.	30.	33.	33.	32.	32.	32.	32.	35.
S.D.		5.0	4.2	5.9	5.2	5.7	5.8	4.8	4.5	6.6
N		23	23	23	23	23	23	23	23	23

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.8

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 10

SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 3: 0.25 PPM										
8747	G	40.	40.	40.	45.	55.	52.	55.	55.	53.
8758	G	32.	41.	39.	38.	40.	44.	51.	49.	53.
8764	G	44.	39.	45.	42.	47.	47.	44.	56.	61.
8767	G	36.	39.	43.	46.	48.	54.	54.	55.	53.
8773	G	47.	44.	30.	38.	35.	31.	29.	33.	32.
8774	G	36.	41.	39.	39.	36.	38.	40.	41.	48.
8807	G	29.	33.	34.	41.	43.	42.	46.	52.	49.
8814	G	28.	30.	32.	29.	36.	36.	42.	42.	42.
8826	G	33.	33.	27.	38.	40.	40.	38.	48.	46.
8834	G	40.	42.	48.	46.	40.	48.	50.	60.	62.
8835	G	42.	47.	45.	52.	45.	49.	56.	61.	60.
8839	G	32.	38.	37.	38.	39.	46.	48.	50.	52.
8849	G	31.	30.	32.	32.	34.	44.	47.	41.	47.
8853	G	38.	42.	44.	44.	45.	40.	57.	57.	60.
8859	G	32.	39.	37.	38.	40.	38.	46.	47.	53.
8869	G	38.	37.	41.	38.	46.	44.	50.	48.	51.
8879	G	39.	NA	39.	41.	41.	50.	44.	NA	48.
8889	G	38.	32.	39.	35.	40.	42.	43.	48.	47.
8891	G	28.	31.	27.	33.	33.	34.	42.	41.	45.
8893	G	30.	39.	38.	38.	37.	39.	45.	41.	48.
8897	G	29.	31.	32.	30.	29.	31.	36.	37.	48.
8908	G	38.	36.	43.	37.	39.	42.	42.	45.	45.
8910	G	24.	28.	20.	33.	32.	35.	38.	42.	54.
8913	NG	38.	31.	33.	33.	35.	34.	31.	36.	33.
8916	NG	33.	19.	35.	33.	34.	33.	29.	35.	33.
MEAN		35.	37.	37.	39.	40.	42.	45.	48.	50.
S.D.		5.8	5.2	6.9	5.5	5.9	6.3	6.9	7.6	6.8
N		23	22	23	23	23	23	23	22	23

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 4.8

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 11
SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 18-19	19-20	20-21	1- 6	6- 9	9-12	12-16	16-21	6-16
DAMS FROM GROUP 3: 0.25 PPM										
8747	G	55.	49.	47.	32.	38.	40.	52.	52.	44.
8758	G	49.	42.	NA	29.	31.	37.	43.	48.	38.
8764	G	56.	57.	42.	34.	39.	43.	45.	54.	43.
8767	G	54.	50.	40.	36.	37.	39.	51.	50.	43.
8773	G	30.	30.	33.	40.	40.	40.	33.	32.	37.
8774	G	44.	45.	41.	30.	31.	39.	38.	44.	36.
8807	G	49.	44.	57.	28.	28.	32.	43.	50.	35.
8814	G	48.	45.	41.	25.	25.	30.	36.	44.	31.
8826	G	43.	40.	NA	33.	34.	31.	39.	44.	35.
8834	G	54.	53.	50.	37.	36.	43.	46.	56.	42.
8835	G	57.	53.	46.	38.	39.	45.	51.	55.	45.
8839	G	58.	50.	49.	33.	33.	36.	43.	52.	38.
8849	G	47.	43.	39.	26.	29.	31.	39.	43.	34.
8853	G	58.	54.	55.	38.	38.	41.	47.	57.	42.
8859	G	45.	47.	48.	36.	39.	36.	41.	48.	39.
8869	G	46.	49.	62.	31.	34.	39.	45.	51.	40.
8879	G	46.	39.	45.	33.	33.	39.	44.	45.	39.
8889	G	46.	46.	41.	32.	34.	36.	40.	46.	37.
8891	G	40.	39.	40.	25.	25.	29.	36.	41.	30.
8893	G	40.	47.	45.	31.	33.	36.	40.	44.	37.
8897	G	40.	40.	47.	26.	25.	31.	32.	42.	29.
8908	G	48.	40.	42.	33.	33.	39.	40.	44.	38.
8910	G	39.	32.	39.	28.	26.	24.	35.	41.	29.
8913	NG	32.	28.	28.	30.	33.	34.	33.	31.	33.
8916	NG	34.	28.	26.	26.	31.	29.	32.	31.	31.
MEAN		47.	45.	45.	32.	33.	36.	42.	47.	37.
S.D.		7.1	6.7	6.8	4.4	4.9	5.2	5.5	5.9	4.7
N		23	23	21	23	23	23	23	23	23

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 4.8

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 12
SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

PREGNANCY STATUS	DAY 1-21	
DAMS FROM GROUP 3:	0.25 PPM	
8747	G	43. SCHEDULED NECROPSY DAY 21
8758	G	38. SCHEDULED NECROPSY DAY 21
8764	G	43. SCHEDULED NECROPSY DAY 21
8767	G	43. SCHEDULED NECROPSY DAY 21
8773	G	37. SCHEDULED NECROPSY DAY 21
8774	G	36. SCHEDULED NECROPSY DAY 21
8807	G	37. SCHEDULED NECROPSY DAY 21
8814	G	33. SCHEDULED NECROPSY DAY 21
8826	G	36. SCHEDULED NECROPSY DAY 21
8834	G	44. SCHEDULED NECROPSY DAY 21
8835	G	46. SCHEDULED NECROPSY DAY 21
8839	G	40. SCHEDULED NECROPSY DAY 21
8849	G	34. SCHEDULED NECROPSY DAY 21
8853	G	45. SCHEDULED NECROPSY DAY 21
8859	G	40. SCHEDULED NECROPSY DAY 21
8869	G	40. SCHEDULED NECROPSY DAY 21
8879	G	39. SCHEDULED NECROPSY DAY 21
8889	G	38. SCHEDULED NECROPSY DAY 21
8891	G	32. SCHEDULED NECROPSY DAY 21
8893	G	37. SCHEDULED NECROPSY DAY 21
8897	G	32. SCHEDULED NECROPSY DAY 21
8908	G	38. SCHEDULED NECROPSY DAY 21
8910	G	32. SCHEDULED NECROPSY DAY 21
8913	NG	32. SCHEDULED NECROPSY DAY 21
8916	NG	30. SCHEDULED NECROPSY DAY 21
MEAN		38.
S.D.		4.2
N		23

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.8

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 13
SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 0- 1	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 4: 1.5 PPM										
8741	G	26.	29.	31.	26.	26.	30.	27.	29.	32.
8765	G	24.	29.	29.	28.	31.	35.	28.	31.	37.
8783	G	23.	23.	34.	28.	28.	24.	32.	28.	32.
8786	G	29.	32.	34.	37.	36.	37.	34.	39.	35.
8788	G	28.	27.	23.	30.	30.	30.	35.	29.	38.
8792	G	35.	35.	34.	36.	48.	36.	45.	38.	49.
8805	G	26.	30.	26.	33.	29.	31.	36.	31.	34.
8806	G	32.	31.	30.	30.	35.	35.	31.	33.	38.
8811	G	28.	36.	32.	38.	30.	33.	37.	34.	34.
8813	G	24.	26.	21.	22.	25.	26.	NA	27.	25.
8823	G	27.	35.	33.	37.	38.	37.	34.	35.	42.
8844	G	23.	22.	33.	28.	29.	28.	28.	31.	31.
8848	G	26.	31.	30.	33.	35.	33.	39.	35.	42.
8857	G	27.	31.	29.	29.	33.	31.	32.	33.	35.
8867	G	24.	25.	24.	26.	25.	28.	26.	29.	27.
8873	G	23.	25.	28.	25.	30.	27.	27.	26.	24.
8876	G	15.	27.	29.	25.	23.	28.	28.	36.	33.
8881	G	17.	25.	24.	27.	24.	27.	27.	30.	28.
8884	NG	15.	18.	29.	25.	24.	24.	22.	31.	29.
8890	G	29.	35.	46.	47.	36.	36.	38.	37.	39.
8895	G	28.	39.	36.	41.	37.	36.	37.	44.	44.
8899	G	27.	27.	30.	27.	NA	23.	30.	27.	26.
8907	G	21.	29.	37.	27.	30.	31.	28.	33.	33.
8941	G	33.	32.	31.	36.	40.	39.	41.	39.	33.
8942	G	30.	37.	38.	36.	40.	40.	39.	43.	45.
MEAN		26.	30.	31.	31.	32.	32.	33.	33.	35.
S.D.		4.6	4.6	5.4	6.0	6.1	4.8	5.3	5.0	6.5
N		24	24	24	24	23	24	23	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 4.8

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 14

SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 4: 1.5 PPM										
8741	G	29.	33.	34.	41.	37.	39.	42.	42.	47.
8765	G	31.	35.	39.	39.	37.	40.	36.	49.	43.
8783	G	32.	28.	33.	32.	34.	39.	34.	36.	40.
8786	G	33.	46.	39.	40.	45.	45.	48.	51.	56.
8788	G	34.	39.	39.	38.	43.	36.	42.	49.	43.
8792	G	48.	35.	52.	55.	52.	46.	48.	62.	45.
8805	G	33.	31.	36.	32.	31.	36.	42.	41.	41.
8806	G	36.	35.	35.	37.	35.	39.	48.	47.	56.
8811	G	39.	37.	35.	33.	35.	35.	40.	46.	49.
8813	G	28.	33.	28.	30.	26.	32.	36.	34.	43.
8823	G	39.	39.	44.	40.	47.	46.	50.	62.	53.
8844	G	37.	37.	34.	35.	39.	36.	38.	46.	47.
8848	G	41.	43.	36.	43.	50.	50.	52.	60.	47.
8857	G	34.	35.	47.	38.	46.	44.	48.	38.	47.
8867	G	25.	30.	28.	26.	32.	30.	34.	35.	34.
8873	G	31.	32.	27.	32.	33.	32.	33.	39.	43.
8876	G	34.	29.	37.	38.	31.	40.	37.	47.	48.
8881	G	31.	30.	28.	37.	33.	30.	33.	36.	34.
8884	NG	30.	28.	22.	31.	26.	27.	18.	33.	22.
8890	G	39.	41.	39.	43.	41.	46.	48.	45.	54.
8895	G	46.	42.	39.	39.	42.	45.	41.	47.	47.
8899	G	33.	31.	31.	27.	33.	36.	39.	41.	45.
8907	G	37.	33.	31.	38.	43.	42.	45.	46.	53.
8941	G	37.	44.	46.	47.	48.	52.	48.	55.	51.
8942	G	41.	37.	43.	46.	51.	68.	59.	56.	51.
MEAN		35.	36.	37.	38.	39.	41.	43.	46.	47.
S.D.		5.4	5.0	6.5	6.5	7.3	8.3	6.9	8.3	5.9
N		24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.8

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 15

SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 18-19	19-20	20-21	1- 6	6- 9	9-12	12-16	16-21	6-16
DAMS FROM GROUP 4: 1.5 PPM										
8741	G	43.	43.	44.	28.	29.	32.	40.	44.	34.
8765	G	45.	44.	44.	30.	32.	35.	38.	45.	35.
8783	G	35.	34.	38.	27.	31.	31.	35.	37.	32.
8786	G	49.	51.	46.	35.	36.	39.	45.	51.	40.
8788	G	44.	52.	39.	28.	34.	37.	40.	45.	37.
8792	G	54.	63.	55.	38.	44.	45.	50.	56.	47.
8805	G	41.	36.	40.	30.	34.	33.	35.	40.	34.
8806	G	40.	42.	48.	32.	34.	35.	40.	47.	37.
8811	G	54.	50.	43.	34.	35.	37.	36.	48.	36.
8813	G	36.	39.	28.	24.	26.	30.	31.	36.	29.
8823	G	49.	45.	42.	36.	37.	41.	46.	50.	42.
8844	G	28.	46.	40.	28.	30.	36.	37.	41.	35.
8848	G	49.	46.	53.	32.	39.	40.	49.	51.	43.
8857	G	51.	53.	49.	31.	33.	39.	44.	48.	39.
8867	G	29.	31.	27.	26.	27.	28.	31.	31.	29.
8873	G	31.	39.	40.	27.	26.	30.	33.	38.	30.
8876	G	45.	45.	39.	26.	32.	33.	37.	45.	34.
8881	G	36.	32.	36.	25.	28.	30.	33.	35.	31.
8884	NG	25.	26.	16.	24.	27.	27.	26.	24.	26.
8890	G	49.	51.	43.	40.	38.	40.	45.	48.	41.
8895	G	46.	45.	45.	38.	42.	42.	42.	46.	42.
8899	G	38.	34.	33.	27.	28.	32.	34.	38.	31.
8907	G	40.	44.	47.	31.	31.	34.	42.	46.	36.
8941	G	53.	45.	45.	36.	38.	42.	49.	50.	44.
8942	G	45.	43.	52.	38.	42.	40.	56.	49.	47.
MEAN		43.	44.	42.	31.	34.	36.	40.	44.	37.
S.D.		7.6	7.5	7.0	4.7	5.2	4.7	6.6	6.1	5.4
N		24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.8

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 16
SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

PREGNANCY STATUS	DAY 1-21	
DAMS FROM GROUP 4:	1.5 PPM	
8741	G	35. SCHEDULED NECROPSY DAY 21
8765	G	37. SCHEDULED NECROPSY DAY 21
8783	G	32. SCHEDULED NECROPSY DAY 21
8786	G	42. SCHEDULED NECROPSY DAY 21
8788	G	37. SCHEDULED NECROPSY DAY 21
8792	G	47. SCHEDULED NECROPSY DAY 21
8805	G	35. SCHEDULED NECROPSY DAY 21
8806	G	38. SCHEDULED NECROPSY DAY 21
8811	G	39. SCHEDULED NECROPSY DAY 21
8813	G	30. SCHEDULED NECROPSY DAY 21
8823	G	42. SCHEDULED NECROPSY DAY 21
8844	G	35. SCHEDULED NECROPSY DAY 21
8848	G	42. SCHEDULED NECROPSY DAY 21
8857	G	39. SCHEDULED NECROPSY DAY 21
8867	G	29. SCHEDULED NECROPSY DAY 21
8873	G	31. SCHEDULED NECROPSY DAY 21
8876	G	35. SCHEDULED NECROPSY DAY 21
8881	G	30. SCHEDULED NECROPSY DAY 21
8884	NG	25. SCHEDULED NECROPSY DAY 21
8890	G	43. SCHEDULED NECROPSY DAY 21
8895	G	42. SCHEDULED NECROPSY DAY 21
8899	G	32. SCHEDULED NECROPSY DAY 21
8907	G	37. SCHEDULED NECROPSY DAY 21
8941	G	43. SCHEDULED NECROPSY DAY 21
8942	G	46. SCHEDULED NECROPSY DAY 21
MEAN		37.
S.D.		5.2
N		24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.8

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 17
SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 0- 1	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 5: 500 PPM										
8735	G	20.	23.	26.	27.	23.	27.	19.	27.	29.
8763	G	30.	31.	32.	28.	32.	26.	23.	26.	23.
8775	G	26.	33.	23.	30.	27.	30.	24.	29.	24.
8778	G	23.	28.	23.	21.	18.	21.	18.	23.	22.
8784	G	24.	22.	23.	27.	25.	22.	25.	24.	26.
8790	G	26.	23.	20.	24.	25.	19.	22.	28.	24.
8824	G	25.	28.	23.	29.	24.	25.	19.	26.	19.
8828	G	19.	NA	19.	20.	23.	17.	16.	20.	22.
8830	G	33.	38.	33.	34.	35.	32.	35.	38.	35.
8833	G	24.	28.	26.	24.	29.	23.	24.	26.	25.
8837	G	28.	33.	32.	30.	33.	29.	35.	30.	32.
8838	G	32.	32.	32.	28.	27.	28.	28.	28.	28.
8845	G	26.	31.	29.	30.	29.	34.	33.	35.	26.
8846	G	22.	24.	24.	23.	22.	22.	20.	23.	21.
8855	G	20.	26.	26.	27.	25.	24.	25.	27.	23.
8863	G	20.	24.	23.	26.	23.	19.	22.	23.	18.
8864	G	26.	24.	31.	27.	26.	26.	24.	26.	21.
8868	G	32.	26.	31.	27.	32.	25.	28.	21.	29.
8874	G	29.	34.	34.	36.	39.	36.	31.	36.	34.
8875	G	27.	23.	29.	25.	32.	23.	27.	29.	26.
8878	G	21.	22.	25.	26.	24.	29.	24.	26.	25.
8928	G	24.	18.	24.	15.	24.	NA	34.	16.	15.
8933	G	36.	29.	27.	29.	27.	28.	25.	26.	23.
8936	G	33.	22.	29.	24.	24.	26.	28.	26.	27.
8937	NG	23.	16.	18.	26.	22.	17.	18.	23.	22.
MEAN		26.	27.	27.	27.	27.	26.	25.	27.	25.
S.D.		4.8	4.9	4.3	4.4	4.8	4.8	5.4	4.9	4.8
N		24	23	24	24	24	23	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 4.8

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 18
SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 5: 500 PPM										
8735	G	29.	33.	31.	33.	38.	39.	42.	46.	48.
8763	G	23.	28.	28.	27.	30.	34.	35.	35.	45.
8775	G	26.	NA	30.	28.	28.	34.	39.	43.	45.
8778	G	23.	20.	22.	25.	19.	25.	32.	28.	31.
8784	G	24.	31.	26.	29.	34.	31.	46.	34.	36.
8790	G	24.	27.	30.	33.	28.	33.	31.	39.	40.
8824	G	23.	23.	28.	23.	29.	27.	34.	35.	32.
8828	G	16.	22.	20.	25.	19.	28.	16.	35.	36.
8830	G	37.	34.	48.	49.	47.	46.	52.	59.	58.
8833	G	26.	28.	24.	31.	32.	29.	38.	37.	36.
8837	G	32.	36.	33.	41.	40.	39.	47.	50.	49.
8838	G	29.	31.	37.	38.	34.	33.	43.	43.	45.
8845	G	25.	29.	28.	29.	34.	37.	43.	46.	50.
8846	G	23.	26.	26.	27.	29.	32.	34.	36.	40.
8855	G	29.	26.	29.	32.	28.	33.	39.	39.	44.
8863	G	25.	21.	24.	25.	24.	31.	33.	33.	36.
8864	G	22.	30.	30.	29.	30.	20.	37.	39.	35.
8868	G	27.	26.	38.	29.	30.	34.	37.	41.	44.
8874	G	40.	44.	44.	40.	43.	47.	52.	56.	56.
8875	G	27.	29.	33.	33.	36.	36.	38.	43.	45.
8878	G	26.	27.	26.	38.	30.	38.	42.	43.	39.
8928	G	25.	27.	22.	25.	16.	23.	31.	29.	38.
8933	G	28.	33.	33.	32.	35.	38.	41.	50.	48.
8936	G	30.	31.	27.	33.	29.	35.	35.	41.	49.
8937	NG	23.	17.	29.	23.	24.	NA	29.	23.	22.
MEAN		27.	29.	30.	31.	31.	33.	38.	41.	43.
S.D.		4.9	5.3	6.7	6.2	7.2	6.4	7.6	7.7	7.1
N		24	23	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 4.8

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 19
SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 18-19	19-20	20-21	1- 6	6- 9	9-12	12-16	16-21	6-16
DAMS FROM GROUP 5: 500 PPM										
8735	G	46.	40.	46.	25.	25.	31.	38.	45.	32.
8763	G	35.	38.	31.	30.	24.	26.	32.	37.	28.
8775	G	38.	38.	34.	29.	26.	28.	32.	40.	29.
8778	G	33.	34.	23.	22.	21.	22.	25.	30.	23.
8784	G	36.	45.	36.	24.	25.	27.	35.	37.	30.
8790	G	39.	42.	44.	22.	25.	27.	31.	41.	28.
8824	G	32.	29.	30.	26.	21.	25.	28.	32.	25.
8828	G	33.	33.	24.	20.	19.	19.	22.	32.	20.
8830	G	58.	58.	51.	34.	36.	40.	49.	57.	42.
8833	G	34.	36.	35.	26.	25.	26.	33.	36.	28.
8837	G	51.	48.	40.	31.	32.	34.	42.	48.	37.
8838	G	39.	44.	47.	29.	28.	32.	37.	44.	33.
8845	G	45.	44.	33.	31.	31.	27.	36.	44.	32.
8846	G	35.	31.	44.	23.	21.	25.	31.	37.	26.
8855	G	40.	39.	41.	26.	25.	28.	33.	41.	29.
8863	G	NA	35.	32.	23.	21.	23.	28.	34.	25.
8864	G	39.	37.	39.	27.	24.	27.	29.	38.	27.
8868	G	44.	34.	37.	28.	26.	30.	33.	40.	30.
8874	G	57.	49.	50.	36.	34.	43.	46.	54.	41.
8875	G	45.	46.	38.	26.	27.	30.	36.	43.	31.
8878	G	41.	39.	48.	25.	25.	26.	37.	42.	30.
8928	G	35.	25.	27.	20.	22.	25.	24.	31.	23.
8933	G	45.	39.	46.	28.	25.	31.	37.	46.	31.
8936	G	40.	47.	40.	25.	27.	29.	33.	43.	30.
8937	NG	17.	27.	19.	20.	21.	23.	25.	22.	23.
MEAN		41.	40.	38.	27.	26.	28.	34.	41.	30.
S.D.		7.2	7.3	8.0	4.1	4.2	5.2	6.4	6.8	5.2
N		23	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 4.8

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 20
SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

PREGNANCY STATUS	DAY 1-21	
DAMS FROM GROUP 5:	500 PPM	
8735	G	34. SCHEDULED NECROPSY DAY 21
8763	G	31. SCHEDULED NECROPSY DAY 21
8775	G	32. SCHEDULED NECROPSY DAY 21
8778	G	24. SCHEDULED NECROPSY DAY 21
8784	G	30. SCHEDULED NECROPSY DAY 21
8790	G	30. SCHEDULED NECROPSY DAY 21
8824	G	27. SCHEDULED NECROPSY DAY 21
8828	G	23. SCHEDULED NECROPSY DAY 21
8830	G	44. SCHEDULED NECROPSY DAY 21
8833	G	30. SCHEDULED NECROPSY DAY 21
8837	G	38. SCHEDULED NECROPSY DAY 21
8838	G	35. SCHEDULED NECROPSY DAY 21
8845	G	35. SCHEDULED NECROPSY DAY 21
8846	G	28. SCHEDULED NECROPSY DAY 21
8855	G	31. SCHEDULED NECROPSY DAY 21
8863	G	26. SCHEDULED NECROPSY DAY 21
8864	G	30. SCHEDULED NECROPSY DAY 21
8868	G	32. SCHEDULED NECROPSY DAY 21
8874	G	43. SCHEDULED NECROPSY DAY 21
8875	G	33. SCHEDULED NECROPSY DAY 21
8878	G	32. SCHEDULED NECROPSY DAY 21
8928	G	25. SCHEDULED NECROPSY DAY 21
8933	G	34. SCHEDULED NECROPSY DAY 21
8936	G	32. SCHEDULED NECROPSY DAY 21
8937	NG	22. SCHEDULED NECROPSY DAY 21
MEAN		32.
S.D.		5.2
N		24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.8

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 21
SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 0- 1	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 6: 1000 PPM										
8739	G	23.	20.	27.	22.	25.	19.	20.	27.	24.
8760	G	22.	30.	22.	24.	25.	24.	21.	21.	24.
8769	G	20.	26.	21.	26.	17.	22.	20.	19.	21.
8770	G	29.	29.	25.	22.	21.	21.	20.	23.	26.
8771	G	27.	25.	19.	26.	17.	25.	22.	24.	23.
8785	G	21.	30.	27.	24.	24.	24.	23.	26.	27.
8793	G	24.	30.	21.	31.	25.	25.	25.	21.	24.
8795	G	24.	20.	16.	21.	23.	20.	23.	27.	27.
8799	G	26.	28.	16.	21.	24.	23.	17.	20.	23.
8804	G	22.	25.	34.	23.	26.	29.	26.	22.	27.
8815	G	32.	26.	27.	30.	27.	29.	26.	29.	28.
8819	G	29.	21.	42.	27.	29.	27.	29.	30.	26.
8821	G	24.	31.	25.	27.	31.	29.	30.	29.	31.
8829	G	34.	28.	28.	27.	31.	31.	31.	28.	35.
8831	G	28.	22.	26.	23.	25.	25.	22.	28.	28.
8856	NG	23.	29.	27.	27.	25.	23.	25.	24.	22.
8860	G	26.	28.	22.	27.	20.	30.	NA	32.	22.
8861	G	27.	23.	27.	28.	25.	29.	27.	28.	30.
8865	G	28.	23.	27.	28.	34.	22.	32.	29.	29.
8870	G	18.	25.	23.	26.	28.	27.	25.	23.	29.
8872	G	27.	26.	32.	30.	35.	30.	35.	30.	27.
8885	G	23.	19.	24.	25.	21.	28.	22.	21.	24.
8888	G	24.	17.	29.	32.	NA	22.	24.	24.	28.
8896	G	23.	25.	30.	27.	23.	25.	25.	21.	23.
8917	G	32.	25.	23.	24.	23.	26.	22.	26.	25.
MEAN		26.	25.	26.	26.	25.	26.	25.	25.	26.
S.D.		4.0	3.8	5.7	3.1	4.7	3.4	4.4	3.8	3.2
N		24	24	24	24	23	24	23	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 4.8

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 22
SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 6: 1000 PPM										
8739	G	23.	28.	26.	31.	25.	25.	29.	34.	38.
8760	G	23.	22.	23.	21.	25.	28.	35.	35.	36.
8769	G	22.	25.	26.	16.	26.	33.	35.	34.	36.
8770	G	22.	26.	30.	30.	34.	37.	34.	38.	39.
8771	G	21.	24.	29.	25.	26.	31.	37.	31.	36.
8785	G	29.	24.	29.	25.	31.	33.	35.	39.	45.
8793	G	29.	28.	28.	29.	29.	34.	38.	37.	36.
8795	G	26.	NA	21.	25.	29.	31.	46.	35.	41.
8799	G	20.	23.	23.	25.	23.	33.	34.	NA	34.
8804	G	25.	29.	30.	31.	30.	40.	42.	35.	43.
8815	G	29.	32.	32.	32.	35.	32.	36.	37.	46.
8819	G	33.	30.	29.	32.	37.	37.	40.	39.	44.
8821	G	30.	32.	33.	36.	36.	36.	37.	38.	41.
8829	G	27.	32.	30.	35.	35.	39.	52.	47.	44.
8831	G	NA	32.	28.	NA	26.	31.	36.	44.	43.
8856	NG	25.	20.	NA	17.	20.	18.	21.	21.	NA
8860	G	27.	19.	23.	29.	30.	36.	28.	45.	45.
8861	G	27.	29.	33.	33.	24.	39.	35.	47.	49.
8865	G	31.	32.	38.	34.	32.	36.	37.	44.	43.
8870	G	27.	29.	29.	33.	27.	39.	38.	42.	43.
8872	G	30.	40.	39.	32.	29.	36.	34.	46.	46.
8885	G	28.	30.	28.	29.	27.	35.	32.	40.	41.
8888	G	26.	32.	38.	34.	34.	31.	37.	37.	45.
8896	G	25.	25.	23.	25.	29.	33.	41.	29.	38.
8917	G	23.	32.	34.	33.	29.	32.	37.	39.	40.
MEAN		26.	28.	29.	29.	30.	34.	37.	39.	41.
S.D.		3.5	4.6	4.9	4.9	4.0	3.7	5.0	5.0	4.0
N		23	23	24	23	24	24	24	23	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 4.8

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 23

SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 18-19	19-20	20-21	1- 6	6- 9	9-12	12-16	16-21	6-16
DAMS FROM GROUP 6: 1000 PPM										
8739	G	47.	NA	31.	23.	24.	26.	28.	38.	26.
8760	G	38.	29.	29.	25.	22.	23.	27.	33.	24.
8769	G	36.	29.	36.	22.	20.	24.	28.	34.	24.
8770	G	45.	34.	38.	24.	23.	26.	34.	39.	28.
8771	G	38.	30.	25.	22.	23.	25.	30.	32.	26.
8785	G	38.	42.	32.	26.	25.	27.	31.	39.	28.
8793	G	36.	36.	33.	26.	23.	28.	33.	36.	29.
8795	G	32.	27.	42.	20.	26.	24.	33.	35.	28.
8799	G	29.	34.	28.	22.	20.	22.	29.	31.	24.
8804	G	45.	34.	34.	27.	25.	28.	36.	38.	30.
8815	G	44.	41.	40.	28.	28.	31.	34.	42.	31.
8819	G	31.	43.	41.	29.	28.	31.	37.	40.	32.
8821	G	40.	36.	39.	29.	30.	32.	36.	39.	33.
8829	G	44.	43.	41.	29.	31.	30.	40.	44.	34.
8831	G	43.	46.	39.	24.	26.	30.	31.	43.	29.
8856	NG	NA	23.	20.	26.	24.	23.	19.	21.	21.
8860	G	42.	35.	44.	25.	27.	23.	31.	42.	27.
8861	G	40.	42.	35.	26.	28.	30.	33.	43.	31.
8865	G	46.	45.	47.	27.	30.	34.	35.	45.	33.
8870	G	45.	40.	36.	26.	26.	28.	34.	41.	30.
8872	G	48.	40.	37.	31.	31.	36.	33.	43.	33.
8885	G	36.	44.	32.	23.	22.	29.	31.	39.	28.
8888	G	32.	37.	40.	25.	25.	32.	34.	38.	31.
8896	G	37.	35.	21.	26.	23.	24.	32.	32.	27.
8917	G	42.	33.	41.	24.	24.	30.	33.	39.	29.
MEAN		40.	37.	36.	25.	25.	28.	33.	39.	29.
S.D.		5.4	5.6	6.2	2.7	3.2	3.7	3.1	4.1	3.0
N		24	23	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 4.8

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 24
SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

PREGNANCY STATUS	DAY 1-21	
DAMS FROM GROUP 6:	1000 PPM	
8739	G	27. SCHEDULED NECROPSY DAY 21
8760	G	27. SCHEDULED NECROPSY DAY 21
8769	G	26. SCHEDULED NECROPSY DAY 21
8770	G	30. SCHEDULED NECROPSY DAY 21
8771	G	27. SCHEDULED NECROPSY DAY 21
8785	G	30. SCHEDULED NECROPSY DAY 21
8793	G	30. SCHEDULED NECROPSY DAY 21
8795	G	28. SCHEDULED NECROPSY DAY 21
8799	G	25. SCHEDULED NECROPSY DAY 21
8804	G	32. SCHEDULED NECROPSY DAY 21
8815	G	33. SCHEDULED NECROPSY DAY 21
8819	G	33. SCHEDULED NECROPSY DAY 21
8821	G	33. SCHEDULED NECROPSY DAY 21
8829	G	35. SCHEDULED NECROPSY DAY 21
8831	G	32. SCHEDULED NECROPSY DAY 21
8856	NG	23. SCHEDULED NECROPSY DAY 21
8860	G	31. SCHEDULED NECROPSY DAY 21
8861	G	33. SCHEDULED NECROPSY DAY 21
8865	G	34. SCHEDULED NECROPSY DAY 21
8870	G	32. SCHEDULED NECROPSY DAY 21
8872	G	35. SCHEDULED NECROPSY DAY 21
8885	G	29. SCHEDULED NECROPSY DAY 21
8888	G	32. SCHEDULED NECROPSY DAY 21
8896	G	28. SCHEDULED NECROPSY DAY 21
8917	G	30. SCHEDULED NECROPSY DAY 21
MEAN		31.
S.D.		2.9
N		24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

PGFWv4.11
11/02/2018

TABLE 4.9

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 1
SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY 0- 1	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 1: 0 PPM										
8738	G	96.	116.	122.	119.	132.	124.	118.	129.	106.
8751	G	71.	101.	99.	78.	101.	95.	90.	102.	125.
8755	G	94.	129.	119.	122.	126.	109.	111.	113.	121.
8766	G	102.	118.	128.	111.	120.	103.	104.	117.	111.
8768	G	92.	70.	85.	95.	91.	90.	119.	104.	88.
8772	G	NA	109.	88.	122.	109.	100.	99.	86.	103.
8776	G	89.	116.	112.	115.	99.	115.	105.	107.	113.
8777	G	109.	125.	122.	122.	131.	115.	94.	129.	123.
8779	G	88.	100.	97.	94.	108.	96.	92.	87.	103.
8791	G	143.	125.	118.	85.	112.	109.	97.	88.	107.
8798	G	99.	105.	96.	89.	NA	80.	106.	92.	89.
8803	G	98.	116.	122.	123.	107.	116.	130.	130.	140.
8812	G	103.	122.	123.	126.	116.	121.	107.	109.	104.
8817	G	111.	104.	91.	101.	106.	109.	96.	108.	117.
8820	G	85.	120.	141.	126.	137.	115.	113.	108.	124.
8825	G	101.	113.	104.	103.	105.	115.	102.	117.	111.
8836	G	134.	124.	116.	137.	111.	130.	131.	147.	104.
8843	G	120.	124.	132.	119.	131.	133.	118.	130.	127.
8852	NG	133.	111.	153.	121.	127.	148.	NA	130.	113.
8858	G	162.	101.	100.	112.	102.	107.	105.	109.	109.
8871	G	129.	121.	118.	116.	128.	115.	106.	132.	119.
8883	G	112.	139.	137.	148.	133.	123.	125.	126.	145.
8886	G	137.	NA	172.	136.	122.	135.	131.	138.	136.
8894	G	97.	142.	130.	121.	123.	123.	117.	124.	159.
8926	G	97.	117.	122.	110.	108.	93.	109.	113.	108.
MEAN		107.	116.	116.	114.	116.	111.	109.	114.	116.
S.D.		21.4	14.9	19.6	17.0	12.8	14.0	12.2	16.5	16.8
N		23	23	24	24	23	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 4.9

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 2
SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY 9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 1: 0 PPM										
8738	G	133.	114.	115.	107.	103.	133.	123.	127.	122.
8751	G	92.	101.	82.	89.	94.	92.	111.	93.	132.
8755	G	115.	128.	106.	119.	107.	120.	132.	136.	136.
8766	G	120.	117.	119.	135.	114.	132.	139.	120.	143.
8768	G	111.	108.	118.	123.	107.	104.	124.	126.	132.
8772	G	97.	102.	92.	107.	101.	106.	116.	131.	126.
8776	G	98.	96.	111.	110.	105.	106.	117.	120.	115.
8777	G	129.	125.	119.	111.	104.	124.	124.	134.	129.
8779	G	89.	94.	109.	116.	94.	113.	122.	113.	122.
8791	G	91.	110.	102.	117.	103.	116.	129.	121.	129.
8798	G	101.	92.	88.	96.	91.	103.	104.	98.	127.
8803	G	119.	148.	98.	127.	118.	131.	147.	140.	132.
8812	G	117.	115.	99.	NA	112.	127.	135.	134.	123.
8817	G	108.	131.	118.	120.	133.	125.	128.	122.	138.
8820	G	122.	120.	127.	136.	123.	116.	137.	107.	128.
8825	G	106.	98.	102.	104.	119.	189.	126.	137.	152.
8836	G	111.	131.	128.	129.	128.	147.	130.	149.	137.
8843	G	136.	127.	128.	140.	134.	130.	145.	137.	160.
8852	NG	107.	129.	130.	121.	105.	97.	139.	108.	107.
8858	G	104.	123.	102.	101.	101.	105.	116.	123.	132.
8871	G	127.	124.	130.	115.	114.	124.	127.	130.	125.
8883	G	122.	158.	122.	140.	125.	127.	152.	150.	126.
8886	G	147.	129.	155.	155.	139.	152.	158.	169.	171.
8894	G	129.	120.	127.	135.	136.	149.	136.	148.	123.
8926	G	205.	104.	135.	132.	133.	128.	132.	127.	138.
MEAN		118.	117.	114.	120.	114.	125.	130.	129.	133.
S.D.		24.0	16.6	16.7	16.1	14.5	20.4	12.8	16.8	12.7
N		24	24	24	23	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 4.9

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 3

SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY 18-19	19-20	20-21	1- 6	6- 9	9-12	12-16	16-21	6-16
DAMS FROM GROUP 1: 0 PPM										
8738	G	119.	103.	78.	123.	119.	121.	116.	108.	119.
8751	G	101.	88.	90.	95.	105.	93.	98.	100.	98.
8755	G	116.	112.	106.	121.	116.	115.	120.	121.	116.
8766	G	112.	103.	123.	115.	109.	118.	131.	118.	122.
8768	G	121.	108.	98.	88.	105.	111.	114.	115.	110.
8772	G	110.	105.	105.	105.	97.	96.	107.	115.	102.
8776	G	119.	113.	97.	112.	107.	103.	109.	111.	108.
8777	G	77.	111.	94.	123.	116.	125.	115.	107.	118.
8779	G	119.	109.	104.	98.	93.	96.	112.	113.	103.
8791	G	130.	116.	102.	111.	99.	100.	117.	118.	106.
8798	G	99.	98.	103.	94.	96.	93.	98.	105.	95.
8803	G	127.	120.	110.	117.	133.	122.	132.	125.	128.
8812	G	102.	104.	82.	122.	106.	111.	125.	107.	113.
8817	G	124.	123.	109.	101.	108.	120.	127.	122.	118.
8820	G	127.	104.	100.	127.	115.	123.	127.	114.	123.
8825	G	130.	112.	117.	110.	110.	101.	134.	129.	118.
8836	G	123.	116.	100.	125.	129.	124.	133.	124.	129.
8843	G	120.	134.	111.	127.	126.	130.	136.	131.	133.
8852	NG	85.	127.	76.	132.	124.	122.	115.	99.	119.
8858	G	117.	105.	90.	105.	109.	111.	106.	113.	107.
8871	G	142.	114.	101.	120.	118.	127.	122.	123.	123.
8883	G	142.	134.	101.	135.	133.	134.	137.	128.	133.
8886	G	135.	135.	118.	145.	133.	144.	151.	143.	145.
8894	G	124.	110.	100.	128.	134.	126.	140.	119.	132.
8926	G	124.	127.	129.	110.	110.	147.	133.	129.	132.
MEAN		119.	113.	103.	115.	114.	116.	123.	118.	118.
S.D.		14.3	11.7	11.9	13.9	12.5	15.2	13.7	9.9	12.7
N		24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.9

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 4
SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY 1-21	
DAMS FROM GROUP 1:		0 PPM	
8738	G	116.	SCHEDULED NECROPSY DAY 21
8751	G	99.	SCHEDULED NECROPSY DAY 21
8755	G	119.	SCHEDULED NECROPSY DAY 21
8766	G	119.	SCHEDULED NECROPSY DAY 21
8768	G	106.	SCHEDULED NECROPSY DAY 21
8772	G	106.	SCHEDULED NECROPSY DAY 21
8776	G	110.	SCHEDULED NECROPSY DAY 21
8777	G	116.	SCHEDULED NECROPSY DAY 21
8779	G	105.	SCHEDULED NECROPSY DAY 21
8791	G	112.	SCHEDULED NECROPSY DAY 21
8798	G	98.	SCHEDULED NECROPSY DAY 21
8803	G	126.	SCHEDULED NECROPSY DAY 21
8812	G	113.	SCHEDULED NECROPSY DAY 21
8817	G	115.	SCHEDULED NECROPSY DAY 21
8820	G	119.	SCHEDULED NECROPSY DAY 21
8825	G	120.	SCHEDULED NECROPSY DAY 21
8836	G	125.	SCHEDULED NECROPSY DAY 21
8843	G	131.	SCHEDULED NECROPSY DAY 21
8852	NG	118.	SCHEDULED NECROPSY DAY 21
8858	G	109.	SCHEDULED NECROPSY DAY 21
8871	G	120.	SCHEDULED NECROPSY DAY 21
8883	G	134.	SCHEDULED NECROPSY DAY 21
8886	G	144.	SCHEDULED NECROPSY DAY 21
8894	G	128.	SCHEDULED NECROPSY DAY 21
8926	G	125.	SCHEDULED NECROPSY DAY 21
MEAN		117.	
S.D.		11.0	
N		24	

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.9

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 5
SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY	0- 1	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 2: 15 MG/KG RA											
8740	G		95.	100.	112.	99.	116.	107.	101.	90.	83.
8743	G		108.	116.	121.	112.	114.	118.	75.	107.	91.
8756	G		102.	90.	82.	107.	107.	90.	63.	90.	89.
8757	G		111.	151.	172.	146.	136.	126.	99.	92.	119.
8780	G		83.	75.	129.	94.	120.	125.	93.	86.	115.
8789	G		105.	116.	117.	107.	116.	132.	106.	143.	129.
8800	G		115.	119.	108.	109.	114.	104.	96.	190.	112.
8801	G		145.	126.	133.	141.	146.	124.	119.	104.	119.
8802	G		92.	110.	128.	114.	105.	112.	92.	75.	86.
8808	G		91.	112.	106.	130.	116.	110.	146.	106.	87.
8809	G		127.	127.	142.	167.	150.	140.	102.	118.	119.
8810	G		NA	109.	111.	146.	129.	120.	118.	103.	131.
8818	G		102.	127.	128.	129.	136.	134.	91.	138.	116.
8822	G		115.	161.	137.	143.	137.	134.	95.	115.	84.
8827	G		91.	120.	115.	108.	121.	123.	96.	110.	105.
8840	G		121.	121.	142.	126.	118.	141.	108.	107.	116.
8842	G		138.	147.	165.	170.	142.	185.	131.	107.	106.
8847	G		112.	113.	112.	122.	141.	135.	110.	147.	128.
8850	G		99.	107.	116.	131.	108.	107.	96.	95.	81.
8851	G		109.	116.	130.	119.	123.	121.	101.	143.	115.
8854	G		94.	137.	154.	144.	125.	169.	108.	110.	101.
8900	G		133.	120.	122.	110.	102.	91.	67.	99.	105.
8901	G		108.	119.	110.	43.	116.	120.	88.	95.	81.
8930	G		119.	125.	112.	125.	120.	122.	101.	96.	110.
8931	G		96.	110.	108.	117.	97.	96.	82.	117.	108.
MEAN			109.	119.	124.	122.	122.	123.	99.	111.	105.
S.D.			15.9	18.0	19.9	25.6	14.2	21.5	18.1	24.7	16.0
N			24	25	25	25	25	25	25	25	25

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 4.9

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 6
SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY 9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 2: 15 MG/KG RA										
8740	G	100.	83.	94.	84.	101.	99.	103.	120.	132.
8743	G	123.	94.	124.	106.	109.	133.	116.	136.	131.
8756	G	104.	112.	84.	79.	91.	89.	107.	118.	127.
8757	G	107.	156.	121.	132.	130.	155.	147.	157.	158.
8780	G	89.	164.	78.	110.	115.	146.	160.	172.	149.
8789	G	123.	124.	123.	146.	144.	213.	189.	138.	183.
8800	G	96.	113.	128.	163.	84.	230.	148.	123.	150.
8801	G	106.	130.	137.	89.	155.	108.	106.	137.	136.
8802	G	96.	122.	112.	112.	97.	156.	125.	125.	121.
8808	G	121.	95.	182.	116.	111.	113.	119.	164.	140.
8809	G	146.	145.	193.	136.	208.	179.	173.	192.	192.
8810	G	109.	124.	165.	113.	152.	138.	134.	163.	147.
8818	G	129.	116.	127.	131.	133.	133.	142.	149.	156.
8822	G	125.	124.	113.	196.	130.	124.	150.	134.	182.
8827	G	107.	119.	133.	117.	106.	120.	116.	136.	129.
8840	G	118.	147.	128.	134.	123.	119.	137.	162.	161.
8842	G	88.	183.	78.	135.	109.	127.	164.	175.	175.
8847	G	137.	115.	124.	157.	80.	172.	150.	158.	139.
8850	G	102.	82.	118.	111.	112.	100.	110.	138.	NA
8851	G	132.	129.	135.	157.	155.	145.	159.	180.	150.
8854	G	125.	141.	176.	126.	127.	113.	120.	108.	127.
8900	G	117.	131.	136.	154.	160.	151.	172.	195.	172.
8901	G	128.	99.	108.	88.	128.	115.	131.	120.	228.
8930	G	106.	125.	102.	88.	105.	108.	113.	123.	125.
8931	G	100.	121.	93.	155.	111.	118.	127.	NA	NA
MEAN		113.	124.	124.	125.	123.	136.	137.	147.	153.
S.D.		15.3	23.9	30.1	29.0	28.3	34.2	23.9	24.6	26.3
N		25	25	25	25	25	25	25	24	23

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 4.9

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 7
SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY 18-19	19-20	20-21	1- 6	6- 9	9-12	12-16	16-21	6-16
DAMS FROM GROUP 2: 15 MG/KG RA										
8740	G	117.	102.	99.	107.	90.	92.	97.	114.	95.
8743	G	119.	123.	101.	115.	92.	114.	118.	121.	110.
8756	G	148.	112.	95.	95.	79.	99.	93.	119.	91.
8757	G	176.	144.	117.	145.	102.	129.	141.	149.	127.
8780	G	261.	134.	124.	108.	99.	112.	133.	165.	118.
8789	G	148.	168.	118.	119.	125.	125.	174.	151.	147.
8800	G	136.	130.	105.	109.	131.	113.	156.	129.	135.
8801	G	123.	126.	97.	134.	112.	123.	116.	123.	119.
8802	G	121.	99.	73.	115.	83.	109.	123.	106.	108.
8808	G	132.	149.	111.	115.	113.	133.	117.	139.	121.
8809	G	192.	162.	141.	146.	114.	161.	175.	175.	154.
8810	G	128.	NA	91.	122.	117.	134.	136.	129.	129.
8818	G	161.	158.	130.	132.	114.	123.	136.	149.	125.
8822	G	158.	174.	104.	142.	99.	123.	149.	151.	126.
8827	G	115.	124.	106.	116.	102.	119.	114.	120.	113.
8840	G	163.	137.	106.	130.	110.	130.	129.	145.	125.
8842	G	192.	NA	129.	163.	113.	118.	134.	164.	122.
8847	G	139.	134.	123.	125.	126.	125.	139.	137.	132.
8850	G	124.	101.	100.	114.	92.	100.	109.	115.	102.
8851	G	135.	129.	102.	123.	121.	132.	155.	139.	138.
8854	G	114.	102.	91.	148.	106.	149.	121.	108.	126.
8900	G	180.	148.	127.	111.	92.	129.	159.	163.	130.
8901	G	131.	101.	95.	100.	88.	113.	116.	134.	105.
8930	G	128.	112.	97.	122.	103.	111.	104.	117.	107.
8931	G	153.	144.	140.	106.	103.	106.	128.	153.	114.
MEAN		148.	131.	109.	122.	105.	121.	131.	137.	121.
S.D.		33.3	22.6	16.7	16.6	13.8	15.2	21.8	19.4	15.1
N		25	23	25	25	25	25	25	25	25

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 4.9

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 8
SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/KG/DAY]

PREGNANCY STATUS	DAY 1-21	
DAMS FROM GROUP 2: 15 MG/KG RA		
8740	G	102. SCHEDULED NECROPSY DAY 21
8743	G	114. SCHEDULED NECROPSY DAY 21
8756	G	100. SCHEDULED NECROPSY DAY 21
8757	G	138. SCHEDULED NECROPSY DAY 21
8780	G	129. SCHEDULED NECROPSY DAY 21
8789	G	142. SCHEDULED NECROPSY DAY 21
8800	G	129. SCHEDULED NECROPSY DAY 21
8801	G	121. SCHEDULED NECROPSY DAY 21
8802	G	108. SCHEDULED NECROPSY DAY 21
8808	G	123. SCHEDULED NECROPSY DAY 21
8809	G	158. SCHEDULED NECROPSY DAY 21
8810	G	127. SCHEDULED NECROPSY DAY 21
8818	G	133. SCHEDULED NECROPSY DAY 21
8822	G	136. SCHEDULED NECROPSY DAY 21
8827	G	117. SCHEDULED NECROPSY DAY 21
8840	G	132. SCHEDULED NECROPSY DAY 21
8842	G	141. SCHEDULED NECROPSY DAY 21
8847	G	131. SCHEDULED NECROPSY DAY 21
8850	G	106. SCHEDULED NECROPSY DAY 21
8851	G	135. SCHEDULED NECROPSY DAY 21
8854	G	125. SCHEDULED NECROPSY DAY 21
8900	G	136. SCHEDULED NECROPSY DAY 21
8901	G	114. SCHEDULED NECROPSY DAY 21
8930	G	111. SCHEDULED NECROPSY DAY 21
8931	G	115. SCHEDULED NECROPSY DAY 21
MEAN		125.
S.D.		14.1
N		25

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.9

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 9

SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY	0- 1	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 3: 0.25 PPM											
8747	G		109.	95.	140.	115.	105.	116.	117.	118.	137.
8758	G		83.	115.	119.	110.	97.	93.	116.	100.	104.
8764	G		106.	121.	121.	101.	129.	123.	131.	122.	122.
8767	G		133.	124.	122.	120.	105.	123.	111.	112.	119.
8773	G		116.	87.	177.	152.	167.	147.	121.	135.	143.
8774	G		106.	116.	125.	104.	117.	108.	109.	111.	113.
8807	G		117.	105.	119.	102.	105.	127.	101.	106.	105.
8814	G		86.	105.	95.	107.	109.	88.	102.	97.	95.
8826	G		113.	113.	132.	135.	144.	128.	134.	116.	128.
8834	G		133.	130.	128.	147.	139.	129.	108.	127.	130.
8835	G		144.	141.	154.	129.	143.	126.	135.	126.	139.
8839	G		115.	135.	125.	127.	127.	110.	111.	99.	144.
8849	G		98.	106.	116.	103.	83.	93.	105.	104.	98.
8853	G		153.	124.	161.	161.	142.	148.	122.	127.	153.
8859	G		131.	139.	114.	136.	120.	135.	133.	133.	128.
8869	G		92.	104.	109.	110.	112.	118.	112.	114.	112.
8879	G		101.	119.	125.	133.	114.	119.	104.	115.	122.
8889	G		98.	123.	123.	96.	106.	116.	104.	112.	117.
8891	G		76.	88.	86.	96.	102.	76.	88.	88.	77.
8893	G		94.	109.	114.	109.	100.	108.	109.	89.	129.
8897	G		97.	107.	93.	114.	104.	91.	80.	108.	91.
8908	G		106.	118.	131.	118.	121.	129.	120.	115.	113.
8910	G		109.	95.	87.	138.	87.	90.	86.	98.	83.
8913	NG		96.	112.	107.	119.	106.	116.	126.	102.	126.
8916	NG		83.	114.	119.	93.	101.	91.	124.	127.	96.
MEAN			109.	114.	122.	120.	116.	115.	111.	112.	117.
S.D.			19.4	15.0	21.9	18.4	20.3	19.1	14.8	13.0	20.0
N			23	23	23	23	23	23	23	23	23

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.9

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 10
SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 3: 0.25 PPM											
8747	G		124.	122.	120.	131.	154.	141.	144.	139.	128.
8758	G		106.	133.	123.	118.	123.	131.	148.	137.	142.
8764	G		135.	118.	134.	122.	133.	129.	118.	145.	151.
8767	G		107.	114.	123.	128.	131.	144.	141.	138.	127.
8773	G		151.	140.	97.	124.	113.	101.	95.	107.	103.
8774	G		126.	140.	129.	125.	114.	119.	125.	126.	145.
8807	G		102.	115.	116.	136.	137.	130.	139.	151.	136.
8814	G		103.	109.	116.	102.	123.	121.	138.	133.	128.
8826	G		118.	116.	94.	131.	133.	128.	120.	148.	137.
8834	G		130.	134.	150.	141.	121.	143.	145.	167.	164.
8835	G		135.	148.	139.	159.	137.	146.	160.	169.	161.
8839	G		110.	126.	119.	121.	122.	139.	140.	140.	138.
8849	G		106.	101.	105.	104.	108.	138.	143.	120.	132.
8853	G		129.	139.	143.	141.	142.	124.	171.	166.	167.
8859	G		105.	126.	117.	120.	125.	117.	137.	136.	148.
8869	G		123.	117.	128.	117.	138.	129.	143.	134.	137.
8879	G		128.	NA	124.	127.	123.	147.	126.	NA	126.
8889	G		120.	99.	117.	103.	116.	119.	120.	128.	119.
8891	G		92.	100.	87.	105.	102.	103.	124.	117.	125.
8893	G		95.	123.	118.	115.	110.	114.	127.	114.	130.
8897	G		104.	108.	107.	98.	93.	98.	110.	110.	136.
8908	G		130.	122.	141.	118.	123.	131.	128.	134.	129.
8910	G		78.	90.	63.	103.	98.	105.	110.	117.	144.
8913	NG		134.	108.	116.	116.	120.	116.	107.	124.	112.
8916	NG		122.	71.	129.	118.	119.	115.	102.	123.	113.
MEAN			116.	120.	118.	121.	123.	126.	133.	135.	137.
S.D.			16.9	15.2	19.6	15.0	14.8	14.8	17.0	17.7	14.8
N			23	22	23	23	23	23	23	22	23

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 4.9

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 11
SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY 18-19	19-20	20-21	1- 6	6- 9	9-12	12-16	16-21	6-16
DAMS FROM GROUP 3: 0.25 PPM										
8747	G	128.	109.	100.	115.	125.	122.	143.	121.	131.
8758	G	126.	103.	NA	107.	107.	120.	130.	122.	121.
8764	G	134.	131.	93.	118.	125.	130.	126.	129.	128.
8767	G	124.	109.	84.	120.	115.	114.	138.	114.	124.
8773	G	96.	96.	105.	145.	134.	129.	108.	103.	122.
8774	G	130.	130.	115.	115.	112.	133.	120.	129.	121.
8807	G	130.	112.	135.	110.	103.	111.	136.	131.	119.
8814	G	140.	126.	108.	102.	97.	109.	122.	128.	112.
8826	G	125.	113.	NA	133.	127.	109.	128.	127.	122.
8834	G	138.	131.	118.	136.	122.	137.	137.	143.	133.
8835	G	147.	133.	110.	139.	132.	142.	152.	141.	142.
8839	G	147.	122.	114.	126.	117.	120.	131.	132.	124.
8849	G	128.	112.	97.	99.	104.	104.	123.	116.	113.
8853	G	155.	139.	133.	146.	134.	137.	146.	151.	138.
8859	G	121.	121.	118.	129.	130.	116.	126.	128.	125.
8869	G	119.	124.	151.	111.	114.	124.	133.	132.	125.
8879	G	115.	95.	104.	124.	115.	126.	131.	113.	125.
8889	G	112.	107.	91.	114.	112.	111.	115.	111.	113.
8891	G	108.	103.	102.	89.	84.	94.	110.	111.	96.
8893	G	104.	118.	108.	109.	108.	113.	117.	113.	115.
8897	G	108.	104.	116.	103.	93.	108.	102.	114.	99.
8908	G	132.	104.	104.	122.	115.	131.	125.	120.	125.
8910	G	99.	78.	91.	100.	88.	77.	105.	104.	92.
8913	NG	108.	95.	95.	111.	119.	120.	114.	106.	116.
8916	NG	115.	95.	87.	103.	117.	107.	113.	106.	114.
MEAN		125.	114.	109.	118.	114.	118.	126.	123.	120.
S.D.		15.5	14.7	16.1	15.2	14.3	15.0	13.0	12.3	12.2
N		23	23	21	23	23	23	23	23	23

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 4.9

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 12
SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY 1-21	
DAMS FROM GROUP 3:		0.25 PPM	
8747	G	124.	SCHEDULED NECROPSY DAY 21
8758	G	118.	SCHEDULED NECROPSY DAY 21
8764	G	124.	SCHEDULED NECROPSY DAY 21
8767	G	120.	SCHEDULED NECROPSY DAY 21
8773	G	124.	SCHEDULED NECROPSY DAY 21
8774	G	120.	SCHEDULED NECROPSY DAY 21
8807	G	121.	SCHEDULED NECROPSY DAY 21
8814	G	115.	SCHEDULED NECROPSY DAY 21
8826	G	123.	SCHEDULED NECROPSY DAY 21
8834	G	135.	SCHEDULED NECROPSY DAY 21
8835	G	142.	SCHEDULED NECROPSY DAY 21
8839	G	126.	SCHEDULED NECROPSY DAY 21
8849	G	110.	SCHEDULED NECROPSY DAY 21
8853	G	144.	SCHEDULED NECROPSY DAY 21
8859	G	125.	SCHEDULED NECROPSY DAY 21
8869	G	123.	SCHEDULED NECROPSY DAY 21
8879	G	120.	SCHEDULED NECROPSY DAY 21
8889	G	112.	SCHEDULED NECROPSY DAY 21
8891	G	100.	SCHEDULED NECROPSY DAY 21
8893	G	112.	SCHEDULED NECROPSY DAY 21
8897	G	106.	SCHEDULED NECROPSY DAY 21
8908	G	122.	SCHEDULED NECROPSY DAY 21
8910	G	98.	SCHEDULED NECROPSY DAY 21
8913	NG	113.	SCHEDULED NECROPSY DAY 21
8916	NG	110.	SCHEDULED NECROPSY DAY 21
MEAN		120.	
S.D.		11.2	
N		23	

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.9

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 13
SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY	0- 1	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 4: 1.5 PPM											
8741	G		100.	109.	115.	95.	94.	106.	93.	99.	107.
8765	G		94.	112.	109.	104.	114.	127.	100.	108.	127.
8783	G		96.	95.	138.	108.	106.	90.	117.	99.	111.
8786	G		127.	133.	138.	149.	142.	143.	129.	146.	129.
8788	G		106.	100.	84.	108.	106.	105.	121.	99.	127.
8792	G		133.	129.	123.	125.	163.	121.	148.	121.	154.
8805	G		104.	118.	104.	128.	110.	117.	134.	112.	120.
8806	G		129.	121.	115.	113.	129.	125.	109.	114.	128.
8811	G		113.	140.	123.	144.	112.	121.	133.	119.	117.
8813	G		100.	106.	84.	86.	97.	98.	NA	97.	88.
8823	G		101.	131.	121.	132.	134.	128.	114.	116.	139.
8844	G		93.	87.	127.	105.	108.	102.	99.	107.	105.
8848	G		110.	128.	122.	133.	137.	128.	150.	130.	153.
8857	G		105.	119.	109.	107.	118.	108.	111.	113.	119.
8867	G		91.	94.	89.	95.	90.	99.	91.	101.	92.
8873	G		97.	102.	112.	98.	117.	103.	102.	97.	89.
8876	G		61.	105.	109.	93.	85.	101.	100.	126.	113.
8881	G		66.	95.	91.	101.	88.	97.	95.	104.	96.
8884	NG		54.	66.	106.	90.	86.	86.	79.	109.	100.
8890	G		109.	127.	164.	165.	124.	121.	126.	121.	125.
8895	G		111.	148.	135.	151.	134.	129.	133.	154.	150.
8899	G		107.	103.	112.	100.	NA	83.	107.	93.	89.
8907	G		79.	106.	129.	93.	102.	103.	92.	107.	105.
8941	G		130.	123.	117.	133.	144.	138.	142.	133.	111.
8942	G		112.	135.	135.	125.	137.	134.	127.	137.	141.
MEAN			103.	115.	117.	116.	117.	114.	116.	115.	118.
S.D.			17.9	16.4	18.8	21.6	20.4	16.0	18.5	16.3	20.1
N			24	24	24	24	23	24	23	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 4.9

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 14

SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 4: 1.5 PPM											
8741	G		94.	106.	107.	125.	111.	116.	122.	117.	125.
8765	G		104.	115.	126.	124.	116.	123.	107.	141.	117.
8783	G		108.	92.	106.	101.	104.	117.	100.	102.	108.
8786	G		120.	163.	135.	136.	150.	146.	151.	156.	166.
8788	G		111.	126.	124.	119.	133.	108.	124.	142.	119.
8792	G		148.	108.	159.	164.	153.	135.	139.	174.	122.
8805	G		113.	104.	119.	105.	101.	114.	129.	121.	116.
8806	G		119.	113.	110.	115.	107.	116.	137.	128.	146.
8811	G		132.	124.	116.	108.	114.	111.	125.	140.	141.
8813	G		98.	112.	92.	97.	83.	100.	108.	99.	120.
8823	G		127.	125.	140.	125.	145.	136.	143.	171.	141.
8844	G		122.	120.	109.	110.	118.	106.	110.	130.	128.
8848	G		147.	154.	129.	149.	169.	164.	165.	182.	136.
8857	G		113.	113.	149.	118.	144.	136.	142.	109.	131.
8867	G		85.	100.	91.	84.	102.	94.	105.	105.	98.
8873	G		112.	111.	92.	108.	107.	101.	102.	119.	125.
8876	G		114.	96.	120.	119.	96.	122.	111.	135.	132.
8881	G		104.	99.	91.	117.	103.	93.	100.	106.	96.
8884	NG		103.	94.	74.	104.	87.	89.	59.	110.	73.
8890	G		123.	127.	118.	127.	118.	130.	132.	121.	139.
8895	G		154.	139.	126.	124.	131.	138.	125.	141.	134.
8899	G		110.	101.	99.	85.	103.	108.	114.	117.	123.
8907	G		115.	100.	93.	111.	122.	115.	121.	120.	131.
8941	G		123.	143.	145.	143.	145.	154.	138.	150.	132.
8942	G		126.	112.	127.	133.	145.	193.	165.	152.	133.
MEAN			118.	117.	118.	119.	122.	124.	126.	132.	127.
S.D.			16.5	18.3	19.5	18.6	21.9	23.5	19.1	23.2	15.0
N			24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.9

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 15

SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY 18-19	19-20	20-21	1- 6	6- 9	9-12	12-16	16-21	6-16
DAMS FROM GROUP 4: 1.5 PPM										
8741	G	108.	104.	101.	102.	99.	103.	119.	111.	108.
8765	G	117.	111.	106.	112.	111.	115.	117.	118.	114.
8783	G	90.	85.	90.	106.	110.	102.	106.	96.	104.
8786	G	139.	137.	119.	141.	134.	138.	148.	143.	139.
8788	G	119.	134.	95.	101.	116.	119.	122.	120.	118.
8792	G	142.	162.	137.	133.	141.	138.	147.	147.	144.
8805	G	111.	94.	99.	116.	123.	111.	111.	108.	114.
8806	G	101.	102.	111.	120.	117.	113.	119.	118.	117.
8811	G	146.	129.	105.	129.	123.	124.	116.	130.	120.
8813	G	97.	102.	71.	94.	94.	102.	97.	98.	97.
8823	G	126.	110.	97.	129.	123.	132.	138.	127.	132.
8844	G	72.	114.	95.	106.	104.	117.	111.	106.	112.
8848	G	137.	121.	131.	128.	146.	143.	163.	140.	151.
8857	G	137.	137.	122.	114.	113.	127.	135.	128.	126.
8867	G	81.	85.	71.	95.	93.	93.	98.	87.	96.
8873	G	85.	103.	100.	107.	97.	105.	106.	104.	103.
8876	G	117.	111.	92.	97.	112.	109.	114.	117.	111.
8881	G	99.	85.	92.	93.	97.	99.	102.	96.	101.
8884	NG	83.	86.	53.	87.	95.	92.	87.	80.	89.
8890	G	123.	123.	98.	140.	124.	124.	129.	119.	125.
8895	G	127.	120.	114.	141.	147.	138.	131.	127.	138.
8899	G	99.	87.	84.	100.	98.	105.	104.	101.	100.
8907	G	95.	101.	102.	108.	100.	103.	118.	109.	107.
8941	G	131.	106.	102.	133.	130.	135.	145.	124.	139.
8942	G	113.	104.	120.	132.	134.	120.	160.	123.	141.
MEAN		113.	111.	102.	116.	116.	117.	123.	117.	119.
S.D.		20.6	19.2	16.2	16.2	16.6	14.6	19.0	15.5	16.4
N		24	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.9

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 16
SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/KG/DAY]

PREGNANCY STATUS	DAY 1-21	
DAMS FROM GROUP 4:	1.5 PPM	
8741	G	107. SCHEDULED NECROPSY DAY 21
8765	G	117. SCHEDULED NECROPSY DAY 21
8783	G	102. SCHEDULED NECROPSY DAY 21
8786	G	142. SCHEDULED NECROPSY DAY 21
8788	G	115. SCHEDULED NECROPSY DAY 21
8792	G	142. SCHEDULED NECROPSY DAY 21
8805	G	114. SCHEDULED NECROPSY DAY 21
8806	G	117. SCHEDULED NECROPSY DAY 21
8811	G	126. SCHEDULED NECROPSY DAY 21
8813	G	98. SCHEDULED NECROPSY DAY 21
8823	G	128. SCHEDULED NECROPSY DAY 21
8844	G	109. SCHEDULED NECROPSY DAY 21
8848	G	141. SCHEDULED NECROPSY DAY 21
8857	G	123. SCHEDULED NECROPSY DAY 21
8867	G	94. SCHEDULED NECROPSY DAY 21
8873	G	103. SCHEDULED NECROPSY DAY 21
8876	G	110. SCHEDULED NECROPSY DAY 21
8881	G	96. SCHEDULED NECROPSY DAY 21
8884	NG	86. SCHEDULED NECROPSY DAY 21
8890	G	127. SCHEDULED NECROPSY DAY 21
8895	G	135. SCHEDULED NECROPSY DAY 21
8899	G	101. SCHEDULED NECROPSY DAY 21
8907	G	107. SCHEDULED NECROPSY DAY 21
8941	G	131. SCHEDULED NECROPSY DAY 21
8942	G	136. SCHEDULED NECROPSY DAY 21
MEAN		118.
S.D.		15.3
N		24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.9

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 17

SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY 0- 1	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 5: 500 PPM										
8735	G	77.	86.	96.	97.	82.	95.	68.	96.	98.
8763	G	122.	125.	128.	110.	123.	98.	86.	96.	83.
8775	G	101.	125.	86.	111.	98.	107.	84.	100.	81.
8778	G	91.	108.	86.	77.	65.	75.	64.	81.	76.
8784	G	88.	79.	82.	95.	86.	75.	85.	80.	85.
8790	G	106.	89.	76.	89.	91.	68.	78.	97.	81.
8824	G	111.	121.	100.	123.	100.	102.	78.	105.	75.
8828	G	81.	NA	80.	82.	92.	66.	62.	76.	82.
8830	G	121.	136.	116.	117.	118.	105.	113.	120.	110.
8833	G	101.	113.	103.	94.	111.	86.	89.	94.	89.
8837	G	111.	126.	120.	112.	122.	106.	125.	104.	110.
8838	G	130.	127.	126.	107.	101.	103.	101.	100.	97.
8845	G	98.	112.	104.	105.	99.	114.	109.	113.	83.
8846	G	86.	92.	91.	85.	81.	80.	72.	82.	74.
8855	G	83.	104.	102.	104.	95.	89.	91.	97.	81.
8863	G	82.	96.	91.	101.	87.	72.	83.	85.	66.
8864	G	102.	91.	115.	99.	95.	93.	85.	91.	73.
8868	G	121.	97.	114.	97.	112.	86.	96.	72.	98.
8874	G	114.	129.	125.	129.	137.	124.	106.	120.	110.
8875	G	103.	87.	107.	91.	114.	81.	95.	99.	88.
8878	G	87.	89.	100.	102.	93.	111.	89.	96.	91.
8928	G	98.	72.	95.	59.	92.	NA	129.	58.	56.
8933	G	138.	109.	100.	106.	97.	99.	88.	92.	81.
8936	G	124.	81.	107.	87.	86.	91.	96.	88.	90.
8937	NG	93.	65.	75.	106.	87.	68.	74.	93.	87.
MEAN		103.	104.	102.	99.	99.	92.	91.	93.	86.
S.D.		17.0	18.7	14.9	15.2	16.1	15.6	17.2	14.4	13.4
N		24	23	24	24	24	23	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 4.9

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 18
SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY 9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 5: 500 PPM										
8735	G	96.	106.	98.	102.	116.	116.	122.	130.	130.
8763	G	82.	97.	95.	90.	99.	110.	108.	105.	129.
8775	G	86.	NA	96.	88.	86.	103.	114.	119.	119.
8778	G	78.	66.	71.	80.	60.	77.	95.	80.	86.
8784	G	77.	97.	80.	87.	100.	90.	128.	91.	94.
8790	G	79.	88.	95.	102.	85.	98.	89.	108.	105.
8824	G	90.	89.	106.	85.	106.	97.	119.	118.	104.
8828	G	59.	79.	70.	86.	64.	92.	51.	109.	105.
8830	G	114.	102.	141.	139.	131.	127.	141.	152.	144.
8833	G	92.	97.	81.	103.	104.	91.	117.	109.	101.
8837	G	108.	119.	107.	130.	125.	119.	141.	145.	136.
8838	G	99.	105.	122.	122.	108.	102.	128.	123.	124.
8845	G	80.	92.	88.	89.	103.	109.	124.	128.	132.
8846	G	79.	87.	85.	87.	91.	98.	101.	101.	107.
8855	G	101.	88.	97.	104.	88.	103.	120.	115.	122.
8863	G	89.	73.	81.	83.	79.	99.	102.	99.	103.
8864	G	76.	101.	98.	92.	93.	63.	115.	113.	97.
8868	G	89.	85.	121.	90.	94.	105.	111.	118.	122.
8874	G	127.	137.	133.	119.	126.	134.	143.	150.	145.
8875	G	90.	96.	107.	105.	114.	112.	116.	129.	131.
8878	G	93.	94.	90.	128.	98.	123.	132.	129.	112.
8928	G	91.	93.	74.	84.	54.	77.	101.	91.	114.
8933	G	97.	109.	106.	102.	111.	120.	125.	146.	133.
8936	G	97.	98.	84.	102.	88.	104.	101.	114.	128.
8937	NG	89.	67.	112.	87.	90.	NA	111.	86.	82.
MEAN		90.	96.	97.	100.	97.	103.	114.	118.	118.
S.D.		14.0	14.7	18.6	16.6	19.8	16.6	19.8	18.9	16.2
N		24	23	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 4.9

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 19
SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY 18-19	19-20	20-21	1- 6	6- 9	9-12	12-16	16-21	6-16
DAMS FROM GROUP 5: 500 PPM										
8735	G	119.	100.	109.	91.	87.	100.	114.	116.	103.
8763	G	95.	99.	77.	117.	88.	90.	103.	101.	96.
8775	G	97.	93.	81.	107.	90.	91.	97.	102.	93.
8778	G	87.	85.	55.	81.	74.	73.	77.	79.	75.
8784	G	90.	107.	81.	84.	83.	85.	101.	91.	93.
8790	G	98.	101.	100.	82.	87.	87.	93.	103.	89.
8824	G	100.	88.	87.	110.	84.	96.	101.	100.	95.
8828	G	91.	87.	60.	82.	72.	68.	73.	89.	71.
8830	G	139.	132.	110.	117.	115.	120.	136.	135.	124.
8833	G	92.	94.	87.	101.	91.	90.	105.	97.	95.
8837	G	135.	121.	97.	116.	112.	113.	130.	127.	121.
8838	G	105.	113.	114.	111.	99.	108.	115.	116.	109.
8845	G	113.	107.	78.	108.	101.	86.	107.	112.	99.
8846	G	90.	77.	103.	86.	75.	84.	96.	95.	86.
8855	G	106.	100.	100.	100.	89.	95.	104.	109.	97.
8863	G	NA	92.	79.	89.	78.	80.	90.	92.	86.
8864	G	104.	95.	95.	100.	84.	91.	91.	101.	89.
8868	G	116.	87.	90.	100.	88.	97.	101.	106.	96.
8874	G	139.	114.	111.	129.	113.	134.	132.	132.	126.
8875	G	126.	126.	102.	95.	93.	99.	113.	121.	101.
8878	G	114.	103.	119.	98.	92.	91.	120.	115.	103.
8928	G	99.	68.	71.	79.	83.	88.	80.	88.	80.
8933	G	120.	100.	114.	102.	88.	103.	116.	123.	102.
8936	G	100.	113.	90.	90.	92.	92.	99.	108.	95.
8937	NG	64.	102.	70.	81.	84.	89.	95.	82.	89.
MEAN		108.	100.	92.	99.	90.	94.	104.	107.	97.
S.D.		16.0	15.1	17.2	13.5	11.4	14.3	16.3	14.6	13.6
N		23	24	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 4.9

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 20
SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/KG/DAY]

PREGNANCY STATUS	DAY 1-21	
DAMS FROM GROUP 5:	500 PPM	
8735	G	105. SCHEDULED NECROPSY DAY 21
8763	G	103. SCHEDULED NECROPSY DAY 21
8775	G	99. SCHEDULED NECROPSY DAY 21
8778	G	76. SCHEDULED NECROPSY DAY 21
8784	G	89. SCHEDULED NECROPSY DAY 21
8790	G	92. SCHEDULED NECROPSY DAY 21
8824	G	100. SCHEDULED NECROPSY DAY 21
8828	G	78. SCHEDULED NECROPSY DAY 21
8830	G	126. SCHEDULED NECROPSY DAY 21
8833	G	98. SCHEDULED NECROPSY DAY 21
8837	G	120. SCHEDULED NECROPSY DAY 21
8838	G	112. SCHEDULED NECROPSY DAY 21
8845	G	105. SCHEDULED NECROPSY DAY 21
8846	G	88. SCHEDULED NECROPSY DAY 21
8855	G	100. SCHEDULED NECROPSY DAY 21
8863	G	86. SCHEDULED NECROPSY DAY 21
8864	G	96. SCHEDULED NECROPSY DAY 21
8868	G	100. SCHEDULED NECROPSY DAY 21
8874	G	128. SCHEDULED NECROPSY DAY 21
8875	G	106. SCHEDULED NECROPSY DAY 21
8878	G	106. SCHEDULED NECROPSY DAY 21
8928	G	84. SCHEDULED NECROPSY DAY 21
8933	G	108. SCHEDULED NECROPSY DAY 21
8936	G	97. SCHEDULED NECROPSY DAY 21
8937	NG	86. SCHEDULED NECROPSY DAY 21
MEAN		100.
S.D.		13.3
N		24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 4.9

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 21
SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY	0- 1	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 6: 1000 PPM											
8739	G		96.	83.	111.	88.	100.	75.	78.	103.	89.
8760	G		90.	119.	87.	94.	96.	90.	77.	76.	86.
8769	G		85.	106.	85.	104.	67.	86.	77.	73.	80.
8770	G		118.	116.	98.	86.	81.	80.	75.	85.	94.
8771	G		113.	101.	76.	103.	67.	97.	83.	89.	83.
8785	G		77.	108.	94.	83.	82.	81.	76.	86.	87.
8793	G		92.	112.	78.	113.	88.	87.	86.	71.	80.
8795	G		100.	81.	65.	85.	91.	78.	89.	102.	99.
8799	G		107.	113.	64.	85.	95.	89.	66.	76.	85.
8804	G		84.	93.	124.	82.	92.	101.	88.	74.	90.
8815	G		127.	100.	102.	111.	98.	103.	91.	100.	95.
8819	G		107.	76.	151.	94.	101.	93.	98.	99.	85.
8821	G		94.	117.	92.	99.	112.	102.	104.	99.	104.
8829	G		139.	112.	112.	105.	119.	117.	115.	101.	124.
8831	G		108.	83.	97.	84.	91.	89.	77.	96.	94.
8856	NG		94.	115.	103.	102.	92.	83.	89.	84.	75.
8860	G		99.	104.	81.	98.	71.	105.	NA	110.	73.
8861	G		105.	88.	102.	104.	92.	105.	96.	99.	103.
8865	G		109.	87.	101.	103.	120.	76.	108.	95.	94.
8870	G		66.	90.	82.	91.	97.	92.	83.	75.	93.
8872	G		105.	100.	119.	109.	124.	105.	120.	101.	90.
8885	G		99.	80.	100.	102.	85.	111.	85.	80.	89.
8888	G		93.	65.	111.	121.	NA	79.	87.	86.	98.
8896	G		95.	100.	117.	103.	86.	93.	91.	75.	81.
8917	G		125.	95.	86.	88.	83.	92.	77.	90.	84.
MEAN			101.	97.	97.	97.	93.	93.	88.	89.	91.
S.D.			16.3	14.6	19.8	10.8	15.4	11.5	13.5	11.9	10.3
N			24	24	24	24	23	24	23	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 4.9

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 22

SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY 9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 6: 1000 PPM										
8739	G	84.	101.	91.	105.	83.	83.	94.	106.	114.
8760	G	80.	75.	78.	70.	82.	91.	110.	106.	105.
8769	G	81.	90.	91.	56.	89.	107.	110.	103.	105.
8770	G	78.	90.	101.	100.	111.	117.	104.	112.	110.
8771	G	75.	83.	99.	84.	86.	100.	116.	93.	103.
8785	G	91.	73.	87.	76.	93.	96.	100.	109.	121.
8793	G	95.	90.	90.	92.	90.	103.	112.	107.	101.
8795	G	93.	NA	72.	85.	97.	100.	144.	105.	117.
8799	G	72.	82.	80.	85.	77.	109.	108.	NA	99.
8804	G	81.	91.	93.	93.	88.	115.	119.	97.	115.
8815	G	97.	104.	101.	99.	105.	93.	101.	101.	119.
8819	G	106.	93.	90.	98.	112.	110.	115.	108.	116.
8821	G	98.	103.	104.	109.	107.	103.	102.	101.	105.
8829	G	93.	108.	100.	114.	112.	121.	155.	133.	119.
8831	G	NA	101.	86.	NA	77.	90.	102.	119.	111.
8856	NG	83.	66.	NA	57.	66.	60.	70.	70.	NA
8860	G	89.	62.	73.	91.	92.	107.	81.	127.	120.
8861	G	91.	96.	107.	105.	75.	120.	104.	136.	135.
8865	G	99.	100.	116.	101.	93.	102.	102.	117.	109.
8870	G	84.	88.	87.	98.	78.	108.	102.	109.	107.
8872	G	99.	127.	121.	99.	89.	108.	101.	132.	125.
8885	G	101.	105.	96.	98.	89.	113.	100.	122.	120.
8888	G	88.	107.	124.	107.	104.	93.	109.	106.	122.
8896	G	86.	84.	75.	80.	92.	104.	127.	88.	111.
8917	G	76.	104.	107.	101.	88.	95.	107.	109.	107.
MEAN		89.	94.	95.	93.	92.	104.	109.	111.	113.
S.D.		9.3	13.9	14.2	13.6	11.3	9.9	15.3	12.6	8.6
N		23	23	24	23	24	24	24	23	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 4.9

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 23

SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY 18-19	19-20	20-21	1- 6	6- 9	9-12	12-16	16-21	6-16
DAMS FROM GROUP 6: 1000 PPM										
8739	G	135.	NA	81.	93.	91.	93.	93.	109.	92.
8760	G	105.	77.	75.	97.	80.	79.	87.	92.	82.
8769	G	101.	78.	91.	88.	76.	86.	93.	94.	85.
8770	G	123.	89.	94.	93.	85.	90.	109.	105.	96.
8771	G	104.	79.	64.	87.	85.	87.	97.	88.	90.
8785	G	97.	103.	75.	90.	82.	83.	91.	100.	86.
8793	G	98.	96.	86.	94.	78.	91.	101.	98.	93.
8795	G	88.	72.	105.	80.	98.	84.	108.	96.	97.
8799	G	82.	92.	73.	88.	76.	78.	96.	87.	84.
8804	G	115.	83.	79.	97.	84.	89.	105.	97.	93.
8815	G	109.	97.	90.	104.	96.	101.	100.	103.	98.
8819	G	78.	103.	93.	102.	93.	98.	110.	100.	100.
8821	G	99.	86.	88.	106.	102.	102.	104.	96.	103.
8829	G	113.	106.	96.	113.	112.	102.	125.	113.	114.
8831	G	106.	108.	87.	88.	89.	95.	91.	105.	91.
8856	NG	NA	80.	68.	98.	83.	76.	63.	71.	71.
8860	G	106.	84.	100.	90.	92.	75.	94.	106.	86.
8861	G	104.	104.	83.	97.	98.	99.	102.	112.	101.
8865	G	111.	104.	102.	98.	100.	106.	100.	108.	101.
8870	G	107.	93.	80.	91.	85.	86.	96.	98.	90.
8872	G	124.	99.	88.	113.	105.	115.	100.	112.	105.
8885	G	101.	117.	82.	94.	83.	102.	101.	108.	98.
8888	G	82.	90.	93.	93.	89.	106.	103.	97.	101.
8896	G	103.	94.	55.	100.	82.	81.	101.	90.	90.
8917	G	106.	80.	94.	88.	82.	97.	98.	98.	92.
MEAN		104.	93.	86.	95.	89.	93.	100.	101.	95.
S.D.		13.3	11.7	11.8	8.1	9.6	10.3	7.9	7.6	7.6
N		24	23	24	24	24	24	24	24	24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 4.9

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 24
SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/KG/DAY]

PREGNANCY STATUS	DAY 1-21	
DAMS FROM GROUP 6:	1000 PPM	
8739	G	92. SCHEDULED NECROPSY DAY 21
8760	G	89. SCHEDULED NECROPSY DAY 21
8769	G	88. SCHEDULED NECROPSY DAY 21
8770	G	99. SCHEDULED NECROPSY DAY 21
8771	G	90. SCHEDULED NECROPSY DAY 21
8785	G	90. SCHEDULED NECROPSY DAY 21
8793	G	95. SCHEDULED NECROPSY DAY 21
8795	G	94. SCHEDULED NECROPSY DAY 21
8799	G	85. SCHEDULED NECROPSY DAY 21
8804	G	97. SCHEDULED NECROPSY DAY 21
8815	G	101. SCHEDULED NECROPSY DAY 21
8819	G	99. SCHEDULED NECROPSY DAY 21
8821	G	100. SCHEDULED NECROPSY DAY 21
8829	G	112. SCHEDULED NECROPSY DAY 21
8831	G	97. SCHEDULED NECROPSY DAY 21
8856	NG	80. SCHEDULED NECROPSY DAY 21
8860	G	95. SCHEDULED NECROPSY DAY 21
8861	G	104. SCHEDULED NECROPSY DAY 21
8865	G	101. SCHEDULED NECROPSY DAY 21
8870	G	93. SCHEDULED NECROPSY DAY 21
8872	G	108. SCHEDULED NECROPSY DAY 21
8885	G	98. SCHEDULED NECROPSY DAY 21
8888	G	100. SCHEDULED NECROPSY DAY 21
8896	G	92. SCHEDULED NECROPSY DAY 21
8917	G	92. SCHEDULED NECROPSY DAY 21
MEAN		96.
S.D.		6.4
N		24

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

PGFWv4.11
11/02/2018
R:11/05/2018

TABLE 4.10

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 1
SPONSOR:HSIA INDIVIDUAL CALCULATED GESTATION COMPOUND CONSUMPTION [MG/KG/DAY]

PREGNANCY STATUS	DAY	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 1: 0 PPM									
8738	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8751	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8755	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8766	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8768	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8772	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8776	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8777	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8779	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8791	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8798	G	0.00	0.00	0.00	NA	0.00	0.00	0.00	0.00
8803	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8812	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8817	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8820	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8825	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8836	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8843	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8852	NG	0.00	0.00	0.00	0.00	0.00	NA	0.00	0.00
8858	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8871	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8883	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8886	G	NA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8894	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8926	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

G = GRAVID NG = NONGRAVID
NA = NOT APPLICABLE

TABLE 4.10

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 2
SPONSOR:HSIA INDIVIDUAL CALCULATED GESTATION COMPOUND CONSUMPTION [MG/KG/DAY]

PREGNANCY STATUS	DAY	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 1:		0 PPM								
8738	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8751	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8755	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8766	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8768	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8772	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8776	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8777	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8779	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8791	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8798	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8803	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8812	G	0.00	0.00	0.00	NA	0.00	0.00	0.00	0.00	0.00
8817	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8820	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8825	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8836	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8843	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8852	NG	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8858	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8871	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8883	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8886	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8894	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8926	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

G = GRAVID NG = NONGRAVID
NA = NOT APPLICABLE

TABLE 4.10

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 3
SPONSOR:HSIA INDIVIDUAL CALCULATED GESTATION COMPOUND CONSUMPTION [MG/KG/DAY]

PREGNANCY STATUS	DAY	18-19	19-20	20-21
DAMS FROM GROUP 1:		0 PPM		
8738	G	0.00	0.00	0.00
8751	G	0.00	0.00	0.00
8755	G	0.00	0.00	0.00
8766	G	0.00	0.00	0.00
8768	G	0.00	0.00	0.00
8772	G	0.00	0.00	0.00
8776	G	0.00	0.00	0.00
8777	G	0.00	0.00	0.00
8779	G	0.00	0.00	0.00
8791	G	0.00	0.00	0.00
8798	G	0.00	0.00	0.00
8803	G	0.00	0.00	0.00
8812	G	0.00	0.00	0.00
8817	G	0.00	0.00	0.00
8820	G	0.00	0.00	0.00
8825	G	0.00	0.00	0.00
8836	G	0.00	0.00	0.00
8843	G	0.00	0.00	0.00
8852	NG	0.00	0.00	0.00
8858	G	0.00	0.00	0.00
8871	G	0.00	0.00	0.00
8883	G	0.00	0.00	0.00
8886	G	0.00	0.00	0.00
8894	G	0.00	0.00	0.00
8926	G	0.00	0.00	0.00

G = GRAVID NG = NONGRAVID

TABLE 4.10

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 4
SPONSOR:HSIA INDIVIDUAL CALCULATED GESTATION COMPOUND CONSUMPTION [MG/KG/DAY]

	PREGNANCY STATUS	DAY	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 2: 15 MG/KG RA										
8740	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8743	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8756	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8757	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8780	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8789	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8800	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8801	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8802	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8808	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8809	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8810	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8818	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8822	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8827	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8840	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8842	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8847	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8850	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8851	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8854	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8900	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8901	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8930	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8931	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

G = GRAVID NG = NONGRAVID
NA = NOT APPLICABLE

TABLE 4.10

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 5
SPONSOR:HSIA INDIVIDUAL CALCULATED GESTATION COMPOUND CONSUMPTION [MG/KG/DAY]

	PREGNANCY STATUS	DAY	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 2: 15 MG/KG RA											
8740	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8743	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8756	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8757	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8780	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8789	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8800	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8801	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8802	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8808	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8809	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8810	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8818	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8822	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8827	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8840	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8842	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8847	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8850	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NA
8851	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8854	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8900	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8901	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8930	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8931	G		0.00	0.00	0.00	0.00	0.00	0.00	0.00	NA	NA

G = GRAVID NG = NONGRAVID
NA = NOT APPLICABLE

TABLE 4.10

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 6
SPONSOR:HSIA INDIVIDUAL CALCULATED GESTATION COMPOUND CONSUMPTION [MG/KG/DAY]

	PREGNANCY STATUS	DAY	18-19	19-20	20-21
DAMS FROM GROUP 2: 15 MG/KG RA					
8740	G		0.00	0.00	0.00
8743	G		0.00	0.00	0.00
8756	G		0.00	0.00	0.00
8757	G		0.00	0.00	0.00
8780	G		0.00	0.00	0.00
8789	G		0.00	0.00	0.00
8800	G		0.00	0.00	0.00
8801	G		0.00	0.00	0.00
8802	G		0.00	0.00	0.00
8808	G		0.00	0.00	0.00
8809	G		0.00	0.00	0.00
8810	G		0.00	NA	0.00
8818	G		0.00	0.00	0.00
8822	G		0.00	0.00	0.00
8827	G		0.00	0.00	0.00
8840	G		0.00	0.00	0.00
8842	G		0.00	NA	0.00
8847	G		0.00	0.00	0.00
8850	G		0.00	0.00	0.00
8851	G		0.00	0.00	0.00
8854	G		0.00	0.00	0.00
8900	G		0.00	0.00	0.00
8901	G		0.00	0.00	0.00
8930	G		0.00	0.00	0.00
8931	G		0.00	0.00	0.00

G = GRAVID NG = NONGRAVID
NA = NOT APPLICABLE

TABLE 4.10

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 7

SPONSOR:HSIA INDIVIDUAL CALCULATED GESTATION COMPOUND CONSUMPTION [MG/KG/DAY]

	PREGNANCY STATUS	DAY	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 3:		0.25 PPM								
8747	G		0.03	0.04	0.03	0.03	0.04	0.04	0.04	0.05
8758	G		0.03	0.04	0.03	0.03	0.03	0.04	0.03	0.03
8764	G		0.04	0.04	0.03	0.04	0.04	0.04	0.04	0.04
8767	G		0.04	0.04	0.04	0.03	0.04	0.04	0.04	0.04
8773	G		0.03	0.05	0.05	0.05	0.04	0.04	0.05	0.05
8774	G		0.03	0.04	0.03	0.04	0.04	0.04	0.04	0.04
8807	G		0.03	0.04	0.03	0.04	0.04	0.03	0.04	0.04
8814	G		0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
8826	G		0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.04
8834	G		0.04	0.04	0.04	0.04	0.04	0.03	0.04	0.04
8835	G		0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.05
8839	G		0.04	0.03	0.04	0.04	0.03	0.04	0.03	0.05
8849	G		0.03	0.03	0.03	0.03	0.03	0.04	0.03	0.03
8853	G		0.04	0.04	0.05	0.04	0.04	0.04	0.04	0.05
8859	G		0.04	0.04	0.05	0.04	0.05	0.04	0.05	0.05
8869	G		0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04
8879	G		0.03	0.04	0.04	0.03	0.04	0.03	0.04	0.04
8889	G		0.04	0.04	0.03	0.04	0.04	0.03	0.04	0.04
8891	G		0.02	0.03	0.03	0.03	0.02	0.03	0.03	0.03
8893	G		0.03	0.03	0.03	0.03	0.04	0.04	0.03	0.04
8897	G		0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.03
8908	G		0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
8910	G		0.03	0.03	0.05	0.03	0.03	0.03	0.03	0.03
8913	NG		0.03	0.03	0.04	0.03	0.04	0.04	0.03	0.04
8916	NG		0.03	0.04	0.03	0.03	0.03	0.04	0.04	0.03

G = GRAVID NG = NONGRAVID

TABLE 4.10

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 8
SPONSOR:HSIA INDIVIDUAL CALCULATED GESTATION COMPOUND CONSUMPTION [MG/KG/DAY]

	PREGNANCY STATUS	DAY	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 3:		0.25 PPM									
8747	G		0.04	0.05	0.05	0.05	0.06	0.05	0.05	0.05	0.05
8758	G		0.04	0.05	0.05	0.05	0.04	0.05	0.05	0.05	0.05
8764	G		0.05	0.05	0.06	0.04	0.05	0.05	0.04	0.05	0.05
8767	G		0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.05
8773	G		0.05	0.05	0.03	0.05	0.04	0.04	0.03	0.04	0.04
8774	G		0.04	0.05	0.05	0.05	0.04	0.04	0.05	0.05	0.05
8807	G		0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.05
8814	G		0.03	0.04	0.04	0.04	0.05	0.04	0.05	0.05	0.05
8826	G		0.04	0.04	0.03	0.05	0.05	0.05	0.04	0.05	0.05
8834	G		0.04	0.04	0.05	0.05	0.05	0.06	0.05	0.06	0.06
8835	G		0.05	0.05	0.05	0.06	0.05	0.06	0.06	0.06	0.06
8839	G		0.04	0.04	0.04	0.05	0.05	0.06	0.05	0.05	0.05
8849	G		0.04	0.04	0.04	0.04	0.04	0.05	0.05	0.04	0.05
8853	G		0.04	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06
8859	G		0.04	0.05	0.04	0.04	0.05	0.04	0.05	0.05	0.05
8869	G		0.04	0.04	0.05	0.04	0.06	0.05	0.05	0.05	0.05
8879	G		0.04	NA	0.05	0.05	0.05	0.05	0.05	NA	0.05
8889	G		0.05	0.04	0.05	0.04	0.04	0.04	0.04	0.05	0.04
8891	G		0.03	0.04	0.03	0.04	0.04	0.04	0.05	0.04	0.05
8893	G		0.03	0.05	0.05	0.05	0.04	0.04	0.05	0.04	0.05
8897	G		0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.05
8908	G		0.05	0.05	0.06	0.04	0.04	0.05	0.05	0.05	0.05
8910	G		0.03	0.04	0.02	0.04	0.04	0.04	0.04	0.04	0.04
8913	NG		0.05	0.04	0.04	0.05	0.04	0.04	0.04	0.05	0.04
8916	NG		0.05	0.03	0.05	0.04	0.04	0.04	0.04	0.04	0.04

G = GRAVID NG = NONGRAVID
NA = NOT APPLICABLE

TABLE 4.10

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 9
SPONSOR:HSIA INDIVIDUAL CALCULATED GESTATION COMPOUND CONSUMPTION [MG/KG/DAY]

PREGNANCY STATUS	DAY	18-19	19-20	20-21
DAMS FROM GROUP 3:		0.25 PPM		
8747	G	0.05	0.03	0.03
8758	G	0.05	0.03	NA
8764	G	0.04	0.05	0.04
8767	G	0.05	0.03	0.03
8773	G	0.03	0.03	0.04
8774	G	0.05	0.04	0.04
8807	G	0.04	0.04	0.05
8814	G	0.05	0.05	0.03
8826	G	0.05	0.04	NA
8834	G	0.05	0.05	0.04
8835	G	0.05	0.05	0.04
8839	G	0.05	0.04	0.04
8849	G	0.05	0.03	0.03
8853	G	0.06	0.05	0.05
8859	G	0.04	0.05	0.05
8869	G	0.04	0.05	0.05
8879	G	0.04	0.03	0.03
8889	G	0.03	0.04	0.03
8891	G	0.04	0.04	0.03
8893	G	0.04	0.04	0.04
8897	G	0.04	0.04	0.04
8908	G	0.04	0.04	0.04
8910	G	0.03	0.03	0.03
8913	NG	0.04	0.03	0.03
8916	NG	0.04	0.03	0.03

G = GRAVID NG = NONGRAVID
NA = NOT APPLICABLE

TABLE 4.10

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 10
SPONSOR:HSIA INDIVIDUAL CALCULATED GESTATION COMPOUND CONSUMPTION [MG/KG/DAY]

	PREGNANCY STATUS	DAY	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 4:		1.5 PPM								
8741	G		0.21	0.22	0.21	0.19	0.22	0.19	0.20	0.20
8765	G		0.19	0.17	0.20	0.22	0.24	0.22	0.22	0.26
8783	G		0.18	0.26	0.20	0.23	0.18	0.24	0.20	0.23
8786	G		0.22	0.22	0.28	0.27	0.27	0.28	0.30	0.26
8788	G		0.19	0.16	0.20	0.23	0.21	0.25	0.20	0.26
8792	G		0.24	0.23	0.27	0.33	0.25	0.30	0.25	0.29
8805	G		0.20	0.17	0.24	0.21	0.22	0.29	0.23	0.24
8806	G		0.20	0.18	0.21	0.24	0.24	0.24	0.23	0.26
8811	G		0.26	0.23	0.27	0.25	0.25	0.27	0.24	0.24
8813	G		0.18	0.13	0.16	0.18	0.19	NA	0.20	0.18
8823	G		0.22	0.19	0.25	0.25	0.24	0.25	0.24	0.28
8844	G		0.14	0.24	0.20	0.20	0.22	0.20	0.22	0.21
8848	G		0.24	0.23	0.25	0.30	0.26	0.30	0.26	0.31
8857	G		0.22	0.24	0.22	0.24	0.22	0.23	0.21	0.20
8867	G		0.18	0.19	0.19	0.18	0.20	0.18	0.19	0.15
8873	G		0.16	0.21	0.19	0.22	0.23	0.21	0.20	0.18
8876	G		0.20	0.21	0.20	0.17	0.21	0.20	0.26	0.21
8881	G		0.18	0.17	0.19	0.19	0.20	0.19	0.21	0.19
8884	NG		0.10	0.20	0.17	0.16	0.19	0.16	0.22	0.20
8890	G		0.24	0.31	0.31	0.27	0.25	0.26	0.25	0.25
8895	G		0.28	0.26	0.29	0.29	0.26	0.27	0.31	0.30
8899	G		0.16	0.21	0.19	NA	0.18	0.22	0.19	0.18
8907	G		0.20	0.24	0.18	0.22	0.21	0.19	0.22	0.21
8941	G		0.23	0.26	0.27	0.29	0.28	0.29	0.25	0.19
8942	G		0.26	0.26	0.27	0.28	0.27	0.26	0.28	0.26

G = GRAVID NG = NONGRAVID
NA = NOT APPLICABLE

TABLE 4.10

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 11
SPONSOR:HSIA INDIVIDUAL CALCULATED GESTATION COMPOUND CONSUMPTION [MG/KG/DAY]

	PREGNANCY STATUS	DAY	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 4:	1.5 PPM										
8741	G		0.16	0.18	0.16	0.21	0.18	0.19	0.20	0.19	0.21
8765	G		0.21	0.23	0.24	0.21	0.19	0.18	0.18	0.23	0.19
8783	G		0.20	0.15	0.18	0.15	0.17	0.19	0.17	0.17	0.18
8786	G		0.24	0.33	0.25	0.23	0.25	0.21	0.25	0.26	0.28
8788	G		0.21	0.21	0.21	0.17	0.22	0.18	0.21	0.24	0.20
8792	G		0.25	0.18	0.23	0.27	0.25	0.22	0.23	0.29	0.20
8805	G		0.23	0.21	0.22	0.18	0.17	0.17	0.21	0.20	0.19
8806	G		0.24	0.23	0.21	0.19	0.18	0.17	0.23	0.21	0.24
8811	G		0.25	0.21	0.19	0.16	0.19	0.18	0.21	0.23	0.23
8813	G		0.20	0.23	0.17	0.16	0.14	0.15	0.18	0.16	0.20
8823	G		0.26	0.25	0.26	0.21	0.24	0.20	0.24	0.28	0.23
8844	G		0.25	0.22	0.18	0.18	0.17	0.18	0.18	0.22	0.21
8848	G		0.27	0.26	0.22	0.22	0.28	0.27	0.27	0.30	0.23
8857	G		0.19	0.16	0.25	0.20	0.24	0.23	0.24	0.18	0.24
8867	G		0.14	0.15	0.15	0.14	0.17	0.16	0.17	0.17	0.18
8873	G		0.23	0.21	0.15	0.18	0.16	0.17	0.17	0.20	0.21
8876	G		0.19	0.16	0.18	0.20	0.16	0.20	0.18	0.22	0.22
8881	G		0.19	0.17	0.15	0.17	0.17	0.15	0.17	0.18	0.16
8884	NG		0.21	0.18	0.12	0.17	0.13	0.15	0.10	0.18	0.12
8890	G		0.23	0.21	0.20	0.19	0.20	0.22	0.22	0.20	0.23
8895	G		0.29	0.23	0.21	0.18	0.22	0.23	0.21	0.23	0.22
8899	G		0.22	0.19	0.17	0.14	0.15	0.18	0.19	0.19	0.20
8907	G		0.22	0.17	0.16	0.16	0.20	0.19	0.20	0.20	0.22
8941	G		0.21	0.21	0.24	0.24	0.24	0.26	0.23	0.25	0.25
8942	G		0.21	0.19	0.19	0.22	0.24	0.32	0.27	0.25	0.22

G = GRAVID NG = NONGRAVID

TABLE 4.10

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 12
SPONSOR:HSIA INDIVIDUAL CALCULATED GESTATION COMPOUND CONSUMPTION [MG/KG/DAY]

	PREGNANCY STATUS	DAY	18-19	19-20	20-21
DAMS FROM GROUP 4:			1.5 PPM		
8741	G		0.20	0.19	0.18
8765	G		0.19	0.18	0.18
8783	G		0.15	0.16	0.16
8786	G		0.23	0.23	0.20
8788	G		0.20	0.25	0.17
8792	G		0.26	0.29	0.24
8805	G		0.18	0.16	0.16
8806	G		0.17	0.17	0.18
8811	G		0.24	0.24	0.19
8813	G		0.16	0.17	0.12
8823	G		0.21	0.18	0.16
8844	G		0.12	0.19	0.18
8848	G		0.23	0.23	0.24
8857	G		0.25	0.24	0.21
8867	G		0.15	0.15	0.12
8873	G		0.14	0.17	0.19
8876	G		0.22	0.20	0.16
8881	G		0.16	0.16	0.17
8884	NG		0.14	0.14	0.10
8890	G		0.20	0.23	0.18
8895	G		0.21	0.22	0.21
8899	G		0.16	0.14	0.16
8907	G		0.16	0.19	0.18
8941	G		0.24	0.19	0.18
8942	G		0.21	0.19	0.21

G = GRAVID NG = NONGRAVID

TABLE 4.10

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 13
SPONSOR:HSIA INDIVIDUAL CALCULATED GESTATION COMPOUND CONSUMPTION [MG/KG/DAY]

	PREGNANCY STATUS	DAY	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 5: 500 PPM										
8735	G		49.54	55.30	55.87	47.07	57.00	40.80	57.60	58.80
8763	G		67.13	73.86	63.36	70.85	56.45	49.36	57.60	49.80
8775	G		67.13	49.62	63.94	56.45	61.63	48.22	60.00	48.60
8778	G		62.21	49.54	44.20	39.00	45.00	38.40	48.60	47.50
8784	G		45.50	47.23	54.72	49.36	45.00	51.00	48.00	51.00
8790	G		47.79	43.85	51.26	52.42	39.17	44.77	58.20	48.60
8824	G		64.98	57.70	70.85	57.60	58.75	44.77	63.00	45.00
8828	G		NA	46.08	47.23	52.99	37.88	37.20	45.60	49.20
8830	G		78.34	66.82	67.16	70.80	63.00	67.80	72.00	68.75
8833	G		65.09	59.33	54.14	63.71	51.60	53.40	56.40	53.40
8837	G		72.58	69.12	64.51	70.03	63.60	75.00	62.40	66.00
8838	G		68.20	72.70	61.63	58.18	59.33	57.97	60.00	58.20
8845	G		64.51	59.90	60.48	56.83	68.40	65.40	67.80	49.80
8846	G		49.40	52.51	48.96	46.66	46.08	41.33	49.20	44.40
8855	G		59.90	58.75	59.90	54.53	53.40	54.60	58.20	48.60
8863	G		55.30	52.42	57.97	52.20	43.20	49.80	51.00	41.25
8864	G		52.42	66.24	57.02	54.53	55.80	51.00	54.60	43.80
8868	G		55.87	65.44	58.20	67.20	51.60	57.60	45.00	55.37
8874	G		74.43	72.00	74.30	78.91	71.18	63.60	72.00	66.00
8875	G		50.20	61.63	52.42	65.66	46.49	57.00	59.40	52.80
8878	G		51.35	57.60	58.75	53.57	63.71	53.40	57.60	54.60
8928	G		41.47	54.72	33.87	55.20	NA	77.40	34.80	35.00
8933	G		62.78	57.40	63.60	58.20	59.40	52.80	57.50	45.77
8936	G		46.66	61.63	49.94	51.60	54.60	57.60	52.80	56.25
8937	NG		37.44	43.20	61.06	49.94	40.80	44.40	55.80	52.20

G = GRAVID NG = NONGRAVID
NA = NOT APPLICABLE

TABLE 4.10

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 14
SPONSOR:HSIA INDIVIDUAL CALCULATED GESTATION COMPOUND CONSUMPTION [MG/KG/DAY]

	PREGNANCY STATUS	DAY	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 5:	500 PPM										
8735	G		60.00	59.89	55.37	51.41	66.70	66.70	70.15	74.75	74.75
8763	G		49.20	58.20	59.38	50.85	55.94	55.44	62.10	60.38	74.18
8775	G		51.60	NA	60.00	49.72	48.59	51.91	65.55	68.43	68.43
8778	G		44.07	37.29	35.78	46.00	34.50	44.28	54.63	46.00	49.45
8784	G		48.13	54.81	45.20	43.85	57.50	51.75	73.60	52.33	54.05
8790	G		47.40	52.80	59.38	57.63	48.03	49.39	51.18	62.10	60.38
8824	G		54.00	53.40	66.25	48.03	59.89	48.89	68.43	67.85	59.80
8828	G		35.40	49.38	39.55	48.59	32.26	52.90	29.33	62.68	60.38
8830	G		64.41	57.63	71.06	79.93	75.33	73.03	81.08	87.40	82.80
8833	G		57.50	54.81	45.77	51.91	59.80	52.33	67.28	62.68	58.08
8837	G		67.50	67.24	60.46	65.52	71.88	68.43	81.08	83.38	78.20
8838	G		59.40	63.00	76.25	68.93	61.02	51.41	73.60	70.73	71.30
8845	G		50.00	51.98	49.72	44.86	59.23	62.68	71.30	73.60	75.90
8846	G		47.40	52.20	53.13	49.16	51.42	49.39	58.08	58.08	61.53
8855	G		63.13	49.72	54.81	52.42	50.60	59.23	69.00	66.13	70.15
8863	G		50.29	41.25	40.82	47.73	45.43	56.93	58.65	56.93	59.23
8864	G		47.50	57.07	55.37	46.37	53.48	36.23	66.13	64.98	55.78
8868	G		50.29	42.84	69.58	51.75	54.05	60.38	63.83	67.85	78.81
8874	G		76.20	85.63	75.15	67.24	63.50	77.05	82.23	86.25	83.38
8875	G		54.00	60.00	60.46	59.33	57.46	64.40	66.70	74.18	75.33
8878	G		55.80	58.75	50.85	72.32	49.39	70.73	75.90	74.18	64.40
8928	G		51.42	52.55	37.30	48.30	31.05	44.28	58.08	52.33	65.55
8933	G		54.81	54.94	60.95	58.65	63.83	69.00	71.88	83.95	85.92
8936	G		54.81	55.37	42.34	58.65	50.60	59.80	58.08	65.55	73.60
8937	NG		55.63	37.86	63.28	43.85	51.75	NA	63.83	49.45	47.15

G = GRAVID NG = NONGRAVID
NA = NOT APPLICABLE

TABLE 4.10

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 15
SPONSOR:HSIA INDIVIDUAL CALCULATED GESTATION COMPOUND CONSUMPTION [MG/KG/DAY]

PREGNANCY STATUS	DAY	18-19	19-20	20-21
DAMS FROM GROUP 5:		500 PPM		
8735	G	68.43	64.60	66.82
8763	G	54.63	56.93	44.28
8775	G	55.78	53.48	46.58
8778	G	56.20	52.11	31.90
8784	G	51.75	69.12	49.65
8790	G	56.35	58.08	57.50
8824	G	57.50	50.60	50.03
8828	G	52.33	50.03	38.76
8830	G	89.79	80.92	63.80
8833	G	52.90	60.72	53.33
8837	G	77.63	78.17	59.46
8838	G	60.38	64.98	65.55
8845	G	64.98	69.12	47.81
8846	G	51.75	44.28	59.23
8855	G	60.95	64.60	61.30
8863	G	NA	56.40	45.82
8864	G	59.80	61.37	58.24
8868	G	71.11	50.46	52.20
8874	G	79.93	65.55	71.71
8875	G	72.45	72.45	65.89
8878	G	65.55	59.23	76.87
8928	G	63.95	41.68	41.18
8933	G	73.56	58.00	66.12
8936	G	64.60	69.27	52.20
8937	NG	36.80	65.89	42.91

G = GRAVID NG = NONGRAVID
NA = NOT APPLICABLE

TABLE 4.10

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 16
SPONSOR:HSIA INDIVIDUAL CALCULATED GESTATION COMPOUND CONSUMPTION [MG/KG/DAY]

	PREGNANCY STATUS	DAY	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 6:		1000 PPM								
8739	G		89.14	119.21	94.16	116.60	87.45	90.95	120.10	112.32
8760	G		127.81	93.44	100.96	102.72	104.94	89.78	88.62	100.28
8769	G		113.84	91.29	111.70	71.69	100.28	89.78	85.12	93.28
8770	G		124.58	105.25	92.02	94.45	93.28	87.45	99.11	118.63
8771	G		103.02	81.85	110.62	71.96	104.18	88.81	103.77	96.78
8785	G		115.99	100.96	88.81	95.61	94.45	88.62	100.28	109.79
8793	G		120.29	83.77	121.36	94.16	101.44	100.28	82.79	93.28
8795	G		82.62	70.01	91.29	97.73	83.77	95.23	118.93	115.43
8799	G		115.26	68.93	91.29	102.03	95.59	70.62	88.62	99.11
8804	G		99.88	133.18	88.07	98.44	117.77	102.61	86.28	104.94
8815	G		107.40	109.55	119.21	104.86	120.10	106.11	116.60	110.77
8819	G		81.62	162.17	100.58	117.77	108.44	114.27	115.43	107.27
8821	G		119.34	99.08	106.33	120.29	109.55	111.28	115.43	121.26
8829	G		114.24	120.62	112.77	127.81	125.66	123.05	117.77	144.58
8831	G		84.66	104.47	90.22	97.73	95.59	82.39	111.94	109.60
8856	NG		123.86	110.62	109.55	98.81	88.81	103.77	97.94	87.45
8860	G		111.70	86.99	104.86	82.79	122.43	NA	128.26	92.13
8861	G		94.78	109.55	111.70	98.81	112.35	111.94	115.43	120.10
8865	G		93.44	108.47	110.21	139.92	88.62	125.93	110.77	118.63
8870	G		96.93	88.07	97.73	104.18	98.44	96.78	87.45	108.44
8872	G		107.40	127.33	127.09	144.58	122.43	139.92	127.46	107.19
8885	G		86.16	107.40	109.55	91.29	118.77	99.11	93.28	103.77
8888	G		69.81	119.21	129.95	NA	92.11	101.44	100.28	114.27
8896	G		107.40	125.66	110.62	92.02	108.44	106.11	87.45	94.45
8917	G		102.03	92.02	102.61	96.78	107.27	89.78	113.58	100.04

G = GRAVID NG = NONGRAVID
NA = NOT APPLICABLE

TABLE 4.10

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 17
SPONSOR:HSIA INDIVIDUAL CALCULATED GESTATION COMPOUND CONSUMPTION [MG/KG/DAY]

	PREGNANCY STATUS	DAY	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 6:	1000 PPM										
8739	G		100.04	120.29	101.83	126.21	99.77	99.77	112.99	127.41	137.03
8760	G		100.96	89.33	92.90	78.33	98.56	109.38	132.22	127.41	126.21
8769	G		102.22	107.19	108.38	62.66	106.98	128.61	132.22	123.81	126.21
8770	G		92.90	107.19	113.02	120.20	133.42	140.63	125.01	134.62	132.22
8771	G		87.45	96.78	124.94	100.04	102.43	111.90	139.43	111.79	123.81
8785	G		108.38	86.94	97.35	91.35	111.79	115.39	120.20	131.02	145.44
8793	G		119.89	107.19	107.19	102.95	108.18	123.81	134.62	128.61	121.40
8795	G		108.44	NA	90.86	101.24	115.53	111.90	173.09	126.21	140.63
8799	G		83.95	95.61	100.96	101.24	91.71	121.97	129.82	NA	119.00
8804	G		102.22	108.38	110.76	104.07	105.78	138.23	143.04	116.59	138.23
8815	G		122.41	123.86	120.29	110.78	126.21	111.79	121.40	121.40	143.04
8819	G		126.25	110.76	100.71	117.80	134.62	132.22	138.23	129.82	139.43
8821	G		114.27	120.10	131.25	129.82	127.44	115.26	122.60	121.40	126.21
8829	G		108.44	125.93	126.20	135.77	133.39	135.40	186.31	159.87	143.04
8831	G		NA	117.77	108.53	NA	91.71	100.71	122.60	143.04	133.42
8856	NG		96.78	83.29	NA	67.89	73.85	72.12	84.14	84.14	NA
8860	G		106.00	73.84	81.69	109.38	110.58	128.61	97.36	152.65	144.24
8861	G		106.11	121.15	127.44	125.06	83.93	144.24	125.01	163.47	162.27
8865	G		117.91	119.10	129.80	121.40	111.79	122.60	122.60	140.63	131.02
8870	G		97.94	111.06	103.62	116.72	87.28	129.82	122.60	131.02	128.61
8872	G		117.91	142.11	145.44	119.00	106.98	129.82	121.40	158.66	160.50
8885	G		117.77	132.51	114.34	116.72	99.59	135.83	120.20	146.64	144.24
8888	G		111.06	127.44	147.68	119.73	125.01	111.79	131.02	127.41	146.64
8896	G		108.53	100.04	89.33	89.52	110.58	125.01	152.65	105.78	133.42
8917	G		90.52	116.38	128.61	121.40	105.78	114.19	128.61	131.02	137.39

G = GRAVID NG = NONGRAVID
NA = NOT APPLICABLE

TABLE 4.10

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 18
SPONSOR:HSIA INDIVIDUAL CALCULATED GESTATION COMPOUND CONSUMPTION [MG/KG/DAY]

PREGNANCY STATUS	DAY	18-19	19-20	20-21
DAMS FROM GROUP 6:		1000 PPM		
8739	G	173.34	NA	91.13
8760	G	126.21	98.87	90.38
8769	G	121.40	100.15	109.66
8770	G	157.93	107.25	105.75
8771	G	125.01	94.96	76.93
8785	G	124.55	124.12	84.38
8793	G	117.80	123.26	103.63
8795	G	105.78	86.54	126.21
8799	G	98.56	110.58	87.75
8804	G	138.23	106.57	95.20
8815	G	131.02	124.55	108.45
8819	G	100.15	124.12	104.63
8821	G	119.00	103.37	105.78
8829	G	135.83	127.41	115.39
8831	G	127.41	129.82	104.57
8856	NG	NA	96.16	87.31
8860	G	136.10	101.22	112.50
8861	G	125.01	125.01	106.57
8865	G	142.52	125.32	114.75
8870	G	128.61	111.79	102.72
8872	G	149.42	111.38	99.00
8885	G	121.40	140.63	105.29
8888	G	98.56	115.56	112.07
8896	G	123.81	120.70	66.28
8917	G	127.73	90.00	105.75

G = GRAVID NG = NONGRAVID
NA = NOT APPLICABLE

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10/30/2018
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TABLE 4.11

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 1
SPONSOR:HSIA INDIVIDUAL MATERNAL MACROSCOPIC FINDINGS

DAMS FROM GROUP 1: 0 PPM	MATERNAL GROSS OBSERVATION
8738	UTERUS: CONTENTS, DARK RED SURROUNDS SITES #2, #3, #8 AND #9
8751	NO SIGNIFICANT CHANGES OBSERVED
8755	NO SIGNIFICANT CHANGES OBSERVED
8766	DELIVERED GESTATION DAY 21 (SITES #6 THROUGH #8 ARBITRARILY ASSIGNED)
8768	NO SIGNIFICANT CHANGES OBSERVED
8772	NO SIGNIFICANT CHANGES OBSERVED
8776	NO SIGNIFICANT CHANGES OBSERVED
8777	NO SIGNIFICANT CHANGES OBSERVED
8779	NO SIGNIFICANT CHANGES OBSERVED
8791	NO SIGNIFICANT CHANGES OBSERVED
8798	NO SIGNIFICANT CHANGES OBSERVED
8803	NO SIGNIFICANT CHANGES OBSERVED
8812	NO SIGNIFICANT CHANGES OBSERVED
8817	NO SIGNIFICANT CHANGES OBSERVED
8820	NO SIGNIFICANT CHANGES OBSERVED
8825	NO SIGNIFICANT CHANGES OBSERVED
8836	NO SIGNIFICANT CHANGES OBSERVED
8843	NO SIGNIFICANT CHANGES OBSERVED
8852	NONGRAVID -- AMMONIUM SULFIDE NEGATIVE
8858	NO SIGNIFICANT CHANGES OBSERVED
8871	NO SIGNIFICANT CHANGES OBSERVED
8883	NO SIGNIFICANT CHANGES OBSERVED
8886	NO SIGNIFICANT CHANGES OBSERVED
8894	NO SIGNIFICANT CHANGES OBSERVED
8926	NO SIGNIFICANT CHANGES OBSERVED

TABLE 4.11

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 2
SPONSOR:HSIA INDIVIDUAL MATERNAL MACROSCOPIC FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	MATERNAL GROSS OBSERVATION
8740	UTERUS: CONTENTS, DARK RED SURROUNDS SITE #1 AMNIOTIC SAC: CONTENTS, RED FLUID SITES #3, #5, #11, #13, #15 AND #17
8743	AMNIOTIC SAC: CONTENTS, RED FLUID SITES #2, #6 THROUGH #11 AND #13
8756	NO SIGNIFICANT CHANGES OBSERVED
8757	AMNIOTIC SAC: CONTENTS, RED FLUID SITES #2, #13 AND #14
8780	AMNIOTIC SAC: CONTENTS, RED FLUID SITES #2, #4, #5, #7, #9 THROUGH #14 AND #17
8789	NO SIGNIFICANT CHANGES OBSERVED
8800	AMNIOTIC SAC: CONTENTS, RED FLUID SITES #2, #3, #6, #9 AND #11 THROUGH #15 UTERUS: CONTENTS, DARK RED SURROUNDS SITES #9 AND #10
8801	NO SIGNIFICANT CHANGES OBSERVED
8802	AMNIOTIC SAC: CONTENTS, RED FLUID SITES #5, #12 AND #13
8808	AMNIOTIC SAC: CONTENTS, RED FLUID SITES #1, #4, #5 AND #9 THROUGH #12 UTERUS: CONTENTS, DARK RED SURROUNDS SITES #2 AND #3
8809	NO SIGNIFICANT CHANGES OBSERVED
8810	AMNIOTIC SAC: CONTENTS, RED FLUID SITES #1 THROUGH #13
8818	NO SIGNIFICANT CHANGES OBSERVED
8822	VAGINA: CONTENTS, DARK RED UTERUS: CONTENTS, DARK RED SURROUNDS ALL SITES AMNIOTIC SAC: CONTENTS, RED FLUID SITES #8, #9 AND #11
8827	NO SIGNIFICANT CHANGES OBSERVED

TABLE 4.11

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 3
SPONSOR:HSIA INDIVIDUAL MATERNAL MACROSCOPIC FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	MATERNAL GROSS OBSERVATION
8840	AMNIOTIC SAC: CONTENTS, RED FLUID SITES #2, #3 AND #6 THROUGH #8
8842	UTERUS: CYST(S) TWO, 5 MM IN DIAMETER, RED FLUID FILLED, RIGHT HORN, ON SEROSAL SURFACE AMNIOTIC SAC: CONTENTS, RED FLUID SURROUNDS SITES #1 AND #3
8847	AMNIOTIC SAC: CONTENTS, RED FLUID SITES #2, #4 THROUGH #7, #9 AND #10
8850	UTERUS: CONTENTS, DARK RED SURROUNDS SITES #4 AND #5 AMNIOTIC SAC: CONTENTS, RED FLUID SITES #6, #14 AND #16
8851	AMNIOTIC SAC: CONTENTS, RED FLUID SITE #9
8854	AMNIOTIC SAC: CONTENTS, RED FLUID SITE #1
8900	NO SIGNIFICANT CHANGES OBSERVED
8901	AMNIOTIC SAC: CONTENTS, RED FLUID SITES #1, #3, #6 AND #12 THROUGH #15
8930	AMNIOTIC SAC: CONTENTS, RED FLUID SITES #3, #4, #6, #7, #13 AND #14
8931	NO SIGNIFICANT CHANGES OBSERVED

TABLE 4.11

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 4
SPONSOR:HSIA INDIVIDUAL MATERNAL MACROSCOPIC FINDINGS

DAMS FROM GROUP 3: 0.25 PPM	MATERNAL GROSS OBSERVATION
8747	NO SIGNIFICANT CHANGES OBSERVED
8758	NO SIGNIFICANT CHANGES OBSERVED
8764	NO SIGNIFICANT CHANGES OBSERVED
8767	NO SIGNIFICANT CHANGES OBSERVED
8773	UTERUS: CYST(S) ONE, 3 MM IN DIAMETER, ON SEROSAL SURFACE, LEFT HORN GRAVID -- AMMONIUM SULFIDE POSITIVE
8774	NO SIGNIFICANT CHANGES OBSERVED
8807	NO SIGNIFICANT CHANGES OBSERVED
8814	NO SIGNIFICANT CHANGES OBSERVED
8826	NO SIGNIFICANT CHANGES OBSERVED
8834	NO SIGNIFICANT CHANGES OBSERVED
8835	NO SIGNIFICANT CHANGES OBSERVED
8839	NO SIGNIFICANT CHANGES OBSERVED
8849	NO SIGNIFICANT CHANGES OBSERVED
8853	NO SIGNIFICANT CHANGES OBSERVED
8859	NO SIGNIFICANT CHANGES OBSERVED
8869	NO SIGNIFICANT CHANGES OBSERVED
8879	NO SIGNIFICANT CHANGES OBSERVED
8889	NO SIGNIFICANT CHANGES OBSERVED
8891	NO SIGNIFICANT CHANGES OBSERVED
8893	NO SIGNIFICANT CHANGES OBSERVED
8897	NO SIGNIFICANT CHANGES OBSERVED
8908	NO SIGNIFICANT CHANGES OBSERVED
8910	UTERUS: CONTENTS, DARK RED SURROUNDS SITE #4
8913	NONGRAVID -- AMMONIUM SULFIDE NEGATIVE
8916	NONGRAVID -- AMMONIUM SULFIDE NEGATIVE

TABLE 4.11

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 5
SPONSOR:HSIA INDIVIDUAL MATERNAL MACROSCOPIC FINDINGS

DAMS FROM GROUP 4: 1.5 PPM	MATERNAL GROSS OBSERVATION
8741	UTERUS: CONTENTS, DARK RED SURROUNDS SITES #15 THROUGH #17
8765	NO SIGNIFICANT CHANGES OBSERVED
8783	NO SIGNIFICANT CHANGES OBSERVED
8786	NO SIGNIFICANT CHANGES OBSERVED
8788	NO SIGNIFICANT CHANGES OBSERVED
8792	NO SIGNIFICANT CHANGES OBSERVED
8805	NO SIGNIFICANT CHANGES OBSERVED
8806	NO SIGNIFICANT CHANGES OBSERVED
8811	NO SIGNIFICANT CHANGES OBSERVED
8813	NO SIGNIFICANT CHANGES OBSERVED
8823	NO SIGNIFICANT CHANGES OBSERVED
8844	NO SIGNIFICANT CHANGES OBSERVED
8848	NO SIGNIFICANT CHANGES OBSERVED
8857	NO SIGNIFICANT CHANGES OBSERVED
8867	NO SIGNIFICANT CHANGES OBSERVED
8873	NO SIGNIFICANT CHANGES OBSERVED
8876	NO SIGNIFICANT CHANGES OBSERVED
8881	NO SIGNIFICANT CHANGES OBSERVED
8884	NONGRAVID -- AMMONIUM SULFIDE NEGATIVE
8890	NO SIGNIFICANT CHANGES OBSERVED
8895	NO SIGNIFICANT CHANGES OBSERVED
8899	VAGINA: CONTENTS, DARK RED UTERUS: CONTENTS, DARK RED SURROUNDS SITES #1 THROUGH #7
8907	NO SIGNIFICANT CHANGES OBSERVED
8941	NO SIGNIFICANT CHANGES OBSERVED
8942	NO SIGNIFICANT CHANGES OBSERVED

TABLE 4.11

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 6
SPONSOR:HSIA INDIVIDUAL MATERNAL MACROSCOPIC FINDINGS

DAMS FROM GROUP 5: 500 PPM	MATERNAL GROSS OBSERVATION
8735	NO SIGNIFICANT CHANGES OBSERVED
8763	NO SIGNIFICANT CHANGES OBSERVED
8775	NO SIGNIFICANT CHANGES OBSERVED
8778	NO SIGNIFICANT CHANGES OBSERVED
8784	NO SIGNIFICANT CHANGES OBSERVED
8790	NO SIGNIFICANT CHANGES OBSERVED
8824	UTERUS: CONTENTS, DARK RED SURROUNDS SITES #6 AND #7
8828	LIVER: PALE ALL LOBES
8830	NO SIGNIFICANT CHANGES OBSERVED
8833	NO SIGNIFICANT CHANGES OBSERVED
8837	NO SIGNIFICANT CHANGES OBSERVED
8838	NO SIGNIFICANT CHANGES OBSERVED
8845	NO SIGNIFICANT CHANGES OBSERVED
8846	NO SIGNIFICANT CHANGES OBSERVED
8855	NO SIGNIFICANT CHANGES OBSERVED
8863	NO SIGNIFICANT CHANGES OBSERVED
8864	NO SIGNIFICANT CHANGES OBSERVED
8868	NO SIGNIFICANT CHANGES OBSERVED
8874	NO SIGNIFICANT CHANGES OBSERVED
8875	LIVER: ACCESSORY LOBULE(S) ONE, IRREGULARLY SHAPED, IN MEDIAN CLEFT PLACENTAE: ENLARGED SITE #1
8878	NO SIGNIFICANT CHANGES OBSERVED
8928	NO SIGNIFICANT CHANGES OBSERVED
8933	NO SIGNIFICANT CHANGES OBSERVED
8936	NO SIGNIFICANT CHANGES OBSERVED
8937	NONGRAVID -- AMMONIUM SULFIDE NEGATIVE

TABLE 4.11

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 7
SPONSOR:HSIA INDIVIDUAL MATERNAL MACROSCOPIC FINDINGS

DAMS FROM GROUP 6: 1000 PPM	MATERNAL GROSS OBSERVATION
8739	UTERUS: CONTENTS, DARK RED SURROUNDS SITES #1 AND #2
8760	NO SIGNIFICANT CHANGES OBSERVED
8769	NO SIGNIFICANT CHANGES OBSERVED
8770	NO SIGNIFICANT CHANGES OBSERVED
8771	NO SIGNIFICANT CHANGES OBSERVED
8785	NO SIGNIFICANT CHANGES OBSERVED
8793	NO SIGNIFICANT CHANGES OBSERVED
8795	NO SIGNIFICANT CHANGES OBSERVED
8799	NO SIGNIFICANT CHANGES OBSERVED
8804	NO SIGNIFICANT CHANGES OBSERVED
8815	NO SIGNIFICANT CHANGES OBSERVED
8819	NO SIGNIFICANT CHANGES OBSERVED
8821	NO SIGNIFICANT CHANGES OBSERVED
8829	NO SIGNIFICANT CHANGES OBSERVED
8831	NO SIGNIFICANT CHANGES OBSERVED
8856	NONGRAVID -- AMMONIUM SULFIDE NEGATIVE
8860	NO SIGNIFICANT CHANGES OBSERVED
8861	NO SIGNIFICANT CHANGES OBSERVED
8865	PLACENTAE: FUSED SITES #5 AND #6
8870	NO SIGNIFICANT CHANGES OBSERVED
8872	NO SIGNIFICANT CHANGES OBSERVED
8885	NO SIGNIFICANT CHANGES OBSERVED
8888	NO SIGNIFICANT CHANGES OBSERVED
8896	NO SIGNIFICANT CHANGES OBSERVED
8917	NO SIGNIFICANT CHANGES OBSERVED

PMFGRDv4.16
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TABLE 4.12

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 1

SPONSOR:HSIA INDIVIDUAL FETAL DATA AT SCHEDULED NECROPSY

DAMS FROM GROUP 1: 0 PPM

			VIABLE FETUSES			DEAD FETUSES			EARLY RESORPTIONS			LATE RESORPTIONS			IMPLANTATION SITES			CORPORA LUTEA		
	SEX		LEFT	RIGHT		LEFT	RIGHT		LEFT	RIGHT		LEFT	RIGHT		LEFT	RIGHT		LEFT	RIGHT	
DAM#	M	F	HORN	HORN	TOTAL	HORN	HORN	TOTAL	HORN	HORN	TOTAL	HORN	HORN	TOTAL	HORN	HORN	TOTAL	OVARY		TOTAL
8738	9	9	11	7	18	0	0	0	0	0	0	0	0	0	11	7	18	11	7	18
8751	5	5	3	7	10	0	0	0	0	4	4	0	0	0	3	11	14	3	11	14
8755	8	8	6	10	16	0	0	0	0	1	1	0	0	0	6	11	17	6	11	17
8766	7	6	5	8	13	0	0	0	0	0	0	0	0	0	5	8	13	5	8	13
8768	8	5	7	6	13	0	0	0	0	0	0	0	0	0	7	6	13	8	7	15
8772	8	4	6	6	12	0	0	0	0	0	0	0	0	0	6	6	12	7	7	14
8776	9	8	7	10	17	0	0	0	0	0	0	0	0	0	7	10	17	7	10	17
8777	11	9	10	10	20	0	0	0	1	0	1	0	0	0	11	10	21	11	10	21
8779	11	3	5	9	14	0	0	0	1	1	2	0	0	0	6	10	16	6	11	17
8791	2	2	2	2	4	0	0	0	0	0	0	0	0	0	2	2	4	6	5	11
8798	6	8	8	6	14	0	0	0	0	0	0	0	0	0	8	6	14	8	6	14
8803	13	6	11	8	19	0	0	0	0	0	0	0	0	0	11	8	19	11	8	19
8812	7	6	6	7	13	0	0	0	1	0	1	0	0	0	7	7	14	7	7	14
8817	5	5	4	6	10	0	0	0	1	1	2	0	0	0	5	7	12	6	7	13
8820	3	10	5	8	13	0	0	0	0	0	0	0	0	0	5	8	13	5	9	14
8825	9	6	7	8	15	0	0	0	0	1	1	0	0	0	7	9	16	7	9	16
8836	5	7	7	5	12	0	0	0	3	1	4	1	0	1	11	6	17	12	6	18
8843	3	2	5	0	5	0	0	0	0	0	0	0	0	0	5	0	5	6	6	12
8852	NONGRAVID																			
8858	8	5	5	8	13	0	0	0	0	2	2	0	0	0	5	10	15	5	10	15
8871	7	6	5	8	13	0	0	0	2	0	2	0	0	0	7	8	15	7	8	15
8883	7	6	4	9	13	0	0	0	0	0	0	0	0	0	4	9	13	4	9	13
8886	7	5	8	4	12	0	0	0	0	0	0	0	0	0	8	4	12	8	6	14
8894	5	11	4	12	16	0	0	0	0	0	0	0	0	0	4	12	16	4	12	16
8926	1	2	0	3	3	0	0	0	0	0	0	0	0	0	0	3	3	5	4	9
TOTAL	164	144	141	167	308	0	0	0	9	11	20	1	0	1	151	178	329	165	194	359
MEAN	6.8	6.0	5.9	7.0	12.8	0.0	0.0	0.0	0.4	0.5	0.8	0.0	0.0	0.0	6.3	7.4	13.7	6.9	8.1	15.0
S.D.	2.90	2.45	2.61	2.74	4.25	0.00	0.00	0.00	0.77	0.93	1.24	0.20	0.00	0.20	2.84	2.98	4.41	2.38	2.12	2.66
N =	24																			

TABLE 4.12

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 2

SPONSOR:HSIA INDIVIDUAL FETAL DATA AT SCHEDULED NECROPSY

DAMS FROM GROUP 2: 15 MG/KG RA

			VIABLE FETUSES			DEAD FETUSES			EARLY RESORPTIONS			LATE RESORPTIONS			IMPLANTATION SITES			CORPORA LUTEA		
	SEX		LEFT	RIGHT		LEFT	RIGHT		LEFT	RIGHT		LEFT	RIGHT		LEFT	RIGHT		LEFT	RIGHT	
DAM#	M	F	HORN	HORN	TOTAL	HORN	HORN	TOTAL	HORN	HORN	TOTAL	HORN	HORN	TOTAL	HORN	HORN	TOTAL	OVARY	OVARY	TOTAL
8740	6	4	4	6	10	0	0	0	1	4	5	0	2	2	5	12	17	5	12	17
8743	6	2	3	5	8	0	0	0	3	1	4	1	0	1	7	6	13	8	7	15
8756	11	4	6	9	15	0	0	0	1	0	1	1	0	1	8	9	17	8	9	17
8757	8	7	6	9	15	0	0	0	1	0	1	0	0	0	7	9	16	7	9	16
8780	3	14	7	10	17	0	0	0	1	0	1	0	0	0	8	10	18	8	10	18
8789	3	1	2	2	4	0	0	0	0	0	0	0	0	0	2	2	4	8	6	14
8800	8	3	2	9	11	0	0	0	1	3	4	0	0	0	3	12	15	3	12	15
8801	5	2	4	3	7	0	0	0	0	1	1	3	4	7	7	8	15	8	10	18
8802	8	5	3	10	13	0	0	0	0	1	1	0	1	1	3	12	15	3	12	15
8808	4	6	6	4	10	0	0	0	0	1	1	0	1	1	6	6	12	7	6	13
8809	4	7	4	7	11	0	0	0	2	0	2	0	0	0	6	7	13	7	12	19
8810	10	3	5	8	13	0	0	0	0	0	0	0	0	0	5	8	13	5	9	14
8818	7	6	6	7	13	0	0	0	0	1	1	0	0	0	6	8	14	9	8	17
8822	2	1	0	3	3	0	0	0	2	5	7	0	2	2	2	10	12	2	10	12
8827	6	4	4	6	10	0	0	0	3	1	4	0	1	1	7	8	15	9	8	17
8840	3	2	3	2	5	0	0	0	3	0	3	0	0	0	6	2	8	6	7	13
8842	8	6	5	9	14	0	0	0	0	2	2	0	0	0	5	11	16	5	11	16
8847	2	6	3	5	8	0	0	0	1	2	3	0	0	0	4	7	11	5	8	13
8850	8	6	7	7	14	0	0	0	1	1	2	0	1	1	8	9	17	11	9	20
8851	6	5	5	6	11	0	0	0	0	1	1	0	0	0	5	7	12	6	7	13
8854	0	4	1	3	4	0	0	0	2	7	9	2	0	2	5	10	15	7	10	17
8900	9	6	8	7	15	0	0	0	0	1	1	0	0	0	8	8	16	8	8	16
8901	7	7	5	9	14	0	0	0	1	0	1	0	0	0	6	9	15	6	9	15
8930	4	6	4	6	10	0	0	0	1	3	4	0	0	0	5	9	14	5	10	15
8931	12	2	4	10	14	0	0	0	1	0	1	0	0	0	5	10	15	6	10	16
TOTAL	150	119	107	162	269	0	0	0	25	35	60	7	12	19	139	209	348	162	229	391
MEAN	6.0	4.8	4.3	6.5	10.8	0.0	0.0	0.0	1.0	1.4	2.4	0.3	0.5	0.8	5.6	8.4	13.9	6.5	9.2	15.6
S.D.	3.00	2.73	1.93	2.58	3.91	0.00	0.00	0.00	1.00	1.78	2.20	0.74	0.96	1.48	1.78	2.56	3.04	2.08	1.82	2.04
N =	25																			

TABLE 4.12

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 3

SPONSOR:HSIA INDIVIDUAL FETAL DATA AT SCHEDULED NECROPSY

DAMS FROM GROUP 3: 0.25 PPM

			VIABLE FETUSES			DEAD FETUSES			EARLY RESORPTIONS			LATE RESORPTIONS			IMPLANTATION SITES			CORPORA LUTEA		
	SEX		LEFT	RIGHT		LEFT	RIGHT		LEFT	RIGHT		LEFT	RIGHT		LEFT	RIGHT		LEFT	RIGHT	
DAM#	M	F	HORN	HORN	TOTAL	HORN	HORN	TOTAL	HORN	HORN	TOTAL	HORN	HORN	TOTAL	HORN	HORN	TOTAL	OVARY		TOTAL
8747	8	8	9	7	16	0	0	0	0	0	0	0	0	0	9	7	16	9	7	16
8758	10	4	3	11	14	0	0	0	0	1	1	0	0	0	3	12	15	3	12	15
8764	9	6	9	6	15	0	0	0	0	1	1	0	0	0	9	7	16	9	7	16
8767	10	6	6	10	16	0	0	0	0	1	1	0	0	0	6	11	17	7	11	18
8773	0	0	0	0	0	0	0	0	1	1	2	0	0	0	1	1	2	9	13	22
8774	2	1	1	2	3	0	0	0	4	8	12	0	0	0	5	10	15	5	10	15
8807	9	7	7	9	16	0	0	0	0	0	0	0	0	0	7	9	16	7	9	16
8814	5	8	6	7	13	0	0	0	0	0	0	0	0	0	6	7	13	7	8	15
8826	5	4	5	4	9	0	0	0	2	1	3	0	0	0	7	5	12	7	5	12
8834	6	7	4	9	13	0	0	0	0	0	0	0	0	0	4	9	13	4	9	13
8835	4	6	7	3	10	0	0	0	0	0	0	0	0	0	7	3	10	7	3	10
8839	9	6	5	10	15	0	0	0	0	1	1	0	0	0	5	11	16	6	11	17
8849	8	6	6	8	14	0	0	0	0	0	0	0	0	0	6	8	14	6	9	15
8853	6	6	6	6	12	0	0	0	0	1	1	0	0	0	6	7	13	7	7	14
8859	9	3	5	7	12	0	0	0	0	0	0	0	0	0	5	7	12	5	7	12
8869	4	5	7	2	9	0	0	0	0	0	0	0	0	0	7	2	9	7	11	18
8879	7	8	7	8	15	0	0	0	1	0	1	0	0	0	8	8	16	8	8	16
8889	7	9	6	10	16	0	0	0	0	0	0	0	0	0	6	10	16	6	10	16
8891	3	5	8	0	8	0	0	0	1	0	1	0	0	0	9	0	9	11	8	19
8893	8	3	8	3	11	0	0	0	0	0	0	0	0	0	8	3	11	8	5	13
8897	6	7	3	10	13	0	0	0	0	2	2	0	0	0	3	12	15	7	12	19
8908	4	8	7	5	12	0	0	0	2	0	2	0	0	0	9	5	14	10	5	15
8910	9	4	5	8	13	0	0	0	0	0	0	0	0	0	5	8	13	7	9	16
8913	NONGRAVID																			
8916	NONGRAVID																			
TOTAL	148	127	130	145	275	0	0	0	11	17	28	0	0	0	141	162	303	162	196	358
MEAN	6.4	5.5	5.7	6.3	12.0	0.0	0.0	0.0	0.5	0.7	1.2	0.0	0.0	0.0	6.1	7.0	13.2	7.0	8.5	15.6
S.D.	2.71	2.29	2.29	3.35	4.08	0.00	0.00	0.00	0.99	1.68	2.50	0.00	0.00	0.00	2.12	3.44	3.38	1.85	2.57	2.64
N =	23																			

TABLE 4.12

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 4

SPONSOR:HSIA INDIVIDUAL FETAL DATA AT SCHEDULED NECROPSY

DAMS FROM GROUP 4: 1.5 PPM

			VIABLE FETUSES			DEAD FETUSES			EARLY RESORPTIONS			LATE RESORPTIONS			IMPLANTATION SITES			CORPORA LUTEA		
	SEX		LEFT	RIGHT		LEFT	RIGHT		LEFT	RIGHT		LEFT	RIGHT		LEFT	RIGHT		LEFT	RIGHT	
DAM#	M	F	HORN	HORN	TOTAL	HORN	HORN	TOTAL	HORN	HORN	TOTAL	HORN	HORN	TOTAL	HORN	HORN	TOTAL	OVARY		TOTAL
8741	8	8	5	11	16	0	0	0	0	1	1	0	0	0	5	12	17	5	12	17
8765	4	9	5	8	13	0	0	0	0	0	0	0	0	0	5	8	13	5	9	14
8783	9	6	7	8	15	0	0	0	0	0	0	0	0	0	7	8	15	7	8	15
8786	7	6	5	8	13	0	0	0	1	0	1	0	0	0	6	8	14	6	8	14
8788	8	6	6	8	14	0	0	0	0	1	1	0	0	0	6	9	15	7	11	18
8792	2	2	4	0	4	0	0	0	0	0	0	0	0	0	4	0	4	5	6	11
8805	9	5	5	9	14	0	0	0	0	0	0	0	0	0	5	9	14	6	10	16
8806	7	7	9	5	14	0	0	0	0	0	0	0	0	0	9	5	14	9	6	15
8811	9	7	6	10	16	0	0	0	0	0	0	0	0	0	6	10	16	6	10	16
8813	8	4	5	7	12	0	0	0	0	0	0	0	0	0	5	7	12	6	7	13
8823	7	8	9	6	15	0	0	0	0	0	0	0	0	0	9	6	15	9	7	16
8844	4	9	9	4	13	0	0	0	0	0	0	0	0	0	9	4	13	9	6	15
8848	7	9	7	9	16	0	0	0	1	2	3	0	0	0	8	11	19	8	11	19
8857	4	8	6	6	12	0	0	0	0	0	0	0	0	0	6	6	12	6	6	12
8867	5	4	4	5	9	0	0	0	1	2	3	0	0	0	5	7	12	5	8	13
8873	8	7	4	11	15	0	0	0	1	0	1	0	0	0	5	11	16	5	11	16
8876	9	8	8	9	17	0	0	0	0	0	0	0	0	0	8	9	17	8	9	17
8881	3	7	9	1	10	0	0	0	0	0	0	0	0	0	9	1	10	9	6	15
8884	NONGRAVID																			
8890	9	6	6	9	15	0	0	0	0	1	1	0	0	0	6	10	16	6	10	16
8895	4	6	2	8	10	0	0	0	0	0	0	0	0	0	2	8	10	5	8	13
8899	7	9	7	9	16	0	0	0	0	0	0	0	0	0	7	9	16	7	9	16
8907	9	8	8	9	17	0	0	0	0	0	0	0	0	0	8	9	17	9	9	18
8941	8	7	6	9	15	0	0	0	0	0	0	0	0	0	6	9	15	6	10	16
8942	3	7	5	5	10	0	0	0	0	0	0	0	0	0	5	5	10	5	6	11
TOTAL	158	163	147	174	321	0	0	0	4	7	11	0	0	0	151	181	332	159	203	362
MEAN	6.6	6.8	6.1	7.3	13.4	0.0	0.0	0.0	0.2	0.3	0.5	0.0	0.0	0.0	6.3	7.5	13.8	6.6	8.5	15.1
S.D.	2.30	1.77	1.87	2.80	3.05	0.00	0.00	0.00	0.38	0.62	0.88	0.00	0.00	0.00	1.81	2.95	3.19	1.53	1.91	2.12
N =	24																			

TABLE 4.12

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 5

SPONSOR:HSIA INDIVIDUAL FETAL DATA AT SCHEDULED NECROPSY

DAMS FROM GROUP 5: 500 PPM

			VIABLE FETUSES			DEAD FETUSES			EARLY RESORPTIONS			LATE RESORPTIONS			IMPLANTATION SITES			CORPORA LUTEA		
	SEX		LEFT	RIGHT		LEFT	RIGHT		LEFT	RIGHT		LEFT	RIGHT		LEFT	RIGHT		LEFT	RIGHT	
DAM#	M	F	HORN	HORN	TOTAL	HORN	HORN	TOTAL	HORN	HORN	TOTAL	HORN	HORN	TOTAL	HORN	HORN	TOTAL	OVARY		TOTAL
8735	8	7	7	8	15	0	0	0	0	0	0	0	0	0	7	8	15	7	8	15
8763	4	10	9	5	14	0	0	0	0	0	0	0	0	0	9	5	14	9	6	15
8775	7	5	4	8	12	0	0	0	0	0	0	0	0	0	4	8	12	4	8	12
8778	5	10	6	9	15	0	0	0	0	0	0	0	0	0	6	9	15	6	9	15
8784	7	9	9	7	16	0	0	0	0	0	0	0	0	0	9	7	16	9	7	16
8790	5	9	7	7	14	0	0	0	0	0	0	0	0	0	7	7	14	7	8	15
8824	5	6	4	7	11	0	0	0	0	2	2	0	0	0	4	9	13	5	9	14
8828	8	7	9	6	15	0	0	0	0	0	0	0	0	0	9	6	15	9	7	16
8830	7	6	2	11	13	0	0	0	3	0	3	0	0	0	5	11	16	5	11	16
8833	6	7	7	6	13	0	0	0	0	0	0	0	0	0	7	6	13	7	7	14
8837	10	5	8	7	15	0	0	0	0	1	1	0	0	0	8	8	16	8	8	16
8838	6	5	4	7	11	0	0	0	0	0	0	0	0	0	4	7	11	5	7	12
8845	7	7	9	5	14	0	0	0	0	1	1	0	0	0	9	6	15	10	6	16
8846	10	6	8	8	16	0	0	0	0	0	0	0	0	0	8	8	16	8	8	16
8855	5	8	6	7	13	0	0	0	1	1	2	0	0	0	7	8	15	9	10	19
8863	5	10	6	9	15	0	0	0	0	0	0	0	0	0	6	9	15	7	10	17
8864	8	6	6	8	14	0	0	0	0	0	0	0	0	0	6	8	14	6	8	14
8868	8	5	7	6	13	0	0	0	0	0	0	0	0	0	7	6	13	7	6	13
8874	6	10	9	7	16	0	0	0	0	0	0	0	0	0	9	7	16	10	9	19
8875	1	6	2	5	7	0	0	0	2	2	4	0	0	0	4	7	11	7	8	15
8878	8	6	4	10	14	0	0	0	1	0	1	0	0	0	5	10	15	6	11	17
8928	7	6	4	9	13	0	0	0	0	1	1	0	0	0	4	10	14	5	10	15
8933	6	7	5	8	13	0	0	0	0	0	0	0	0	0	5	8	13	6	8	14
8936	9	9	7	11	18	0	0	0	0	1	1	0	0	0	7	12	19	7	12	19
8937	NONGRAVID																			
TOTAL	158	172	149	181	330	0	0	0	7	9	16	0	0	0	156	190	346	169	201	370
MEAN	6.6	7.2	6.2	7.5	13.8	0.0	0.0	0.0	0.3	0.4	0.7	0.0	0.0	0.0	6.5	7.9	14.4	7.0	8.4	15.4
S.D.	2.00	1.76	2.19	1.69	2.17	0.00	0.00	0.00	0.75	0.65	1.09	0.00	0.00	0.00	1.82	1.69	1.79	1.68	1.64	1.91
N =	24																			

TABLE 4.12

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 6

SPONSOR:HSIA INDIVIDUAL FETAL DATA AT SCHEDULED NECROPSY

DAMS FROM GROUP 6: 1000 PPM

			VIABLE FETUSES			DEAD FETUSES			EARLY RESORPTIONS			LATE RESORPTIONS			IMPLANTATION SITES			CORPORA LUTEA		
	SEX		LEFT	RIGHT		LEFT	RIGHT		LEFT	RIGHT		LEFT	RIGHT		LEFT	RIGHT		LEFT	RIGHT	
DAM#	M	F	HORN	HORN	TOTAL	HORN	HORN	TOTAL	HORN	HORN	TOTAL	HORN	HORN	TOTAL	HORN	HORN	TOTAL	OVARY		TOTAL
8739	8	6	5	9	14	0	0	0	2	0	2	0	0	0	7	9	16	7	9	16
8760	6	6	4	8	12	0	0	0	0	1	1	0	0	0	4	9	13	4	10	14
8769	5	8	3	10	13	0	0	0	0	0	0	0	0	0	3	10	13	3	10	13
8770	8	4	6	6	12	0	0	0	2	0	2	0	0	0	8	6	14	8	6	14
8771	10	4	8	6	14	0	0	0	0	0	0	0	0	0	8	6	14	10	9	19
8785	7	6	6	7	13	0	0	0	0	1	1	0	0	0	6	8	14	6	8	14
8793	3	5	8	0	8	0	0	0	0	0	0	0	0	0	8	0	8	8	10	18
8795	4	9	7	6	13	0	0	0	0	1	1	0	0	0	7	7	14	8	7	15
8799	7	6	7	6	13	0	0	0	1	0	1	0	0	0	8	6	14	8	7	15
8804	2	12	9	5	14	0	0	0	0	0	0	0	0	0	9	5	14	10	6	16
8815	10	8	10	8	18	0	0	0	0	0	0	0	0	0	10	8	18	10	8	18
8819	6	11	10	7	17	0	0	0	0	0	0	0	0	0	10	7	17	10	7	17
8821	9	8	8	9	17	0	0	0	0	1	1	0	0	0	8	10	18	8	10	18
8829	11	6	8	9	17	0	0	0	0	0	0	0	0	0	8	9	17	10	9	19
8831	6	10	5	11	16	0	0	0	2	0	2	0	0	0	7	11	18	7	11	18
8856	NONGRAVID																			
8860	6	9	5	10	15	0	0	0	0	0	0	0	0	0	5	10	15	5	10	15
8861	6	9	6	9	15	0	0	0	0	0	0	0	0	0	6	9	15	6	9	15
8865	7	10	8	9	17	0	0	0	1	0	1	0	0	0	9	9	18	10	9	19
8870	9	6	7	8	15	0	0	0	1	0	1	0	0	0	8	8	16	8	9	17
8872	5	7	7	5	12	0	0	0	1	0	1	1	0	1	9	5	14	9	8	17
8885	5	8	4	9	13	0	0	0	0	0	0	0	0	0	4	9	13	4	10	14
8888	11	7	10	8	18	0	0	0	0	0	0	0	0	0	10	8	18	12	9	21
8896	5	6	6	5	11	0	0	0	0	0	0	0	0	0	6	5	11	6	6	12
8917	9	6	6	9	15	0	0	0	1	0	1	0	0	0	7	9	16	7	9	16
TOTAL	165	177	163	179	342	0	0	0	11	4	15	1	0	1	175	183	358	184	206	390
MEAN	6.9	7.4	6.8	7.5	14.3	0.0	0.0	0.0	0.5	0.2	0.6	0.0	0.0	0.0	7.3	7.6	14.9	7.7	8.6	16.3
S.D.	2.42	2.10	1.93	2.34	2.44	0.00	0.00	0.00	0.72	0.38	0.71	0.20	0.00	0.20	1.92	2.37	2.47	2.28	1.44	2.23
N =	24																			

PLRDv4.08
09/24/2018

TABLE 4.13

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 1
SPONSOR:HSIA INDIVIDUAL FETAL DATA AT SCHEDULED NECROPSY [% PER LITTER]

DAMS FROM GROUP 1: 0 PPM

DAM #	CORPORA LUTEA	IMPLANTATION SITES	FETUSES VIABLE	FETUSES DEAD	RESORPTIONS EARLY	RESORPTIONS LATE	RESORPTIONS TOTAL	PRE-IMPLANTATION LOSS	POST-IMPLANTATION LOSS	MALES	FEMALES
	#	#	%	%	%	%	%	%	%	%	%
8738	18.0	18.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	50.0
8751	14.0	14.0	71.4	0.0	28.6	0.0	28.6	0.0	28.6	50.0	50.0
8755	17.0	17.0	94.1	0.0	5.9	0.0	5.9	0.0	5.9	50.0	50.0
8766	13.0	13.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	53.8	46.2
8768	15.0	13.0	100.0	0.0	0.0	0.0	0.0	13.3	0.0	61.5	38.5
8772	14.0	12.0	100.0	0.0	0.0	0.0	0.0	14.3	0.0	66.7	33.3
8776	17.0	17.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	52.9	47.1
8777	21.0	21.0	95.2	0.0	4.8	0.0	4.8	0.0	4.8	55.0	45.0
8779	17.0	16.0	87.5	0.0	12.5	0.0	12.5	5.9	12.5	78.6	21.4
8791	11.0	4.0	100.0	0.0	0.0	0.0	0.0	63.6	0.0	50.0	50.0
8798	14.0	14.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	42.9	57.1
8803	19.0	19.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	68.4	31.6
8812	14.0	14.0	92.9	0.0	7.1	0.0	7.1	0.0	7.1	53.8	46.2
8817	13.0	12.0	83.3	0.0	16.7	0.0	16.7	7.7	16.7	50.0	50.0
8820	14.0	13.0	100.0	0.0	0.0	0.0	0.0	7.1	0.0	23.1	76.9
8825	16.0	16.0	93.8	0.0	6.3	0.0	6.3	0.0	6.3	60.0	40.0
8836	18.0	17.0	70.6	0.0	23.5	5.9	29.4	5.6	29.4	41.7	58.3
8843	12.0	5.0	100.0	0.0	0.0	0.0	0.0	58.3	0.0	60.0	40.0
8858	15.0	15.0	86.7	0.0	13.3	0.0	13.3	0.0	13.3	61.5	38.5
8871	15.0	15.0	86.7	0.0	13.3	0.0	13.3	0.0	13.3	53.8	46.2
8883	13.0	13.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	53.8	46.2
8886	14.0	12.0	100.0	0.0	0.0	0.0	0.0	14.3	0.0	58.3	41.7
8894	16.0	16.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	31.3	68.8
8926	9.0	3.0	100.0	0.0	0.0	0.0	0.0	66.7	0.0	33.3	66.7
MEAN	15.0	13.7	94.3	0.0	5.5	0.2	5.7	10.7	5.7	52.5	47.5
S.D.	2.66	4.41	8.91	0.00	8.29	1.20	8.91	20.75	8.91	12.13	12.13
N	24	24	24	24	24	24	24	24	24	24	24

TABLE 4.13

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 2

SPONSOR:HSIA INDIVIDUAL FETAL DATA AT SCHEDULED NECROPSY [% PER LITTER]

DAMS FROM GROUP 2: 15 MG/KG RA

DAM #	CORPORA LUTEA	IMPLANTATION SITES	FETUSES VIABLE	FETUSES DEAD	RESORPTIONS EARLY	RESORPTIONS LATE	RESORPTIONS TOTAL	PRE-IMPLANTATION LOSS	POST-IMPLANTATION LOSS	MALES	FEMALES
	#	#	%	%	%	%	%	%	%	%	%
8740	17.0	17.0	58.8	0.0	29.4	11.8	41.2	0.0	41.2	60.0	40.0
8743	15.0	13.0	61.5	0.0	30.8	7.7	38.5	13.3	38.5	75.0	25.0
8756	17.0	17.0	88.2	0.0	5.9	5.9	11.8	0.0	11.8	73.3	26.7
8757	16.0	16.0	93.8	0.0	6.3	0.0	6.3	0.0	6.3	53.3	46.7
8780	18.0	18.0	94.4	0.0	5.6	0.0	5.6	0.0	5.6	17.6	82.4
8789	14.0	4.0	100.0	0.0	0.0	0.0	0.0	71.4	0.0	75.0	25.0
8800	15.0	15.0	73.3	0.0	26.7	0.0	26.7	0.0	26.7	72.7	27.3
8801	18.0	15.0	46.7	0.0	6.7	46.7	53.3	16.7	53.3	71.4	28.6
8802	15.0	15.0	86.7	0.0	6.7	6.7	13.3	0.0	13.3	61.5	38.5
8808	13.0	12.0	83.3	0.0	8.3	8.3	16.7	7.7	16.7	40.0	60.0
8809	19.0	13.0	84.6	0.0	15.4	0.0	15.4	31.6	15.4	36.4	63.6
8810	14.0	13.0	100.0	0.0	0.0	0.0	0.0	7.1	0.0	76.9	23.1
8818	17.0	14.0	92.9	0.0	7.1	0.0	7.1	17.6	7.1	53.8	46.2
8822	12.0	12.0	25.0	0.0	58.3	16.7	75.0	0.0	75.0	66.7	33.3
8827	17.0	15.0	66.7	0.0	26.7	6.7	33.3	11.8	33.3	60.0	40.0
8840	13.0	8.0	62.5	0.0	37.5	0.0	37.5	38.5	37.5	60.0	40.0
8842	16.0	16.0	87.5	0.0	12.5	0.0	12.5	0.0	12.5	57.1	42.9
8847	13.0	11.0	72.7	0.0	27.3	0.0	27.3	15.4	27.3	25.0	75.0
8850	20.0	17.0	82.4	0.0	11.8	5.9	17.6	15.0	17.6	57.1	42.9
8851	13.0	12.0	91.7	0.0	8.3	0.0	8.3	7.7	8.3	54.5	45.5
8854	17.0	15.0	26.7	0.0	60.0	13.3	73.3	11.8	73.3	0.0	100.0
8900	16.0	16.0	93.8	0.0	6.3	0.0	6.3	0.0	6.3	60.0	40.0
8901	15.0	15.0	93.3	0.0	6.7	0.0	6.7	0.0	6.7	50.0	50.0
8930	15.0	14.0	71.4	0.0	28.6	0.0	28.6	6.7	28.6	40.0	60.0
8931	16.0	15.0	93.3	0.0	6.7	0.0	6.7	6.3	6.7	85.7	14.3
MEAN	15.6	13.9	77.2	0.0	17.6	5.2	22.8	11.1	22.8	55.3	44.7
S.D.	2.04	3.04	20.90	0.00	16.49	9.98	20.89	16.12	20.89	19.98	19.98
N	25	25	25	25	25	25	25	25	25	25	25

TABLE 4.13

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 3

SPONSOR:HSIA INDIVIDUAL FETAL DATA AT SCHEDULED NECROPSY [% PER LITTER]

DAMS FROM GROUP 3: 0.25 PPM

DAM #	CORPORA LUTEA	IMPLANTATION SITES	FETUSES VIABLE	FETUSES DEAD	RESORPTIONS EARLY	RESORPTIONS LATE	RESORPTIONS TOTAL	PRE-IMPLANTATION LOSS	POST-IMPLANTATION LOSS	MALES	FEMALES
	#	#	%	%	%	%	%	%	%	%	%
8747	16.0	16.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	50.0
8758	15.0	15.0	93.3	0.0	6.7	0.0	6.7	0.0	6.7	71.4	28.6
8764	16.0	16.0	93.8	0.0	6.3	0.0	6.3	0.0	6.3	60.0	40.0
8767	18.0	17.0	94.1	0.0	5.9	0.0	5.9	5.6	5.9	62.5	37.5
8773	22.0	2.0	0.0	0.0	100.0	0.0	100.0	90.9	100.0	0.0	0.0
8774	15.0	15.0	20.0	0.0	80.0	0.0	80.0	0.0	80.0	66.7	33.3
8807	16.0	16.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	56.3	43.8
8814	15.0	13.0	100.0	0.0	0.0	0.0	0.0	13.3	0.0	38.5	61.5
8826	12.0	12.0	75.0	0.0	25.0	0.0	25.0	0.0	25.0	55.6	44.4
8834	13.0	13.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	46.2	53.8
8835	10.0	10.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	40.0	60.0
8839	17.0	16.0	93.8	0.0	6.3	0.0	6.3	5.9	6.3	60.0	40.0
8849	15.0	14.0	100.0	0.0	0.0	0.0	0.0	6.7	0.0	57.1	42.9
8853	14.0	13.0	92.3	0.0	7.7	0.0	7.7	7.1	7.7	50.0	50.0
8859	12.0	12.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	75.0	25.0
8869	18.0	9.0	100.0	0.0	0.0	0.0	0.0	50.0	0.0	44.4	55.6
8879	16.0	16.0	93.8	0.0	6.3	0.0	6.3	0.0	6.3	46.7	53.3
8889	16.0	16.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	43.8	56.3
8891	19.0	9.0	88.9	0.0	11.1	0.0	11.1	52.6	11.1	37.5	62.5
8893	13.0	11.0	100.0	0.0	0.0	0.0	0.0	15.4	0.0	72.7	27.3
8897	19.0	15.0	86.7	0.0	13.3	0.0	13.3	21.1	13.3	46.2	53.8
8908	15.0	14.0	85.7	0.0	14.3	0.0	14.3	6.7	14.3	33.3	66.7
8910	16.0	13.0	100.0	0.0	0.0	0.0	0.0	18.8	0.0	69.2	30.8
MEAN	15.6	13.2	87.7	0.0	12.3	0.0	12.3	12.8	12.3	53.8	46.2
S.D.	2.64	3.38	25.51	0.00	25.50	0.00	25.50	22.55	25.50	12.33	12.33
N	23	23	23	23	23	23	23	23	23	22	22

TABLE 4.13

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 4

SPONSOR:HSIA INDIVIDUAL FETAL DATA AT SCHEDULED NECROPSY [% PER LITTER]

DAMS FROM GROUP 4: 1.5 PPM

DAM #	CORPORA LUTEA	IMPLANTATION SITES	FETUSES VIABLE	FETUSES DEAD	RESORPTIONS EARLY	RESORPTIONS LATE	RESORPTIONS TOTAL	PRE-IMPLANTATION LOSS	POST-IMPLANTATION LOSS	MALES	FEMALES
	#	#	%	%	%	%	%	%	%	%	%
8741	17.0	17.0	94.1	0.0	5.9	0.0	5.9	0.0	5.9	50.0	50.0
8765	14.0	13.0	100.0	0.0	0.0	0.0	0.0	7.1	0.0	30.8	69.2
8783	15.0	15.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	60.0	40.0
8786	14.0	14.0	92.9	0.0	7.1	0.0	7.1	0.0	7.1	53.8	46.2
8788	18.0	15.0	93.3	0.0	6.7	0.0	6.7	16.7	6.7	57.1	42.9
8792	11.0	4.0	100.0	0.0	0.0	0.0	0.0	63.6	0.0	50.0	50.0
8805	16.0	14.0	100.0	0.0	0.0	0.0	0.0	12.5	0.0	64.3	35.7
8806	15.0	14.0	100.0	0.0	0.0	0.0	0.0	6.7	0.0	50.0	50.0
8811	16.0	16.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	56.3	43.8
8813	13.0	12.0	100.0	0.0	0.0	0.0	0.0	7.7	0.0	66.7	33.3
8823	16.0	15.0	100.0	0.0	0.0	0.0	0.0	6.3	0.0	46.7	53.3
8844	15.0	13.0	100.0	0.0	0.0	0.0	0.0	13.3	0.0	30.8	69.2
8848	19.0	19.0	84.2	0.0	15.8	0.0	15.8	0.0	15.8	43.8	56.3
8857	12.0	12.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	33.3	66.7
8867	13.0	12.0	75.0	0.0	25.0	0.0	25.0	7.7	25.0	55.6	44.4
8873	16.0	16.0	93.8	0.0	6.3	0.0	6.3	0.0	6.3	53.3	46.7
8876	17.0	17.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	52.9	47.1
8881	15.0	10.0	100.0	0.0	0.0	0.0	0.0	33.3	0.0	30.0	70.0
8890	16.0	16.0	93.8	0.0	6.3	0.0	6.3	0.0	6.3	60.0	40.0
8895	13.0	10.0	100.0	0.0	0.0	0.0	0.0	23.1	0.0	40.0	60.0
8899	16.0	16.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	43.8	56.3
8907	18.0	17.0	100.0	0.0	0.0	0.0	0.0	5.6	0.0	52.9	47.1
8941	16.0	15.0	100.0	0.0	0.0	0.0	0.0	6.3	0.0	53.3	46.7
8942	11.0	10.0	100.0	0.0	0.0	0.0	0.0	9.1	0.0	30.0	70.0
MEAN	15.1	13.8	97.0	0.0	3.0	0.0	3.0	9.1	3.0	48.6	51.4
S.D.	2.12	3.19	6.12	0.00	6.12	0.00	6.12	14.31	6.12	11.06	11.06
N	24	24	24	24	24	24	24	24	24	24	24

TABLE 4.13

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 5

SPONSOR:HSIA INDIVIDUAL FETAL DATA AT SCHEDULED NECROPSY [% PER LITTER]

DAMS FROM GROUP 5: 500 PPM

DAM #	CORPORA LUTEA	IMPLANTATION SITES	FETUSES VIABLE	FETUSES DEAD	RESORPTIONS EARLY	RESORPTIONS LATE	RESORPTIONS TOTAL	PRE-IMPLANTATION LOSS	POST-IMPLANTATION LOSS	MALES	FEMALES
	#	#	%	%	%	%	%	%	%	%	%
8735	15.0	15.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	53.3	46.7
8763	15.0	14.0	100.0	0.0	0.0	0.0	0.0	6.7	0.0	28.6	71.4
8775	12.0	12.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	58.3	41.7
8778	15.0	15.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	33.3	66.7
8784	16.0	16.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	43.8	56.3
8790	15.0	14.0	100.0	0.0	0.0	0.0	0.0	6.7	0.0	35.7	64.3
8824	14.0	13.0	84.6	0.0	15.4	0.0	15.4	7.1	15.4	45.5	54.5
8828	16.0	15.0	100.0	0.0	0.0	0.0	0.0	6.3	0.0	53.3	46.7
8830	16.0	16.0	81.3	0.0	18.8	0.0	18.8	0.0	18.8	53.8	46.2
8833	14.0	13.0	100.0	0.0	0.0	0.0	0.0	7.1	0.0	46.2	53.8
8837	16.0	16.0	93.8	0.0	6.3	0.0	6.3	0.0	6.3	66.7	33.3
8838	12.0	11.0	100.0	0.0	0.0	0.0	0.0	8.3	0.0	54.5	45.5
8845	16.0	15.0	93.3	0.0	6.7	0.0	6.7	6.3	6.7	50.0	50.0
8846	16.0	16.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	62.5	37.5
8855	19.0	15.0	86.7	0.0	13.3	0.0	13.3	21.1	13.3	38.5	61.5
8863	17.0	15.0	100.0	0.0	0.0	0.0	0.0	11.8	0.0	33.3	66.7
8864	14.0	14.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	57.1	42.9
8868	13.0	13.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	61.5	38.5
8874	19.0	16.0	100.0	0.0	0.0	0.0	0.0	15.8	0.0	37.5	62.5
8875	15.0	11.0	63.6	0.0	36.4	0.0	36.4	26.7	36.4	14.3	85.7
8878	17.0	15.0	93.3	0.0	6.7	0.0	6.7	11.8	6.7	57.1	42.9
8928	15.0	14.0	92.9	0.0	7.1	0.0	7.1	6.7	7.1	53.8	46.2
8933	14.0	13.0	100.0	0.0	0.0	0.0	0.0	7.1	0.0	46.2	53.8
8936	19.0	19.0	94.7	0.0	5.3	0.0	5.3	0.0	5.3	50.0	50.0
MEAN	15.4	14.4	95.2	0.0	4.8	0.0	4.8	6.2	4.8	47.3	52.7
S.D.	1.91	1.79	8.69	0.00	8.70	0.00	8.70	7.19	8.70	12.35	12.35
N	24	24	24	24	24	24	24	24	24	24	24

TABLE 4.13

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 6

SPONSOR:HSIA INDIVIDUAL FETAL DATA AT SCHEDULED NECROPSY [% PER LITTER]

DAMS FROM GROUP 6: 1000 PPM

DAM #	CORPORA LUTEA	IMPLANTATION SITES	FETUSES VIABLE	FETUSES DEAD	RESORPTIONS EARLY	RESORPTIONS LATE	RESORPTIONS TOTAL	PRE-IMPLANTATION LOSS	POST-IMPLANTATION LOSS	MALES	FEMALES
	#	#	%	%	%	%	%	%	%	%	%
8739	16.0	16.0	87.5	0.0	12.5	0.0	12.5	0.0	12.5	57.1	42.9
8760	14.0	13.0	92.3	0.0	7.7	0.0	7.7	7.1	7.7	50.0	50.0
8769	13.0	13.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	38.5	61.5
8770	14.0	14.0	85.7	0.0	14.3	0.0	14.3	0.0	14.3	66.7	33.3
8771	19.0	14.0	100.0	0.0	0.0	0.0	0.0	26.3	0.0	71.4	28.6
8785	14.0	14.0	92.9	0.0	7.1	0.0	7.1	0.0	7.1	53.8	46.2
8793	18.0	8.0	100.0	0.0	0.0	0.0	0.0	55.6	0.0	37.5	62.5
8795	15.0	14.0	92.9	0.0	7.1	0.0	7.1	6.7	7.1	30.8	69.2
8799	15.0	14.0	92.9	0.0	7.1	0.0	7.1	6.7	7.1	53.8	46.2
8804	16.0	14.0	100.0	0.0	0.0	0.0	0.0	12.5	0.0	14.3	85.7
8815	18.0	18.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	55.6	44.4
8819	17.0	17.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	35.3	64.7
8821	18.0	18.0	94.4	0.0	5.6	0.0	5.6	0.0	5.6	52.9	47.1
8829	19.0	17.0	100.0	0.0	0.0	0.0	0.0	10.5	0.0	64.7	35.3
8831	18.0	18.0	88.9	0.0	11.1	0.0	11.1	0.0	11.1	37.5	62.5
8860	15.0	15.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	40.0	60.0
8861	15.0	15.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	40.0	60.0
8865	19.0	18.0	94.4	0.0	5.6	0.0	5.6	5.3	5.6	41.2	58.8
8870	17.0	16.0	93.8	0.0	6.3	0.0	6.3	5.9	6.3	60.0	40.0
8872	17.0	14.0	85.7	0.0	7.1	7.1	14.3	17.6	14.3	41.7	58.3
8885	14.0	13.0	100.0	0.0	0.0	0.0	0.0	7.1	0.0	38.5	61.5
8888	21.0	18.0	100.0	0.0	0.0	0.0	0.0	14.3	0.0	61.1	38.9
8896	12.0	11.0	100.0	0.0	0.0	0.0	0.0	8.3	0.0	45.5	54.5
8917	16.0	16.0	93.8	0.0	6.3	0.0	6.3	0.0	6.3	60.0	40.0
MEAN	16.3	14.9	95.6	0.0	4.1	0.3	4.4	7.7	4.4	47.8	52.2
S.D.	2.23	2.47	5.03	0.00	4.61	1.45	5.03	12.30	5.03	13.34	13.34
N	24	24	24	24	24	24	24	24	24	24	24

PILPv4.02
09/24/2018

TABLE 4.14

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 1

SPONSOR:HSIA INDIVIDUAL FETAL WEIGHTS [G]

FETUS #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
DAM # MEAN	GROUP 1:	0 PPM																					
8738 5.8	5.6	5.9	5.6	5.8	5.8	6.4	6.4	5.9	5.3	5.7	6.3/	6.1	5.6	6.1	5.5	5.3	5.3	5.3					
8751 5.5	4.9	5.1	6.4/	E	E	E	E	5.0	6.7	5.5	5.3	5.4	6.3	4.6									
8755 5.9	5.9	6.2	6.4	5.5	6.6	6.6/	6.2	6.1	5.4	E	5.8	5.9	5.9	5.8	4.7	5.8	5.6						
8766 6.1	5.9	6.7	6.1	6.1	5.7/	5.9	6.0	5.7	6.4	6.1	6.4	6.5	5.7										
8768 6.1	5.9	5.9	6.1	5.9	5.8	6.0	6.3/	6.8	6.3	5.9	6.0	6.3	5.9										
8772 6.3	6.1	5.9	6.3	6.5	6.1	6.4/	6.7	6.1	6.5	6.1	6.4	6.4											
8776 5.9	5.6	5.9	6.1	6.7	6.0	6.1	5.9/	5.8	5.3	5.8	6.0	6.0	6.0	5.3	5.8	5.5	5.7						
8777 5.5	E	5.4	5.3	5.2	5.4	5.1	5.1	5.6	5.5	5.7	5.8/	5.3	5.6	5.2	5.7	5.7	5.2	6.0	5.7	5.6	5.1		
8779 6.1	6.1	6.6	6.1	E	6.4	6.3/	6.2	6.0	E	5.8	6.0	5.9	6.3	5.7	6.1	6.1							
8791 6.4	6.0	6.2/	7.0	6.2																			
8798 6.1	5.8	6.1	6.1	5.5	6.1	5.9	5.6	5.9/	6.2	6.8	6.6	6.1	6.3	5.9									
8803 5.6	5.3	5.4	5.5	5.7	5.6	5.7	5.4	5.6	6.2	5.7	6.2/	6.0	6.2	5.5	5.6	5.8	5.6	5.8	4.3				
8812 6.5	6.7	7.2	6.7	E	6.5	6.2	6.6/	6.3	7.0	6.9	6.4	6.3	6.1	6.0									
8817 6.0	5.6	E	6.3	6.3	6.4/	5.8	6.2	5.9	5.8	5.8	5.7	E											
8820 5.9	6.0	6.0	6.3	6.1	6.2/	6.2	5.1	5.9	4.8	6.3	6.2	6.0	5.9										
8825 6.2	6.1	6.1	6.1	5.9	6.0	6.4	6.3/	6.5	6.2	6.6	6.0	6.1	6.5	E	6.0	6.1							
8836 5.9	E	5.7	E	5.8	L	6.4	E	6.0	5.6	5.9	5.8/	5.9	6.0	E	5.6	5.8	5.8						
8843 6.5	6.0	6.4	6.5	7.0	6.4/																		
8858 6.2	6.1	6.7	6.0	6.5	6.2/	6.2	6.4	E	6.3	6.2	E	6.0	6.0	6.2	5.7								
8871 5.6	E	5.8	5.7	5.9	5.9	E	5.7/	5.7	5.4	6.0	5.9	5.3	5.7	5.5	4.8								
8883 5.5	4.9	5.3	5.4	5.3/	5.6	5.6	5.3	5.8	5.3	5.8	5.4	5.7	5.5										
8886 6.2	6.2	6.3	6.2	6.1	6.1	6.3	6.0	6.6/	5.7	6.4	5.8	6.1											
8894 5.7	5.8	5.9	5.8	6.1/	6.1	6.0	5.9	5.7	5.7	5.0	6.0	5.2	5.8	5.8	5.6	5.3							
8926 6.2 /	6.3	5.8	6.6																				
MEAN 6.0																							
S.D. 0.31																							
N 24																							

E = EARLY RESORPTION L = LATE RESORPTION D = DEAD FETUS '/' DENOTES POSITION OF CERVIX

TABLE 4.14

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 2

SPONSOR:HSIA INDIVIDUAL FETAL WEIGHTS [G]

FETUS #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
DAM # MEAN	GROUP 2: 15 MG/KG RA																						
8740 4.5	4.9	4.9	4.2	E	5.2/	L	L	E	4.7	E	3.8	E	4.6	4.6	4.3	E	4.2						
8743 4.0	L	3.3	E	E	E	4.0	4.1/	3.3	4.5	3.9	4.6	E	3.9										
8756 4.5	4.5	3.1	L	E	5.0	4.4	3.7	4.8/	4.7	4.3	4.8	4.8	4.8	4.9	4.7	4.5	3.8						
8757 4.8	5.0	4.1	4.9	5.2	E	5.3	5.1/	5.2	4.1	4.7	5.4	5.3	4.7	4.4	4.4	4.8							
8780 4.3	4.7	4.8	4.4	3.8	4.5	E	3.9	5.0/	4.3	4.5	3.5	4.0	4.2	3.9	4.2	4.4	4.1	4.2					
8789 5.0	4.7	5.4/	4.8	5.1																			
8800 4.5	E	4.7	4.0/	E	4.1	4.7	E	E	4.3	5.0	4.8	4.5	4.4	4.7	4.1								
8801 3.9	L	L	4.2	3.9	4.2	3.2	L /	4.0	L	4.2	L	3.9	L	E	L								
8802 4.7	4.8	5.1	5.3/	5.2	4.0	5.1	4.7	E	4.9	L	4.6	4.2	4.2	4.7	4.9								
8808 5.0	4.7	4.8	5.5	5.2	5.9	5.5/	L	E	5.1	4.3	4.9	4.4											
8809 5.7	E	5.6	6.0	5.9	5.6	E /	6.0	5.4	5.7	5.6	5.4	5.7	5.5										
8810 4.1	4.1	4.3	3.6	4.2	3.9/	4.2	3.7	4.3	4.0	4.1	4.3	4.7	4.3										
8818 6.1	5.7	5.6	6.4	6.1	7.1	5.7/	6.8	5.9	5.3	6.8	6.4	5.5	5.8	E									
8822 3.4	E	E /	E	E	E	L	E	2.8	3.8	E	3.6	L											
8827 4.1	E	3.7	4.3	4.1	E	3.6	E /	4.3	4.2	3.8	5.0	E	4.0	L	3.8								
8840 4.5	E	4.3	4.6	E	E	4.6/	4.5	4.6															
8842 4.6	4.2	4.4	4.8	5.2	4.7/	E	4.7	5.3	4.6	4.7	4.4	4.0	4.7	4.5	E	4.3							
8847 5.2	6.1	5.3	E	5.5/	5.2	4.7	4.6	E	5.0	4.8	E												
8850 4.4	4.0	4.5	4.7	4.4	4.6	3.7	E	4.5/	4.3	4.5	4.3	4.7	4.6	4.3	L	3.8	E						
8851 4.9	4.7	4.9	5.0	4.9	5.0/	5.3	5.3	4.8	3.8	E	4.9	5.3											
8854 3.1	3.1	E	E	L	L /	E	E	E	3.6	3.2	E	2.6	E	E	E								
8900 4.9	4.6	4.8	4.6	4.9	4.4	4.6	5.2	4.8/	E	4.8	5.7	5.3	5.0	5.3	4.9	4.5							
8901 4.7	4.4	4.8	4.5	5.0	E	4.8/	5.3	4.4	5.2	5.1	4.8	4.4	4.4	4.7	4.1								
8930 3.7	3.4	3.9	3.5	4.2	E /	3.3	3.6	E	E	3.5	4.1	E	3.4	4.0									
8931 5.6	5.1	E	5.3	6.1	5.7/	6.2	5.9	5.7	5.2	5.3	5.8	6.0	5.1	5.0	5.8								
MEAN 4.6																							
S.D. 0.69																							
N 25																							

E = EARLY RESORPTION L = LATE RESORPTION D = DEAD FETUS '/' DENOTES POSITION OF CERVIX

TABLE 4.14

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 3

SPONSOR:HSIA INDIVIDUAL FETAL WEIGHTS [G]

FETUS #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
DAM # MEAN	GROUP 3: 0.25 PPM																						
8747 6.4	6.0	6.5	6.4	6.0	6.4	6.3	6.1	6.5	6.6/	6.2	6.4	6.7	6.8	6.2	6.2	6.3							
8758 6.2	6.1	7.0	6.5/	6.2	5.7	6.5	5.5	6.4	5.8	6.1	6.3	6.2	6.1	E	6.1								
8764 6.3	6.7	5.9	4.6	6.6	6.6	6.2	5.9	6.9	6.2/	6.4	E	6.5	6.6	6.7	6.0	6.3							
8767 5.8	5.6	5.8	5.9	6.0	5.9	5.9/	5.6	4.5	5.8	5.9	E	6.3	5.9	6.0	6.2	6.0	5.1						
8773 0.0	E /	E																					
8774 5.8	E	E	E	5.4	E /	E	E	E	6.0	E	E	6.1	E	E	E								
8807 5.8	5.9	5.0	5.6	6.0	5.5	5.6	5.4/	6.0	5.9	6.0	6.3	5.9	5.9	5.6	5.8	5.8							
8814 6.1	6.5	6.0	5.8	6.4	6.1	6.0/	5.9	6.5	5.6	6.2	6.2	5.8	6.0										
8826 6.6	6.2	6.0	6.8	6.8	E	6.7	E /	7.3	6.7	E	6.5	6.3											
8834 5.9	5.8	6.2	6.2	6.0/	6.2	5.6	5.6	5.9	5.7	5.9	6.1	5.5	5.4										
8835 6.6	6.2	7.0	6.3	6.4	6.8	6.6	6.9/	6.1	7.2	6.3													
8839 5.8	5.8	6.2	6.1	6.3	5.8/	5.9	5.9	E	5.6	5.8	5.4	5.4	6.3	5.7	5.9	5.6							
8849 5.9	6.2	5.9	6.4	5.3	5.8	6.0/	5.7	6.4	6.1	5.2	5.6	6.1	6.1	5.7									
8853 5.8	5.3	5.7	5.5	5.8	5.8	5.9/	6.3	6.0	6.4	E	5.6	5.7	5.7										
8859 5.9	5.6	6.1	5.8	6.0	6.7/	6.0	5.1	6.1	5.7	5.9	6.1	5.7											
8869 6.5	6.3	6.3	6.2	6.9	6.2	6.5	6.3/	6.8	6.8														
8879 6.6	6.6	6.3	6.4	6.7	6.5	6.5	E	6.3/	7.0	7.7	6.6	6.2	6.5	6.4	6.2	7.2							
8889 6.0	6.0	6.2	6.0	6.3	5.9	6.4/	6.1	6.2	5.7	5.8	5.6	6.2	5.9	6.1	6.1	6.1							
8891 6.7	6.1	7.3	6.2	6.6	E	7.0	6.4	7.2	6.5/														
8893 6.2	5.4	6.2	6.0	6.8	5.6	6.5	6.8	6.7/	6.3	5.9	6.0												
8897 6.0	6.0	6.2	6.5/	6.0	6.0	6.0	E	6.6	5.9	5.8	6.1	5.8	6.2	E	4.9								
8908 6.2	6.0	5.8	E	5.8	6.0	6.8	6.5	E	6.1/	6.0	5.9	6.2	6.6	6.2									
8910 6.4	6.7	7.4	6.8	6.5	6.6/	6.5	6.0	6.2	6.2	6.4	6.6	6.1	5.6										
MEAN 6.2																							
S.D. 0.31																							
N 22																							

E = EARLY RESORPTION L = LATE RESORPTION D = DEAD FETUS '/' DENOTES POSITION OF CERVIX

TABLE 4.14

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 4

SPONSOR:HSIA INDIVIDUAL FETAL WEIGHTS [G]

FETUS #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
DAM # MEAN	GROUP 4:	1.5 PPM																					
8741 5.5	5.7	5.8	5.7	5.9	5.0/	5.6	5.6	5.1	5.6	5.6	5.8	5.0	5.3	E	5.7	5.3	5.7						
8765 6.2	6.2	5.7	6.5	6.3	6.4/	6.8	6.5	5.9	6.2	6.2	6.2	6.3	5.8										
8783 6.2	6.3	6.0	6.3	6.9	6.6	6.8	5.7/	5.5	6.0	6.0	6.2	6.5	6.1	5.7	6.1								
8786 6.1	6.0	6.2	6.6	6.0	E	6.0/	6.0	6.4	6.5	6.4	6.3	5.7	5.3	5.6									
8788 5.7	5.7	6.1	5.9	5.7	5.6	6.0/	5.6	5.5	5.5	5.5	E	5.7	5.6	6.1	5.5								
8792 6.8	6.1	6.8	7.4	6.9/																			
8805 5.9	5.8	6.6	6.2	6.4	6.5/	5.6	6.4	6.3	6.1	5.9	3.6	5.8	6.0	5.5									
8806 6.2	6.3	6.0	5.8	6.6	5.9	5.8	5.6	6.0	6.7/	6.0	6.6	6.4	6.9	5.9									
8811 6.0	6.2	6.4	6.0	4.5	6.0	6.3/	5.6	6.0	6.3	6.0	6.0	5.8	5.8	5.8	6.6	6.0							
8813 6.0	5.9	6.1	5.9	6.1	6.0/	6.3	6.8	5.6	6.0	6.0	5.9	5.8											
8823 5.7	5.3	5.7	5.8	5.7	6.2	5.4	5.9	5.2	6.0/	6.5	5.7	5.4	5.7	5.3	6.0								
8844 5.9	6.2	5.8	5.7	5.9	6.0	5.4	5.9	5.7	6.8/	6.1	6.5	5.5	5.4										
8848 5.6	5.2	5.8	5.3	5.9	5.7	E	5.6	5.8/	E	E	5.2	5.8	5.9	5.5	5.7	5.6	5.5	5.3	5.2				
8857 5.9	6.4	5.7	5.5	6.3	5.6	5.7/	6.2	5.9	5.9	6.1	5.7	5.2											
8867 6.1	6.4	E	6.1	5.9	6.2/	E	6.0	6.1	E	6.1	6.4	5.9											
8873 5.5	5.2	5.7	6.1	6.0	E /	5.5	5.2	5.7	5.8	5.3	5.7	5.5	5.4	5.1	5.2	5.0							
8876 5.4	5.4	5.2	5.4	5.5	5.2	5.7	5.3	5.2/	5.1	5.5	5.4	4.9	5.3	5.8	5.8	5.0	5.4						
8881 6.6	7.5	6.1	6.1	6.8	7.0	6.3	6.5	5.9	6.9/	6.8													
8890 5.7	5.7	5.7	5.8	5.7	6.1	5.8/	6.1	6.1	5.7	6.2	5.9	6.1	5.0	5.5	4.7	E							
8895 6.3	6.0	6.8/	5.7	6.0	6.9	6.7	6.0	6.4	6.0	6.2													
8899 4.7	4.6	4.8	4.1	5.2	4.5	3.9	5.0/	4.2	4.8	4.4	4.9	4.6	4.2	5.4	5.2	5.0							
8907 6.1	6.3	6.3	6.7	6.2	5.8	6.2	5.9	6.0/	5.9	5.6	6.5	5.9	6.2	5.9	6.2	6.3	5.7						
8941 6.1	5.6	6.7	5.7	5.8	5.8	6.1/	6.3	6.3	6.7	5.7	6.5	6.4	5.5	6.2	5.5								
8942 6.4	6.2	6.5	6.3	7.1	6.8/	6.2	6.1	6.6	6.2	6.4													
MEAN 5.9																							
S.D. 0.43																							
N 24																							

E = EARLY RESORPTION L = LATE RESORPTION D = DEAD FETUS '/' DENOTES POSITION OF CERVIX

TABLE 4.14

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 5

SPONSOR:HSIA INDIVIDUAL FETAL WEIGHTS [G]

FETUS #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
DAM # MEAN	GROUP 5: 500 PPM																						
8735 6.1	6.2	6.3	6.5	6.1	5.7	5.7	6.2/	6.4	6.2	6.3	6.1	6.0	5.8	5.7	5.7								
8763 6.2	5.7	6.6	6.3	6.3	6.1	6.4	6.1	6.2	6.1/	6.7	6.5	5.8	6.2	5.5									
8775 6.0	5.8	5.8	5.9	6.5/	5.8	5.9	6.4	6.1	6.1	6.1	5.7	6.2											
8778 5.8	5.8	6.1	6.2	5.7	6.0	5.9/	5.8	6.3	5.7	5.0	6.1	4.4	5.5	6.2	5.8								
8784 6.5	6.6	6.7	6.4	6.1	6.9	6.6	6.7	6.7	6.2/	6.0	6.4	6.4	6.7	6.6	6.7	6.7							
8790 6.7	7.4	6.5	6.7	6.2	7.2	7.0	6.3/	6.3	6.7	6.4	6.6	7.1	6.8	6.5									
8824 6.1	5.7	6.4	5.3	6.5/	6.3	6.4	6.2	E	6.2	6.1	5.9	6.1	E										
8828 6.0	5.8	6.0	5.9	6.2	6.2	5.6	5.9	6.5	6.4/	5.6	5.8	5.9	6.2	6.3	6.2								
8830 6.1	E	E	E	6.2	6.3/	5.8	6.7	6.0	6.0	6.2	6.1	6.5	5.9	6.0	6.2	5.9							
8833 6.2	6.0	6.3	6.5	6.6	6.3	6.4	6.1/	6.3	6.2	6.1	5.8	6.0	6.1										
8837 5.9	5.9	5.6	6.0	5.8	5.6	6.1	6.1	5.9/	5.9	E	5.6	5.6	6.2	5.9	5.8	6.2							
8838 6.5	6.3	6.2	6.3	6.3/	6.7	6.9	6.6	6.3	6.6	6.9	6.7												
8845 6.1	6.1	5.9	5.8	6.5	6.0	6.6	5.8	6.0	6.0/	5.9	5.9	5.8	E	6.3	6.2								
8846 6.0	4.8	6.0	6.3	6.0	6.0	6.1	5.5	5.9/	6.1	6.1	6.4	6.2	6.4	5.9	6.2	6.0							
8855 6.2	5.7	5.6	E	6.3	6.7	6.7	6.2/	6.2	E	5.8	5.8	5.9	6.7	6.6	6.0								
8863 5.5	5.6	5.1	5.4	5.5	5.5	5.5/	5.3	5.4	5.2	5.4	6.0	5.2	5.5	5.8	5.4								
8864 6.2	5.6	6.2	6.4	6.2	6.8	6.7/	7.1	6.0	6.5	6.1	5.7	5.9	5.7	5.7									
8868 5.7	5.9	5.8	5.2	5.7	5.2	5.8	5.8/	5.6	5.6	6.0	6.0	5.7	5.9										
8874 5.7	5.3	5.6	5.6	6.1	5.8	5.8	5.7	5.5	5.5/	5.8	5.7	5.8	5.8	6.3	5.6	6.0							
8875 5.4	5.6	E	6.0	E /	5.7	5.7	4.9	E	4.9	5.1	E												
8878 5.8	5.9	5.9	5.7	6.1	E /	5.7	5.6	5.5	6.0	6.2	5.8	5.6	6.1	5.1	5.6								
8928 5.4	5.2	5.5	5.5	5.5/	5.2	5.5	4.9	4.9	5.1	5.9	6.0	5.5	E	5.2									
8933 5.9	6.5	6.0	6.4	6.2	5.9/	5.5	4.2	5.7	6.3	6.5	5.6	5.9	5.8										
8936 6.2	6.6	6.4	6.4	6.2	5.7	6.0	6.4/	6.5	6.1	6.0	6.4	6.1	6.5	5.9	E	6.4	6.3	6.0	5.8				
MEAN 6.0																							
S.D. 0.33																							
N 24																							

E = EARLY RESORPTION L = LATE RESORPTION D = DEAD FETUS '/' DENOTES POSITION OF CERVIX

TABLE 4.14

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 6

SPONSOR:HSIA INDIVIDUAL FETAL WEIGHTS [G]

FETUS #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
DAM # MEAN	GROUP 6:	1000 PPM																					
8739 5.4	5.6	5.0	E	E	5.5	5.3	5.5/	5.5	5.3	5.6	5.9	5.5	5.0	5.2	5.6	5.3							
8760 6.3	6.6	5.9	6.1	6.3/	6.4	6.7	6.0	6.3	6.4	6.1	6.6	6.1	E										
8769 6.3	6.8	6.5	6.3/	5.7	5.9	6.0	6.3	6.7	6.5	6.7	6.0	6.7	6.2										
8770 5.8	5.9	5.7	E	E	5.7	6.0	5.8	5.9/	5.9	5.6	5.9	6.0	5.9	5.7									
8771 5.7	5.5	6.2	4.4	5.6	5.8	5.7	6.2	6.3/	6.0	4.6	6.3	5.8	5.9	5.9									
8785 5.9	5.9	5.4	5.9	5.8	6.1	5.7/	5.9	E	5.9	5.9	5.8	6.1	6.4	6.1									
8793 6.3	6.7	6.4	6.0	6.1	6.4	6.0	6.4	6.7/															
8795 6.3	6.0	6.0	6.2	6.1	6.3	5.8	6.6/	6.9	5.9	7.3	6.5	E	6.7	5.6									
8799 5.9	E	5.7	6.0	5.5	6.3	6.0	6.1	6.0/	5.7	5.9	6.1	6.0	5.5	6.0									
8804 6.1	6.0	6.0	6.4	5.6	6.1	5.9	5.9	6.1	5.8/	6.4	6.3	5.9	6.9	5.8									
8815 5.8	6.1	5.7	5.2	5.7	6.0	5.8	5.7	5.7	5.8	5.9/	5.6	6.1	6.1	5.9	6.2	5.8	6.0	5.9					
8819 5.9	5.4	5.5	6.1	6.1	6.4	6.3	5.7	5.7	5.7	5.9/	5.9	6.0	5.8	6.2	5.7	5.7	5.9						
8821 6.0	6.2	5.7	5.4	6.2	6.3	6.0	6.0	5.8/	5.4	6.3	6.0	6.0	E	5.9	6.2	5.6	6.2	6.2					
8829 6.3	6.2	6.5	6.5	6.3	6.1	6.8	6.4	6.0/	6.3	6.0	6.6	5.9	6.2	6.4	6.7	6.0	6.4						
8831 6.1	5.9	6.1	6.5	E	6.4	6.3	E /	6.9	6.4	4.3	6.4	6.5	5.9	5.8	6.2	5.6	6.3	5.7					
8860 5.9	6.2	5.6	5.6	5.4	5.7/	6.2	6.0	6.0	6.3	6.0	6.1	6.0	6.0	6.0	5.5								
8861 5.6	6.1	5.5	5.6	5.6	5.9	5.4/	5.2	5.5	5.8	5.5	6.0	5.7	5.9	5.9	4.4								
8865 5.8	5.9	5.8	E	6.0	5.3	5.0	5.7	6.0	6.3/	6.8	5.6	5.2	5.8	6.0	6.2	5.9	5.7	6.0					
8870 5.8	5.8	5.6	E	6.4	6.1	5.8	6.2	5.7/	5.7	6.1	6.0	5.7	6.0	5.6	5.6	4.5							
8872 5.7	5.5	E	6.2	5.8	5.9	5.7	5.8	L	6.3/	4.5	5.7	5.9	5.4	5.9									
8885 6.2	6.4	6.0	6.5	6.8/	6.8	6.1	6.1	5.5	5.8	6.0	5.6	6.3	6.2										
8888 5.6	5.6	5.5	6.0	5.6	5.5	5.8	5.1	5.8	5.0	5.8/	5.6	6.0	5.6	5.6	5.3	5.4	5.8	5.4					
8896 6.0	6.0	5.9	6.2	5.8	5.9	5.8/	5.8	5.6	6.3	5.9	6.3												
8917 6.0	5.8	5.9	5.8	E	6.1	6.4	6.6/	6.2	6.0	4.4	5.9	6.4	6.2	6.3	5.6	5.8							
MEAN 5.9																							
S.D. 0.26																							
N 24																							

E = EARLY RESORPTION L = LATE RESORPTION D = DEAD FETUS '/' DENOTES POSITION OF CERVIX

PFWTv4.15
09/24/2018

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 1

SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 1: 0 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8738	1	M	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	M	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
	13	F	NO REMARKABLE OBSERVATIONS
	14	M	NO REMARKABLE OBSERVATIONS
	15	F	NO REMARKABLE OBSERVATIONS
	16	F	NO REMARKABLE OBSERVATIONS
	17	F	NO REMARKABLE OBSERVATIONS
	18	F	NO REMARKABLE OBSERVATIONS
8751	1	M	M MICROPHTHALMIA AND/OR ANOPHTHALMIA MICROPHTHALMIA, BILATERAL
	2	F	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4		EARLY RESORPTION
	5		EARLY RESORPTION
	6		EARLY RESORPTION
	7		EARLY RESORPTION
	8	M	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
	13	F	NO REMARKABLE OBSERVATIONS
	14	F	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 2

SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 1: 0 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8755	1	M	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10		EARLY RESORPTION
	11	M	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13	F	NO REMARKABLE OBSERVATIONS
	14	M	NO REMARKABLE OBSERVATIONS
	15	F	NO REMARKABLE OBSERVATIONS
	16	M	NO REMARKABLE OBSERVATIONS
	17	F	NO REMARKABLE OBSERVATIONS
8766	1	F	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS
	7	M	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13	F	NO REMARKABLE OBSERVATIONS
8768	1	M	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 3

SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 1: 0 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8768	4	F	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS
8772	1	M	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	M	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
8776	1	F	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	M	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	F	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 4

SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 1: 0 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8776	12	M	NO REMARKABLE OBSERVATIONS
	13	F	NO REMARKABLE OBSERVATIONS
	14	F	NO REMARKABLE OBSERVATIONS
	15	M	NO REMARKABLE OBSERVATIONS
	16	F	NO REMARKABLE OBSERVATIONS
	17	F	NO REMARKABLE OBSERVATIONS
8777	1		EARLY RESORPTION
	2	M	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS
	14	M	NO REMARKABLE OBSERVATIONS
	15	M	NO REMARKABLE OBSERVATIONS
	16	M	NO REMARKABLE OBSERVATIONS
	17	F	NO REMARKABLE OBSERVATIONS
	18	M	NO REMARKABLE OBSERVATIONS
	19	M	NO REMARKABLE OBSERVATIONS
	20	M	NO REMARKABLE OBSERVATIONS
	21	F	NO REMARKABLE OBSERVATIONS
8779	1	M	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4		EARLY RESORPTION
	5	M	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 5

SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 1: 0 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8779	7	M	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9		EARLY RESORPTION
	10	M	NO REMARKABLE OBSERVATIONS
	11	F	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS
	14	F	NO REMARKABLE OBSERVATIONS
	15	M	NO REMARKABLE OBSERVATIONS
	16	M	NO REMARKABLE OBSERVATIONS
8791	1	M	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
8798	1	F	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS
	14	M	NO REMARKABLE OBSERVATIONS
8803	1	F	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 6

SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 1: 0 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8803	6	M	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS
	14	F	NO REMARKABLE OBSERVATIONS
	15	M	NO REMARKABLE OBSERVATIONS
	16	M	NO REMARKABLE OBSERVATIONS
	17	M	NO REMARKABLE OBSERVATIONS
	18	M	NO REMARKABLE OBSERVATIONS
	19	F	NO REMARKABLE OBSERVATIONS
8812	1	M	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4		EARLY RESORPTION
	5	F	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS
	14	F	NO REMARKABLE OBSERVATIONS
8817	1	F	NO REMARKABLE OBSERVATIONS
	2		EARLY RESORPTION
	3	M	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 7

SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 1: 0 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8817	6	F	NO REMARKABLE OBSERVATIONS
	7	M	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
	11	F	NO REMARKABLE OBSERVATIONS
	12		EARLY RESORPTION
8820	1	F	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13	F	NO REMARKABLE OBSERVATIONS
8825	1	M	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	F	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 8

SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 1: 0 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8825	14		EARLY RESORPTION
	15	F	NO REMARKABLE OBSERVATIONS
	16	M	NO REMARKABLE OBSERVATIONS
8836	1		EARLY RESORPTION
	2	M	NO REMARKABLE OBSERVATIONS
	3		EARLY RESORPTION
	4	M	NO REMARKABLE OBSERVATIONS
	5		LATE RESORPTION CROWN-RUMP LENGTH: 4.0 CM, SLIGHT AUTOLYSIS, NO APPARENT MALFORMATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7		EARLY RESORPTION
	8	F	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	F	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS
	14		EARLY RESORPTION
	15	F	NO REMARKABLE OBSERVATIONS
	16	F	NO REMARKABLE OBSERVATIONS
	17	F	NO REMARKABLE OBSERVATIONS
8843	1	M	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
8858	1	M	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 9
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 1: 0 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8858	7	M	NO REMARKABLE OBSERVATIONS
	8		EARLY RESORPTION
	9	M	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
	11		EARLY RESORPTION
	12	M	NO REMARKABLE OBSERVATIONS
	13	F	NO REMARKABLE OBSERVATIONS
	14	M	NO REMARKABLE OBSERVATIONS
	15	F	NO REMARKABLE OBSERVATIONS
8871	1		EARLY RESORPTION
	2	M	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6		EARLY RESORPTION
	7	F	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS
	14	F	NO REMARKABLE OBSERVATIONS
	15	F	NO REMARKABLE OBSERVATIONS
8883	1	M	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 10

SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 1: 0 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8883	10	M	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
	13	F	NO REMARKABLE OBSERVATIONS
8886	1	M	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	F	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
8894	1	M	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13	F	NO REMARKABLE OBSERVATIONS
	14	M	NO REMARKABLE OBSERVATIONS
	15	F	NO REMARKABLE OBSERVATIONS
	16	M	NO REMARKABLE OBSERVATIONS
8926	1	F	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 11
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 1: 0 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8926	2	F	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 12
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	SEX	FETAL GROSS OBSERVATION
8740	1	F	M MENINGOCELE
			PORTION OF MENINGES PROTRUDES THROUGH A 1 MM IN DIAMETER
			OPENING IN THE MEDIAL CRANIUM
			M CLEFT PALATE
			ENTIRE LENGTH
	2	M	M ECTRODACTYLY
			DIGIT #2 ABSENT, HINDPAW, BILATERAL
	3	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, BILATERAL
	4		EARLY RESORPTION
	5	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, RIGHT
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA
			MICROPHTHALMIA, LEFT
			M BENT TAIL
			PROXIMAL
			M SPINA BIFIDA
			VERTEBRAL COLUMN OPEN IN THE SACRAL REGION
	6		LATE RESORPTION
			CROWN-RUMP LENGTH: 1.6 CM, MUMMIFIED
	7		LATE RESORPTION
			CROWN-RUMP LENGTH: 1.9 CM, MUMMIFIED
	8		EARLY RESORPTION
	9	M	NO REMARKABLE OBSERVATIONS
	10		EARLY RESORPTION
	11	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, RIGHT
			M CLEFT PALATE
			ENTIRE LENGTH
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA
			MICROPHTHALMIA, LEFT
			M BENT TAIL
			MEDIAL

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 13
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	SEX	FETAL GROSS OBSERVATION
8740	12		EARLY RESORPTION
	13	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, BILATERAL
	14	F	M CLEFT PALATE
			ENTIRE LENGTH
	15	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
			M CLEFT PALATE
			POSTERIOR PORTION
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA
			MICROPHTHALMIA, BILATERAL
	16		EARLY RESORPTION
	17	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA
			MICROPHTHALMIA, BILATERAL
8743	1		LATE RESORPTION
			CROWN-RUMP LENGTH: 2.5 CM, MUMMIFIED
	2	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA
			MICROPHTHALMIA, BILATERAL
			M CLEFT PALATE
			POSTERIOR PORTION
	3		EARLY RESORPTION
	4		EARLY RESORPTION
	5		EARLY RESORPTION
	6	F	M HYDROCEPHALY WITH OR WITHOUT DOME HEAD
			WITH DOME HEAD
			M CLEFT PALATE
			ENTIRE LENGTH
	7	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 14
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	SEX	FETAL GROSS OBSERVATION
8743	7		M CLEFT PALATE POSTERIOR PORTION M MICROPHTHALMIA AND/OR ANOPHTHALMIA MICROPHTHALMIA, BILATERAL
	8	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID WITHOUT OPEN EYELID, BILATERAL M MICROPHTHALMIA AND/OR ANOPHTHALMIA MICROPHTHALMIA, BILATERAL M CLEFT PALATE POSTERIOR PORTION
	9	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID WITHOUT OPEN EYELID, BILATERAL M MICROPHTHALMIA AND/OR ANOPHTHALMIA MICROPHTHALMIA, BILATERAL
	10	M	M OMPHALOCELE SEVERAL LOOPS OF INTESTINE PROTRUDE THROUGH AN OPENING IN THE UMBILICUS, REMNANTS OF A MEMBRANOUS SAC M BENT TAIL MEDIAL M EXENCEPHALY WITH OR WITHOUT OPEN EYELID WITH OPEN EYELID, RIGHT M CLEFT PALATE ENTIRE LENGTH
	11	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID WITHOUT OPEN EYELID, BILATERAL M MICROPHTHALMIA AND/OR ANOPHTHALMIA MICROPHTHALMIA, BILATERAL
	12		EARLY RESORPTION
	13	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID WITH OPEN EYELID, RIGHT M MICROPHTHALMIA AND/OR ANOPHTHALMIA MICROPHTHALMIA, LEFT
8756	1	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 15
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	SEX	FETAL GROSS OBSERVATION
8756			WITH OPEN EYELID, LEFT
	2	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA
			MICROPHTHALMIA, BILATERAL
			M CLEFT PALATE
			POSTERIOR PORTION
	3		LATE RESORPTION
			CR0WN-RUMP LENGTH: 2.5 CM, MUMMIFIED
	4		EARLY RESORPTION
	5	M	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, BILATERAL
	8	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
	9	M	NO REMARKABLE OBSERVATIONS
	10	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, RIGHT
			M CLEFT PALATE
			POSTERIOR PORTION
	11	M	NO REMARKABLE OBSERVATIONS
	12	M	M MENINGOENCEPHALOCELE
			PORTION OF BRAIN AND MENINGES PROTRUDE THROUGH A 4 MM IN DIAMETER OPENING IN THE MEDIAL CRANIUM
	13	M	M MENINGOCELE
			PORTION OF MENINGES PROTRUDES THROUGH A 1 MM IN DIAMETER OPENING IN THE MEDIAL CRANIUM
	14	M	M MENINGOENCEPHALOCELE
			PORTION OF BRAIN AND MENINGES PROTRUDE THROUGH A 4 MM IN DIAMETER OPENING IN THE MEDIAL CRANIUM
			M CLEFT PALATE
			POSTERIOR PORTION

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 16
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	SEX	FETAL GROSS OBSERVATION
8756	15	F	M MENINGOCELE
			PORTION OF MENINGES PROTRUDES THROUGH A 3 MM IN DIAMETER
			OPENING IN THE MEDIAL CRANIUM
	16	F	NO REMARKABLE OBSERVATIONS
	17	F	M CLEFT PALATE
			ENTIRE LENGTH
8757	1	M	NO REMARKABLE OBSERVATIONS
	2	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA
			MICROPHTHALMIA, BILATERAL
	3	F	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5		EARLY RESORPTION
	6	F	NO REMARKABLE OBSERVATIONS
	7	M	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	F	M MENINGOCELE
			PORTION OF MENINGES PROTRUDES THROUGH A 1 MM IN DIAMETER
			OPENING IN THE MEDIAL CRANIUM
			M CLEFT PALATE
			POSTERIOR PORTION
	10	M	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
	13	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, BILATERAL
	14	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
	15	F	M HYDROCEPHALY WITH OR WITHOUT DOME HEAD
			WITH DOME HEAD
	16	M	NO REMARKABLE OBSERVATIONS
8780	1	F	M MENINGOCELE

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 17
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	SEX	FETAL GROSS OBSERVATION
8780			PORTION OF MENINGES PROTRUDES THROUGH A 2 MM IN DIAMETER OPENING IN THE MEDIAL CRANIUM
	2	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, BILATERAL
			M ECTRODACTYLY
			DIGIT #2 ABSENT, HINDPAW, RIGHT
	3	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
	4	F	M MICROPHTHALMIA AND/OR ANOPHTHALMIA
			MICROPHTHALMIA, BILATERAL
	5	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, BILATERAL
			M ECTRODACTYLY
			DIGIT #2 ABSENT, HINDPAW, LEFT
	6		EARLY RESORPTION
	7	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
			M ECTRODACTYLY
			DIGIT #2 ABSENT, HINDPAW, BILATERAL
	8	F	NO REMARKABLE OBSERVATIONS
	9	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, LEFT
	10	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
	11	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, BILATERAL
	12	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
			M SYNDACTYLY
			DIGITS #2 AND #3 FUSED, HINDPAW, BILATERAL
	13	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
	14	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 18
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	SEX	FETAL GROSS OBSERVATION
8780			WITH OPEN EYELID, BILATERAL
	15	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
	16	F	M CLEFT PALATE
			ENTIRE LENGTH
	17	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, RIGHT
	18	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
8789	1	M	M HYDROCEPHALY WITH OR WITHOUT DOME HEAD
			WITH DOME HEAD
			M OPEN EYELID
			LEFT
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA
			MICROPHTHALMIA, RIGHT
	2	M	M HYDROCEPHALY WITH OR WITHOUT DOME HEAD
			WITH DOME HEAD
	3	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, RIGHT
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA
			MICROPHTHALMIA, LEFT
	4	F	M OPEN EYELID
			RIGHT
8800	1		EARLY RESORPTION
	2	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
			M SPINA BIFIDA
			VERTEBRAL COLUMN OPEN IN THE SACRAL REGION
	3	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, LEFT
	4		EARLY RESORPTION
	5	F	M MENINGOCELE
			PORTION OF MENINGES PROTRUDES THROUGH A 2 MM IN DIAMETER

OBSERVATION CODE: M = MALFORMATION V = VARIATION

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PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 19
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	SEX	FETAL GROSS OBSERVATION
8800			OPENING IN THE MEDIAL CRANIUM
	6	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, LEFT
	7		EARLY RESORPTION
	8		EARLY RESORPTION
	9	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, RIGHT
			M SPINA BIFIDA
			VERTEBRAL COLUMN OPEN IN THE SACRAL REGION
	10	M	M MENINGOCELE
			PORTION OF MENINGES PROTRUDES THROUGH A 3 MM IN DIAMETER
			OPENING IN THE MEDIAL CRANIUM
	11	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, RIGHT
	12	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
	13	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, BILATERAL
	14	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, RIGHT
	15	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
8801	1		LATE RESORPTION
			CROWN-RUMP LENGTH: 1.5 CM, MUMMIFIED
	2		LATE RESORPTION
			CROWN-RUMP LENGTH: 2.5 CM, SEVERE AUTOLYSIS,
			MENINGOENCEPHALOCELE, PORTION OF BRAIN AND MENINGES PROTRUDE
			THROUGH A 3 MM IN DIAMETER OPENING IN THE ANTERIOR CRANIUM
	3	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA
			MICROPHTHALMIA, BILATERAL
	4	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID

OBSERVATION CODE: M = MALFORMATION V = VARIATION

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PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 20
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	SEX	FETAL GROSS OBSERVATION
8801			WITHOUT OPEN EYELID, BILATERAL
	5	M	M CLEFT PALATE
			ROSTRAL PORTION
			M MENINGOCELE
			PORTION OF MENINGES PROTRUDES THROUGH A 2 MM IN DIAMETER
			OPENING IN THE ANTERIOR CRANIUM
			M HYDROCEPHALY WITH OR WITHOUT DOME HEAD
			WITH DOME HEAD
	6	F	M MENINGOCELE
			PORTION OF MENINGES PROTRUDES THROUGH A 1 MM IN DIAMETER
			OPENING IN THE ANTERIOR CRANIUM
			M CLEFT PALATE
			ENTIRE LENGTH
	7		LATE RESORPTION
			CROWN-RUMP LENGTH: 3.0 CM, SEVERE AUTOLYSIS, EXENCEPHALY
			WITHOUT OPEN EYELID, BILATERAL
	8	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, RIGHT
			M CLEFT PALATE
			ROSTRAL PORTION
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA
			MICROPHTHALMIA, LEFT
	9		LATE RESORPTION
			CROWN-RUMP LENGTH: 2.5 CM, MUMMIFIED
	10	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, BILATERAL
	11		LATE RESORPTION
			CROWN-RUMP LENGTH: 1.5 CM, MUMMIFIED
	12	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, BILATERAL
	13		LATE RESORPTION
			CROWN-RUMP LENGTH: 3.0 CM, SEVERE AUTOLYSIS, EXENCEPHALY
			WITHOUT OPEN EYELID, BILATERAL

OBSERVATION CODE: M = MALFORMATION V = VARIATION

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PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 21
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	SEX	FETAL GROSS OBSERVATION
8801	14		EARLY RESORPTION
	15		LATE RESORPTION
			CROWN-RUMP LENGTH: 2.5 CM, MUMMIFIED
8802	1	F	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, BILATERAL
	6	M	M CLEFT PALATE
			ENTIRE LENGTH
	7	F	M MENINGOCELE
			PORTION OF MENINGES PROTRUDES THOUGH A 1 MM IN DIAMETER
			OPENING IN THE MEDIAL CRANIUM
	8		EARLY RESORPTION
	9	F	NO REMARKABLE OBSERVATIONS
	10		LATE RESORPTION
			CROWN-RUMP LENGTH: 2.2 CM, MUMMIFIED
	11	F	NO REMARKABLE OBSERVATIONS
	12	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, BILATERAL
			M BENT TAIL
			MEDIAL
	13	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, BILATERAL
	14	M	NO REMARKABLE OBSERVATIONS
	15	M	NO REMARKABLE OBSERVATIONS
8808	1	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, BILATERAL
	2	F	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, LEFT

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 22
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	SEX	FETAL GROSS OBSERVATION
8808	5	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, BILATERAL
	6	F	M MENINGOCELE
			PORTION OF MENINGES PROTRUDES THROUGH A 3 MM IN DIAMETER
			OPENING IN THE MEDIAL CRANIUM
	7		LATE RESORPTION
			CROWN-RUMP LENGTH: 3.2 CM, MUMMIFIED
	8		EARLY RESORPTION
	9	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, BILATERAL
	10	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, RIGHT
	11	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
			M ECTRODACTYLY
			DIGIT #2 ABSENT, HINDPAW, BILATERAL
	12	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, LEFT
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA
			MICROPHTHALMIA, RIGHT
8809	1		EARLY RESORPTION
	2	F	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6		EARLY RESORPTION
	7	M	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
	11	F	M CLEFT PALATE
			ENTIRE LENGTH
			M ECTRODACTYLY

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 23
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	SEX	FETAL GROSS OBSERVATION
8809			DIGIT #2 ABSENT, HINDPAW, RIGHT
	12	F	M ECTRODACTYLY
			DIGIT #2 ABSENT, HINDPAW, BILATERAL
			M CLEFT PALATE
			ENTIRE LENGTH
	13	F	NO REMARKABLE OBSERVATIONS
8810	1	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
	2	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, BILATERAL
	3	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
	4	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
	5	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, RIGHT
	6	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, RIGHT
	7	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
	8	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
	9	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, BILATERAL
	10	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
	11	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, RIGHT
	12	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, BILATERAL
	13	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, BILATERAL
8818	1	F	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

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PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 24
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	SEX	FETAL GROSS OBSERVATION
8818	2	F	NO REMARKABLE OBSERVATIONS
	3	M	M MENINGOCELE PORTION OF MENINGES PROTRUDES THROUGH A 1 MM IN DIAMETER OPENING IN THE ANTERIOR CRANIUM
	4	F	NO REMARKABLE OBSERVATIONS
	5	M	M MICROPHTHALMIA AND/OR ANOPHTHALMIA MICROPHTHALMIA, RIGHT
	6	M	M MENINGOCELE PORTION OF MENINGES PROTRUDES THROUGH A LESS THAN 1 MM IN DIAMETER OPENING IN THE ANTERIOR CRANIUM
	7	M	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS
	14		EARLY RESORPTION
8822	1		EARLY RESORPTION
	2		EARLY RESORPTION
	3		EARLY RESORPTION
	4		EARLY RESORPTION
	5		EARLY RESORPTION
	6		LATE RESORPTION CROWN-RUMP LENGTH: 2.4 CM, MUMMIFIED
	7		EARLY RESORPTION
	8	F	M SPINA BIFIDA VERTEBRAL COLUMN OPEN IN THE SACRAL REGION M SHORT TAIL 2 MM IN LENGTH M EXENCEPHALY WITH OR WITHOUT OPEN EYELID WITHOUT OPEN EYELID, BILATERAL
	9	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID

OBSERVATION CODE: M = MALFORMATION V = VARIATION

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PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 25
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	SEX	FETAL GROSS OBSERVATION
8822			WITH OPEN EYELID, BILATERAL
	9		M SPINA BIFIDA
			VERTEBRAL COLUMN OPEN IN THE SACRAL REGION
			M ANAL ATRESIA
			M SHORT TAIL
			LESS THAN 1 MM IN LENGTH
	10		EARLY RESORPTION
	11	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, LEFT
	12		LATE RESORPTION
			CROWN-RUMP LENGTH: 2.9 CM, SEVERE AUTOLYSIS, EXENCEPHALY
			WITHOUT OPEN EYELID, BILATERAL
8827	1		EARLY RESORPTION
	2	M	NO REMARKABLE OBSERVATIONS
	3	M	M ECTRODACTYLY
			DIGIT #2 ABSENT, HINDPAW, BILATERAL
			M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA
			MICROPHTHALMIA, BILATERAL
	4	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA
			MICROPHTHALMIA, BILATERAL
			M ECTRODACTYLY
			DIGIT #2 ABSENT, HINDPAW, BILATERAL
	5		EARLY RESORPTION
	6	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, RIGHT
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA
			MICROPHTHALMIA, LEFT
	7		EARLY RESORPTION
	8	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID

OBSERVATION CODE: M = MALFORMATION V = VARIATION

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PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 26
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	SEX	FETAL GROSS OBSERVATION
8827			WITHOUT OPEN EYELID, BILATERAL
	8		M ECTRODACTYLY
			DIGIT #2 ABSENT, HINDPAW, BILATERAL
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA
			MICROPHTHALMIA, LEFT
	9	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA
			MICROPHTHALMIA, BILATERAL
			M ECTRODACTYLY
			DIGIT #2 ABSENT, HINDPAW, RIGHT
			M SYNDACTYLY
			DIGITS #2 THROUGH #4 FUSED, HINDPAW, LEFT
	10	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA
			MICROPHTHALMIA, BILATERAL
			M ECTRODACTYLY
			DIGIT #2 ABSENT, HINDPAW, BILATERAL
	11	M	M MENINGOCELE
			PORTION OF MENINGES PROTRUDES THROUGH A 1 MM IN DIAMETER
			OPENING IN THE MEDIAL CRANIUM
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA
			MICROPHTHALMIA, BILATERAL
			M CLEFT PALATE
			ENTIRE LENGTH
			M ECTRODACTYLY
			DIGIT #2 ABSENT, HINDPAW, RIGHT
			M SYNDACTYLY
			DIGITS #2 THROUGH #4 FUSED, HINDPAW, LEFT
	12		EARLY RESORPTION
	13	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL

OBSERVATION CODE: M = MALFORMATION V = VARIATION

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PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 27
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	SEX	FETAL GROSS OBSERVATION
8827	13		M MICROPHTHALMIA AND/OR ANOPHTHALMIA
			MICROPHTHALMIA, BILATERAL
			M ECTRODACTYLY
			DIGIT #2 ABSENT, HINDPAW, BILATERAL
	14		LATE RESORPTION
			CROWN-RUMP LENGTH: 4.6 CM, MODERATE AUTOLYSIS, EXENCEPHALY,
			WITH OPEN EYELID, BILATERAL
	15	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA
			MICROPHTHALMIA, BILATERAL
8840	1		EARLY RESORPTION
	2	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA
			MICROPHTHALMIA, BILATERAL
	3	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, BILATERAL
	4		EARLY RESORPTION
	5		EARLY RESORPTION
	6	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, BILATERAL
			M CLEFT PALATE
			ROSTRAL PORTION
	7	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA
			MICROPHTHALMIA, BILATERAL
			M CLEFT PALATE
			ROSTRAL PORTION
	8	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, RIGHT
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA

OBSERVATION CODE: M = MALFORMATION V = VARIATION

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PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 28
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	SEX	FETAL GROSS OBSERVATION
8840			MICROPHTHALMIA, BILATERAL
	8		M CLEFT PALATE
			ROSTRAL PORTION
8842	1	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, RIGHT
			M CLEFT PALATE
			POSTERIOR PORTION
	2	F	M CLEFT PALATE
			ENTIRE LENGTH
			M MAXILLARY MICROGNATHIA
	3	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, BILATERAL
	4	M	M CLEFT PALATE
			ENTIRE LENGTH
	5	M	NO REMARKABLE OBSERVATIONS
	6		EARLY RESORPTION
	7	F	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	M	M CLEFT PALATE
			ENTIRE LENGTH
	11	F	M HYDROCEPHALY WITH OR WITHOUT DOME HEAD
			WITH DOME HEAD
	12	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, BILATERAL
			M CLEFT PALATE
			ENTIRE LENGTH
			M FACIAL CLEFT
			UPPER, RIGHT
	13	M	M CLEFT PALATE
			ENTIRE LENGTH
	14	F	M HYDROCEPHALY WITH OR WITHOUT DOME HEAD
			WITH DOME HEAD

OBSERVATION CODE: M = MALFORMATION V = VARIATION

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PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 29
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	SEX	FETAL GROSS OBSERVATION
8842	14		M CLEFT PALATE
			ENTIRE LENGTH
	15		EARLY RESORPTION
	16	M	M CLEFT PALATE
			ENTIRE LENGTH
8847	1	M	NO REMARKABLE OBSERVATIONS
	2	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, LEFT
			M ECTRODACTYLY
			DIGIT #2 ABSENT, HINDPAW, RIGHT
			M SYNDACTYLY
			DIGITS #2 AND #3 FUSED, HINDPAW, LEFT
	3		EARLY RESORPTION
	4	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, BILATERAL
			M ECTRODACTYLY
			DIGIT #2 ABSENT, HINDPAW, BILATERAL
	5	F	M SYNDACTYLY
			DIGITS #2 AND #3 FUSED, HINDPAW, BILATERAL
			M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
	6	F	M ECTRODACTYLY
			DIGIT #1 ABSENT, HINDPAW, BILATERAL
			M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
	7	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
	8		EARLY RESORPTION
	9	F	M ECTRODACTYLY
			DIGIT #1 ABSENT, HINDPAW, BILATERAL
			M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
	10	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID

OBSERVATION CODE: M = MALFORMATION V = VARIATION

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PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 30
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	SEX	FETAL GROSS OBSERVATION
8847			WITH OPEN EYELID, RIGHT
	10		M SYNDACTYLY
			DIGITS #2 AND #3 FUSED, HINDPAW, BILATERAL
	11		EARLY RESORPTION
8850	1	F	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	M	M MENINGOCELE
			PORTION OF MENINGES PROTRUDES THROUGH A 1 MM IN DIAMETER
			OPENING IN THE MEDIAL CRANIUM
	5	M	M CLEFT PALATE
			ENTIRE LENGTH
	6	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
	7		EARLY RESORPTION
	8	F	NO REMARKABLE OBSERVATIONS
	9	M	M MENINGOCELE
			PORTION OF MENINGES PROTRUDES THROUGH A 2 MM IN DIAMETER
			OPENING IN THE MEDIAL CRANIUM
	10	M	NO REMARKABLE OBSERVATIONS
	11	F	M CLEFT PALATE
			ENTIRE LENGTH
	12	M	M CLEFT PALATE
			ENTIRE LENGTH
	13	F	M HYDROCEPHALY WITH OR WITHOUT DOME HEAD
			WITH DOME HEAD
	14	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
			M CLEFT PALATE
			ENTIRE LENGTH
	15		LATE RESORPTION
			CROWN-RUMP LENGTH: 3.6 CM, SEVERE AUTOLYSIS, NO APPARENT
			MALFORMATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 31
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	SEX	FETAL GROSS OBSERVATION
8850	16	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, LEFT
	17		EARLY RESORPTION
8851	1	M	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	F	M MENINGOCELE
			PORTION OF MENINGES PROTRUDES THROUGH A 2 MM IN DIAMETER
			OPENING IN THE MEDIAL CRANIUM
	6	M	M MENINGOCELE
			PORTION OF MENINGES PROTRUDES THROUGH A 2 MM IN DIAMETER
			OPENING IN THE MEDIAL CRANIUM
	7	M	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, RIGHT
	10		EARLY RESORPTION
	11	M	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
8854	1	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
			M CLEFT PALATE
			ENTIRE LENGTH
	2		EARLY RESORPTION
	3		EARLY RESORPTION
	4		LATE RESORPTION
			CROWN-RUMP LENGTH: 2.3 CM, MUMMIFIED
	5		LATE RESORPTION
			CROWN-RUMP LENGTH: 2.4 CM, MUMMIFIED
	6		EARLY RESORPTION
	7		EARLY RESORPTION
	8		EARLY RESORPTION

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 32
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	SEX	FETAL GROSS OBSERVATION
8854	9	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
			M CLEFT PALATE
			ENTIRE LENGTH
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA
			MICROPHTHALMIA, BILATERAL
	10	F	M ANURY
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA
			MICROPHTHALMIA, RIGHT; ANOPHTHALMIA, LEFT
			M PINNA(E) MALPOSITIONED, SMALL OR ABSENT
			ABSENT, LEFT
			M MANDIBULAR MICROGNATHIA
			M MICROSTOMIA
	11		EARLY RESORPTION
	12	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
			M MANDIBULAR MICROGNATHIA
			M MICROSTOMIA
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA
			MICROPHTHALMIA, BILATERAL
			V SKIN- TAG
			TWO, LEFT LATERAL HEAD
	13		EARLY RESORPTION
	14		EARLY RESORPTION
	15		EARLY RESORPTION
8900	1	M	M CLEFT PALATE
			ENTIRE LENGTH
	2	F	NO REMARKABLE OBSERVATIONS
	3	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, BILATERAL
			M CLEFT PALATE
			POSTERIOR PORTION
	4	M	M HYDROCEPHALY WITH OR WITHOUT DOME HEAD

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 33
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	SEX	FETAL GROSS OBSERVATION
8900			WITH DOME HEAD
	4		M CLEFT PALATE
			ENTIRE LENGTH
	5	F	M MICROPHTHALMIA AND/OR ANOPHTHALMIA
			MICROPHTHALMIA, BILATERAL
			M HYDROCEPHALY WITH OR WITHOUT DOME HEAD
			WITH DOME HEAD
			M CLEFT PALATE
			ENTIRE LENGTH
	6	F	M HYDROCEPHALY WITH OR WITHOUT DOME HEAD
			WITH DOME HEAD
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA
			MICROPHTHALMIA, LEFT
	7	M	NO REMARKABLE OBSERVATIONS
	8	F	M CLEFT PALATE
			ENTIRE LENGTH
	9		EARLY RESORPTION
	10	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, BILATERAL
	11	M	NO REMARKABLE OBSERVATIONS
	12	M	M HYDROCEPHALY WITH OR WITHOUT DOME HEAD
			WITH DOME HEAD
	13	M	M CLEFT PALATE
			ENTIRE LENGTH
	14	M	NO REMARKABLE OBSERVATIONS
	15	F	M HYDROCEPHALY WITH OR WITHOUT DOME HEAD
			WITH DOME HEAD
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA
			MICROPHTHALMIA, RIGHT
	16	M	M HYDROCEPHALY WITH OR WITHOUT DOME HEAD
			WITH DOME HEAD
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA
			MICROPHTHALMIA, BILATERAL

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 34
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	SEX	FETAL GROSS OBSERVATION
8900	16		M CLEFT PALATE ENTIRE LENGTH
8901	1	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID WITHOUT OPEN EYELID, BILATERAL
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA MICROPHTHALMIA, BILATERAL
	2	F	M MICROPHTHALMIA AND/OR ANOPHTHALMIA MICROPHTHALMIA, BILATERAL
	3	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID WITHOUT OPEN EYELID, BILATERAL
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA MICROPHTHALMIA, BILATERAL
			M CLEFT PALATE POSTERIOR PORTION
	4	M	M HYDROCEPHALY WITH OR WITHOUT DOME HEAD WITH DOME HEAD
	5		EARLY RESORPTION
	6	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID WITH OPEN EYELID, RIGHT
			M CLEFT PALATE POSTERIOR PORTION
	7	F	M HYDROCEPHALY WITH OR WITHOUT DOME HEAD WITH DOME HEAD
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA MICROPHTHALMIA, BILATERAL
			M CLEFT PALATE ENTIRE LENGTH
	8	F	M HYDROCEPHALY WITH OR WITHOUT DOME HEAD WITH DOME HEAD
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA MICROPHTHALMIA, BILATERAL
			M CLEFT PALATE ENTIRE LENGTH

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 35
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	SEX	FETAL GROSS OBSERVATION
8901	9	M	M MICROPHTHALMIA AND/OR ANOPHTHALMIA MICROPHTHALMIA, BILATERAL
			M HYDROCEPHALY WITH OR WITHOUT DOME HEAD WITH DOME HEAD
	10	F	M CLEFT PALATE ENTIRE LENGTH
	11	F	M HYDROCEPHALY WITH OR WITHOUT DOME HEAD WITH DOME HEAD
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA MICROPHTHALMIA, BILATERAL
			M CLEFT PALATE POSTERIOR PORTION
	12	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID WITHOUT OPEN EYELID, BILATERAL
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA MICROPHTHALMIA, BILATERAL
	13	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID WITHOUT OPEN EYELID, BILATERAL
			M CLEFT PALATE POSTERIOR PORTION
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA MICROPHTHALMIA, BILATERAL
	14	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID WITHOUT OPEN EYELID, BILATERAL
	15	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID WITHOUT OPEN EYELID, BILATERAL
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA MICROPHTHALMIA, BILATERAL
			M CLEFT PALATE POSTERIOR PORTION
8930	1	F	M HYDROCEPHALY WITH OR WITHOUT DOME HEAD WITH DOME HEAD
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 36
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	SEX	FETAL GROSS OBSERVATION
8930			MICROPHTHALMIA, BILATERAL
	1		M CLEFT PALATE
			ENTIRE LENGTH
	2	M	M HYDROCEPHALY WITH OR WITHOUT DOME HEAD
			WITH DOME HEAD
			M CLEFT PALATE
			ENTIRE LENGTH
	3	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA
			MICROPHTHALMIA, BILATERAL
			M CLEFT PALATE
			POSTERIOR PORTION
	4	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
			M CLEFT PALATE
			ENTIRE LENGTH
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA
			MICROPHTHALMIA, LEFT
	5		EARLY RESORPTION
	6	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
			M MACROGLOSSIA
			M CLEFT PALATE
			POSTERIOR PORTION
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA
			MICROPHTHALMIA, BILATERAL
	7	M	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITH OPEN EYELID, LEFT
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA
			MICROPHTHALMIA, RIGHT
			M CLEFT PALATE
			ENTIRE LENGTH

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 37
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	SEX	FETAL GROSS OBSERVATION
8930	8		EARLY RESORPTION
	9		EARLY RESORPTION
	10	F	M HYDROCEPHALY WITH OR WITHOUT DOME HEAD
			WITH DOME HEAD
			M MACROGLOSSIA
			M MICROSTOMIA
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA
			MICROPHTHALMIA, BILATERAL
			M CLEFT PALATE
			ENTIRE LENGTH
	11	M	M HYDROCEPHALY WITH OR WITHOUT DOME HEAD
			WITH DOME HEAD
			M MENINGOCELE
			PORTION OF MENINGES PROTRUDES THROUGH A LESS THAN 1 MM IN DIAMETER OPENING IN THE MEDIAL CRANIAL
			M CLEFT PALATE
			ENTIRE LENGTH
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA
			MICROPHTHALMIA, BILATERAL
	12		EARLY RESORPTION
	13	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA
			MICROPHTHALMIA, BILATERAL
			M CLEFT PALATE
			POSTERIOR PORTION
			M CLEFT LIP
			LOWER RIGHT
			M ANKYLOGLOSSIA
	14	F	M EXENCEPHALY WITH OR WITHOUT OPEN EYELID
			WITHOUT OPEN EYELID, BILATERAL
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA
			MICROPHTHALMIA, BILATERAL

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 38
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	SEX	FETAL GROSS OBSERVATION
8930	14		M MACROGLOSSIA
			M CLEFT PALATE
			ENTIRE LENGTH
8931	1	M	M CLEFT PALATE
			ENTIRE LENGTH
	2		EARLY RESORPTION
	3	M	M CLEFT PALATE
			ENTIRE LENGTH
	4	M	M CLEFT PALATE
			ENTIRE LENGTH
	5	M	M ECTRODACTYLY
			DIGIT #2 ABSENT, HINDPAW, BILATERAL
	6	M	M MENINGOCELE
			PORTION OF MENINGES PROTRUDES THROUGH A 2 MM IN DIAMETER
			OPENING IN THE POSTERIOR CRANIUM
			M ECTRODACTYLY
			DIGIT #2 ABSENT, HINDPAW, BILATERAL
	7	M	M ECTRODACTYLY
			DIGIT #2 ABSENT, HINDPAW, LEFT
			M SYNDACTYLY
			DIGITS #2 AND #3 FUSED, HINDPAW, RIGHT
	8	M	M CLEFT PALATE
			ENTIRE LENGTH
	9	F	NO REMARKABLE OBSERVATIONS
	10	M	M CLEFT PALATE
			ENTIRE LENGTH
			M MICROPHTHALMIA AND/OR ANOPHTHALMIA
			MICROPHTHALMIA, LEFT
	11	M	M CLEFT PALATE
			ENTIRE LENGTH
	12	M	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS
	14	F	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 39
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	SEX	FETAL GROSS OBSERVATION
8931	15	M	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 40
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 3: 0.25 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8747	1	F	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	F	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS
	14	F	NO REMARKABLE OBSERVATIONS
	15	F	NO REMARKABLE OBSERVATIONS
	16	F	NO REMARKABLE OBSERVATIONS
8758	1	F	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS
	14		EARLY RESORPTION
	15	M	NO REMARKABLE OBSERVATIONS
8764	1	M	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 41

SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 3: 0.25 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8764	3	M	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11		EARLY RESORPTION
	12	M	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS
	14	M	NO REMARKABLE OBSERVATIONS
	15	F	NO REMARKABLE OBSERVATIONS
	16	F	NO REMARKABLE OBSERVATIONS
8767	1	F	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
	11		EARLY RESORPTION
	12	M	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS
	14	M	NO REMARKABLE OBSERVATIONS
	15	M	NO REMARKABLE OBSERVATIONS
	16	M	NO REMARKABLE OBSERVATIONS
	17	F	NO REMARKABLE OBSERVATIONS
8773	1		EARLY RESORPTION
	2		EARLY RESORPTION

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 42
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 3: 0.25 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8774	1		EARLY RESORPTION
	2		EARLY RESORPTION
	3		EARLY RESORPTION
	4	F	NO REMARKABLE OBSERVATIONS
	5		EARLY RESORPTION
	6		EARLY RESORPTION
	7		EARLY RESORPTION
	8		EARLY RESORPTION
	9	M	NO REMARKABLE OBSERVATIONS
	10		EARLY RESORPTION
	11		EARLY RESORPTION
	12	M	NO REMARKABLE OBSERVATIONS
	13		EARLY RESORPTION
	14		EARLY RESORPTION
	15		EARLY RESORPTION
8807	1	M	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS
	14	F	NO REMARKABLE OBSERVATIONS
	15	M	NO REMARKABLE OBSERVATIONS
	16	M	NO REMARKABLE OBSERVATIONS
8814	1	M	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 43
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 3: 0.25 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8814	3	F	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
	11	F	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS
8826	1	M	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5		EARLY RESORPTION
	6	M	NO REMARKABLE OBSERVATIONS
	7		EARLY RESORPTION
	8	M	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10		EARLY RESORPTION
	11	F	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
8834	1	F	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 44
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 3: 0.25 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8834	11	M	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS
8835	1	F	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS
	7	M	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
8839	1	M	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS
	7	M	NO REMARKABLE OBSERVATIONS
	8		EARLY RESORPTION
	9	F	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13	F	NO REMARKABLE OBSERVATIONS
	14	M	NO REMARKABLE OBSERVATIONS
	15	M	NO REMARKABLE OBSERVATIONS
	16	M	NO REMARKABLE OBSERVATIONS
8849	1	M	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 45
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 3: 0.25 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8849	5	M	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
	11	F	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS
	14	F	NO REMARKABLE OBSERVATIONS
8853	1	M	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	M	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10		EARLY RESORPTION
	11	F	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS
8859	1	F	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS
	7	M	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 46

SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 3: 0.25 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8859	11	M	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
8869	1	F	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
8879	1	F	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS
	7		EARLY RESORPTION
	8	M	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	F	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS
	14	M	NO REMARKABLE OBSERVATIONS
	15	M	NO REMARKABLE OBSERVATIONS
	16	F	NO REMARKABLE OBSERVATIONS
8889	1	F	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 47

SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 3: 0.25 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8889	7	F	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
	11	F	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
	13	F	NO REMARKABLE OBSERVATIONS
	14	M	NO REMARKABLE OBSERVATIONS
	15	F	NO REMARKABLE OBSERVATIONS
	16	M	NO REMARKABLE OBSERVATIONS
8891	1	F	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5		EARLY RESORPTION
	6	F	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
8893	1	F	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	M	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
8897	1	F	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 48

SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 3: 0.25 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8897	4	F	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7		EARLY RESORPTION
	8	M	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS
	14		EARLY RESORPTION
	15	F	NO REMARKABLE OBSERVATIONS
8908	1	M	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3		EARLY RESORPTION
	4	F	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	M	NO REMARKABLE OBSERVATIONS
	8		EARLY RESORPTION
	9	F	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
	11	F	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS
	14	F	NO REMARKABLE OBSERVATIONS
8910	1	M	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 49
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 3: 0.25 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8910	8	F	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
	13	F	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 50

SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 4: 1.5 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8741	1	M	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
	13	F	NO REMARKABLE OBSERVATIONS
	14		EARLY RESORPTION
	15	M	NO REMARKABLE OBSERVATIONS
	16	F	NO REMARKABLE OBSERVATIONS
	17	M	NO REMARKABLE OBSERVATIONS
8765	1	F	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
	11	F	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
	13	F	NO REMARKABLE OBSERVATIONS
8783	1	M	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 51

SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 4: 1.5 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8783	4	M	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	F	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS
	14	M	NO REMARKABLE OBSERVATIONS
	15	F	NO REMARKABLE OBSERVATIONS
8786	1	M	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5		EARLY RESORPTION
	6	F	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS
	14	F	NO REMARKABLE OBSERVATIONS
8788	1	M	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	M	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 52

SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 4: 1.5 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8788	8	F	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
	11		EARLY RESORPTION
	12	M	NO REMARKABLE OBSERVATIONS
	13	F	NO REMARKABLE OBSERVATIONS
	14	M	NO REMARKABLE OBSERVATIONS
	15	M	NO REMARKABLE OBSERVATIONS
8792	1	M	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
8805	1	F	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	M	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	F	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS
	14	F	NO REMARKABLE OBSERVATIONS
8806	1	M	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 53

SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 4: 1.5 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8806	8	F	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS
	14	F	NO REMARKABLE OBSERVATIONS
8811	1	M	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13	F	NO REMARKABLE OBSERVATIONS
	14	F	NO REMARKABLE OBSERVATIONS
	15	M	NO REMARKABLE OBSERVATIONS
	16	M	NO REMARKABLE OBSERVATIONS
8813	1	F	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	M	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 54
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 4: 1.5 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8813	11	M	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
8823	1	F	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS
	7	M	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	F	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13	F	NO REMARKABLE OBSERVATIONS
	14	F	NO REMARKABLE OBSERVATIONS
	15	F	NO REMARKABLE OBSERVATIONS
8844	1	M	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	F	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13	F	NO REMARKABLE OBSERVATIONS
8848	1	F	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 55
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 4: 1.5 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8848	4	M	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6		EARLY RESORPTION
	7	F	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9		EARLY RESORPTION
	10		EARLY RESORPTION
	11	M	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS
	14	F	NO REMARKABLE OBSERVATIONS
	15	F	NO REMARKABLE OBSERVATIONS
	16	F	NO REMARKABLE OBSERVATIONS
	17	F	NO REMARKABLE OBSERVATIONS
	18	M	NO REMARKABLE OBSERVATIONS
	19	F	NO REMARKABLE OBSERVATIONS
8857	1	M	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	F	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
8867	1	M	NO REMARKABLE OBSERVATIONS
	2		EARLY RESORPTION
	3	F	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 56

SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 4: 1.5 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8867	6		EARLY RESORPTION
	7	F	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9		EARLY RESORPTION
	10	M	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
8873	1	F	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5		EARLY RESORPTION
	6	F	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
	13	F	NO REMARKABLE OBSERVATIONS
	14	F	NO REMARKABLE OBSERVATIONS
	15	F	NO REMARKABLE OBSERVATIONS
	16	M	NO REMARKABLE OBSERVATIONS
8876	1	M	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	M	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 57
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 4: 1.5 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8876	11	M	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS
	14	F	NO REMARKABLE OBSERVATIONS
	15	M	NO REMARKABLE OBSERVATIONS
	16	F	NO REMARKABLE OBSERVATIONS
	17	M	NO REMARKABLE OBSERVATIONS
8881	1	M	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
8890	1	F	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS
	7	M	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS
	14	F	NO REMARKABLE OBSERVATIONS
	15	M	NO REMARKABLE OBSERVATIONS
	16		EARLY RESORPTION

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 58

SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 4: 1.5 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8895	1	F	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
8899	1	M	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
	11	F	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
	13	F	NO REMARKABLE OBSERVATIONS
	14	F	NO REMARKABLE OBSERVATIONS
	15	M	NO REMARKABLE OBSERVATIONS
	16	M	NO REMARKABLE OBSERVATIONS
8907	1	M	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 59

SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 4: 1.5 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8907	8	M	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13	F	NO REMARKABLE OBSERVATIONS
	14	M	NO REMARKABLE OBSERVATIONS
	15	F	NO REMARKABLE OBSERVATIONS
	16	M	NO REMARKABLE OBSERVATIONS
	17	M	NO REMARKABLE OBSERVATIONS
8941	1	M	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS
	7	M	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
	13	F	NO REMARKABLE OBSERVATIONS
	14	M	NO REMARKABLE OBSERVATIONS
	15	F	NO REMARKABLE OBSERVATIONS
8942	1	F	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 60

SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 4: 1.5 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8942	9	F	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 61
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 5: 500 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8735	1	M	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS
	7	M	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13	F	NO REMARKABLE OBSERVATIONS
	14	F	NO REMARKABLE OBSERVATIONS
	15	F	NO REMARKABLE OBSERVATIONS
8763	1	F	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	F	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS
	14	F	NO REMARKABLE OBSERVATIONS
8775	1	F	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 62

SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 5: 500 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8775	5	M	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	M	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
	11	F	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
8778	1	F	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13	F	NO REMARKABLE OBSERVATIONS
	14	F	NO REMARKABLE OBSERVATIONS
	15	F	NO REMARKABLE OBSERVATIONS
8784	1	M	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS
	7	M	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 63

SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 5: 500 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8784	11	F	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
	13	F	NO REMARKABLE OBSERVATIONS
	14	F	NO REMARKABLE OBSERVATIONS
	15	M	NO REMARKABLE OBSERVATIONS
	16	M	NO REMARKABLE OBSERVATIONS
8790	1	M	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
	11	F	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS
	14	F	NO REMARKABLE OBSERVATIONS
8824	1	M	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8		EARLY RESORPTION
	9	F	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
	11	F	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13		EARLY RESORPTION

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 64

SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 5: 500 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8828	1	F	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	M	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
	11	F	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS
	14	M	NO REMARKABLE OBSERVATIONS
	15	F	NO REMARKABLE OBSERVATIONS
8830	1		EARLY RESORPTION
	2		EARLY RESORPTION
	3		EARLY RESORPTION
	4	M	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
	13	F	NO REMARKABLE OBSERVATIONS
	14	M	NO REMARKABLE OBSERVATIONS
	15	M	NO REMARKABLE OBSERVATIONS
	16	M	NO REMARKABLE OBSERVATIONS
8833	1	M	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 65

SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 5: 500 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8833	3	M	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
	11	F	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13	F	NO REMARKABLE OBSERVATIONS
8837	1	F	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	M	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10		EARLY RESORPTION
	11	M	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
	13	F	NO REMARKABLE OBSERVATIONS
	14	M	NO REMARKABLE OBSERVATIONS
	15	F	NO REMARKABLE OBSERVATIONS
	16	F	NO REMARKABLE OBSERVATIONS
8838	1	F	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 66
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 5: 500 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8838	7	M	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
8845	1	M	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	M	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
	13		EARLY RESORPTION
	14	M	NO REMARKABLE OBSERVATIONS
	15	F	NO REMARKABLE OBSERVATIONS
8846	1	M	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 67
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 5: 500 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8846	14	F	NO REMARKABLE OBSERVATIONS
	15	F	NO REMARKABLE OBSERVATIONS
	16	M	NO REMARKABLE OBSERVATIONS
8855	1	F	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3		EARLY RESORPTION
	4	F	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9		EARLY RESORPTION
	10	F	NO REMARKABLE OBSERVATIONS
	11	F	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS
	14	M	NO REMARKABLE OBSERVATIONS
	15	M	NO REMARKABLE OBSERVATIONS
8863	1	F	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13	F	NO REMARKABLE OBSERVATIONS
	14	M	NO REMARKABLE OBSERVATIONS
	15	M	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 68
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 5: 500 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8864	1	F	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	M	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13	F	NO REMARKABLE OBSERVATIONS
	14	M	NO REMARKABLE OBSERVATIONS
8868	1	M	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	M	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS
8874	1	M	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 69
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 5: 500 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8874	7	F	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13	F	NO REMARKABLE OBSERVATIONS
	14	F	NO REMARKABLE OBSERVATIONS
	15	F	NO REMARKABLE OBSERVATIONS
	16	M	NO REMARKABLE OBSERVATIONS
8875	1	F	NO REMARKABLE OBSERVATIONS
	2		EARLY RESORPTION
	3	M	NO REMARKABLE OBSERVATIONS
	4		EARLY RESORPTION
	5	F	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8		EARLY RESORPTION
	9	F	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
	11		EARLY RESORPTION
8878	1	M	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5		EARLY RESORPTION
	6	F	NO REMARKABLE OBSERVATIONS
	7	M	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	F	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 70
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 5: 500 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8878	13	M	NO REMARKABLE OBSERVATIONS
	14	F	NO REMARKABLE OBSERVATIONS
	15	M	NO REMARKABLE OBSERVATIONS
8928	1	M	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
	13		EARLY RESORPTION
	14	F	NO REMARKABLE OBSERVATIONS
8933	1	M	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	F	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13	F	NO REMARKABLE OBSERVATIONS
8936	1	M	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 71

SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 5: 500 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8936	4	F	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS
	14	M	NO REMARKABLE OBSERVATIONS
	15		EARLY RESORPTION
	16	M	NO REMARKABLE OBSERVATIONS
	17	F	NO REMARKABLE OBSERVATIONS
	18	M	NO REMARKABLE OBSERVATIONS
	19	M	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 72

SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 6: 1000 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8739	1	M	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3		EARLY RESORPTION
	4		EARLY RESORPTION
	5	F	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
	13	F	NO REMARKABLE OBSERVATIONS
	14	M	NO REMARKABLE OBSERVATIONS
	15	M	NO REMARKABLE OBSERVATIONS
	16	F	NO REMARKABLE OBSERVATIONS
8760	1	M	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13		EARLY RESORPTION
8769	1	M	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 73

SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 6: 1000 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8769	5	F	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	F	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
	13	F	NO REMARKABLE OBSERVATIONS
8770	1	M	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3		EARLY RESORPTION
	4		EARLY RESORPTION
	5	F	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
	13	F	NO REMARKABLE OBSERVATIONS
	14	M	NO REMARKABLE OBSERVATIONS
8771	1	F	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS
	7	M	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	F	M MICROPHTHALMIA AND/OR ANOPHTHALMIA

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 74
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 6: 1000 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8771			MICROPHTHALMIA, BILATERAL
	11	M	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS
	14	M	NO REMARKABLE OBSERVATIONS
8785	1	F	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8		EARLY RESORPTION
	9	M	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS
	14	M	NO REMARKABLE OBSERVATIONS
8793	1	M	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS
	7	M	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
8795	1	F	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 75
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 6: 1000 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8795	7	F	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12		EARLY RESORPTION
	13	M	NO REMARKABLE OBSERVATIONS
	14	F	NO REMARKABLE OBSERVATIONS
8799	1		EARLY RESORPTION
	2	F	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	M	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
	13	F	NO REMARKABLE OBSERVATIONS
	14	M	NO REMARKABLE OBSERVATIONS
8804	1	F	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 76
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 6: 1000 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8804	12	F	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS
	14	F	NO REMARKABLE OBSERVATIONS
8815	1	M	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS
	14	M	NO REMARKABLE OBSERVATIONS
	15	F	NO REMARKABLE OBSERVATIONS
	16	F	NO REMARKABLE OBSERVATIONS
	17	F	NO REMARKABLE OBSERVATIONS
	18	F	NO REMARKABLE OBSERVATIONS
8819	1	F	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	F	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 77
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 6: 1000 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8819	13	F	NO REMARKABLE OBSERVATIONS
	14	M	NO REMARKABLE OBSERVATIONS
	15	F	NO REMARKABLE OBSERVATIONS
	16	F	NO REMARKABLE OBSERVATIONS
	17	M	NO REMARKABLE OBSERVATIONS
8821	1	M	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	F	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
	13		EARLY RESORPTION
	14	F	NO REMARKABLE OBSERVATIONS
	15	M	NO REMARKABLE OBSERVATIONS
	16	F	NO REMARKABLE OBSERVATIONS
	17	M	NO REMARKABLE OBSERVATIONS
	18	M	NO REMARKABLE OBSERVATIONS
8829	1	F	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	M	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 78
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 6: 1000 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8829	11	M	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS
	14	M	NO REMARKABLE OBSERVATIONS
	15	F	NO REMARKABLE OBSERVATIONS
	16	F	NO REMARKABLE OBSERVATIONS
	17	F	NO REMARKABLE OBSERVATIONS
8831	1	F	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4		EARLY RESORPTION
	5	M	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS
	7		EARLY RESORPTION
	8	M	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
	13	F	NO REMARKABLE OBSERVATIONS
	14	F	NO REMARKABLE OBSERVATIONS
	15	M	NO REMARKABLE OBSERVATIONS
	16	F	NO REMARKABLE OBSERVATIONS
	17	F	NO REMARKABLE OBSERVATIONS
	18	F	NO REMARKABLE OBSERVATIONS
8860	1	M	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	F	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS
	7	M	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 79
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 6: 1000 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8860	9	M	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS
	14	F	NO REMARKABLE OBSERVATIONS
	15	F	NO REMARKABLE OBSERVATIONS
8861	1	M	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	F	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
	11	F	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS
	14	F	NO REMARKABLE OBSERVATIONS
	15	F	NO REMARKABLE OBSERVATIONS
8865	1	F	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3		EARLY RESORPTION
	4	F	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	F	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 80
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 6: 1000 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8865	12	F	NO REMARKABLE OBSERVATIONS
	13	F	NO REMARKABLE OBSERVATIONS
	14	F	NO REMARKABLE OBSERVATIONS
	15	M	NO REMARKABLE OBSERVATIONS
	16	F	NO REMARKABLE OBSERVATIONS
	17	F	NO REMARKABLE OBSERVATIONS
	18	M	NO REMARKABLE OBSERVATIONS
8870	1	M	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3		EARLY RESORPTION
	4	M	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS
	7	M	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13	F	NO REMARKABLE OBSERVATIONS
	14	F	NO REMARKABLE OBSERVATIONS
	15	M	NO REMARKABLE OBSERVATIONS
	16	F	NO REMARKABLE OBSERVATIONS
8872	1	M	NO REMARKABLE OBSERVATIONS
	2		EARLY RESORPTION
	3	M	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS
	7	M	NO REMARKABLE OBSERVATIONS
	8		LATE RESORPTION CROWN-RUMP LENGTH: 3.0 CM, SEVERE AUTOLYSIS, NO APPARENT MALFORMATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 81
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 6: 1000 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8872	9	F	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
	11	F	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
	13	F	NO REMARKABLE OBSERVATIONS
	14	F	NO REMARKABLE OBSERVATIONS
8885	1	F	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	M	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
	11	F	NO REMARKABLE OBSERVATIONS
	12	F	NO REMARKABLE OBSERVATIONS
	13	F	NO REMARKABLE OBSERVATIONS
8888	1	M	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	M	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	M	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
	13	F	NO REMARKABLE OBSERVATIONS
	14	F	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

TABLE 4.15

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 82
SPONSOR:HSIA INDIVIDUAL FETAL EXTERNAL FINDINGS

DAMS FROM GROUP 6: 1000 PPM	FETUS#	SEX	FETAL GROSS OBSERVATION
8888	15	F	NO REMARKABLE OBSERVATIONS
	16	F	NO REMARKABLE OBSERVATIONS
	17	M	NO REMARKABLE OBSERVATIONS
	18	M	NO REMARKABLE OBSERVATIONS
8896	1	F	NO REMARKABLE OBSERVATIONS
	2	M	NO REMARKABLE OBSERVATIONS
	3	M	NO REMARKABLE OBSERVATIONS
	4	F	NO REMARKABLE OBSERVATIONS
	5	M	NO REMARKABLE OBSERVATIONS
	6	F	NO REMARKABLE OBSERVATIONS
	7	F	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	F	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
8917	1	F	NO REMARKABLE OBSERVATIONS
	2	F	NO REMARKABLE OBSERVATIONS
	3	F	NO REMARKABLE OBSERVATIONS
	4		EARLY RESORPTION
	5	M	NO REMARKABLE OBSERVATIONS
	6	M	NO REMARKABLE OBSERVATIONS
	7	M	NO REMARKABLE OBSERVATIONS
	8	M	NO REMARKABLE OBSERVATIONS
	9	M	NO REMARKABLE OBSERVATIONS
	10	F	NO REMARKABLE OBSERVATIONS
	11	M	NO REMARKABLE OBSERVATIONS
	12	M	NO REMARKABLE OBSERVATIONS
	13	M	NO REMARKABLE OBSERVATIONS
	14	M	NO REMARKABLE OBSERVATIONS
	15	F	NO REMARKABLE OBSERVATIONS
	16	F	NO REMARKABLE OBSERVATIONS

OBSERVATION CODE: M = MALFORMATION V = VARIATION

PMFGRDv4.16
11/02/2018

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 1
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 1: 0 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8738	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
	16	NO REMARKABLE OBSERVATIONS	
	17	NO REMARKABLE OBSERVATIONS	
	18	NO REMARKABLE OBSERVATIONS	
8751	1	M INTERVENTRICULAR SEPTAL DEFECT 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	2	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	3	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 2
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 1: 0 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8751(CONTINUED)	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
8755	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
	16	NO REMARKABLE OBSERVATIONS	
	17	NO REMARKABLE OBSERVATIONS	
8766	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 3
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 1: 0 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8766(CONTINUED)	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
8768	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
8772	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 4
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 1: 0 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8772(CONTINUED)	12	NO REMARKABLE OBSERVATIONS	
8776	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
	16	NO REMARKABLE OBSERVATIONS	
	17	NO REMARKABLE OBSERVATIONS	
8777	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	M SITUS INVERSUS HEART, GREAT AND MAJOR VESSELS LATERALLY TRANSPOSED	P
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 5
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 1: 0 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8777(CONTINUED)	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
	16	NO REMARKABLE OBSERVATIONS	
	17	NO REMARKABLE OBSERVATIONS	
	18	NO REMARKABLE OBSERVATIONS	
	19	NO REMARKABLE OBSERVATIONS	
	20	NO REMARKABLE OBSERVATIONS	
	21	NO REMARKABLE OBSERVATIONS	
8779	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
	16	NO REMARKABLE OBSERVATIONS	
8791	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 6
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 1: 0 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8791(CONTINUED)	4	NO REMARKABLE OBSERVATIONS	
8798	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
8803	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 7
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 1: 0 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8803(CONTINUED)	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
	16	NO REMARKABLE OBSERVATIONS	
	17	NO REMARKABLE OBSERVATIONS	
	18	NO REMARKABLE OBSERVATIONS	
	19	NO REMARKABLE OBSERVATIONS	
8812	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
8817	1	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 8
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 1: 0 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8817(CONTINUED)	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
8820	1	NO REMARKABLE OBSERVATIONS	
	2	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
8825	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 9
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 1: 0 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8825(CONTINUED)	13	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
	16	NO REMARKABLE OBSERVATIONS	
8836	2	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
	16	NO REMARKABLE OBSERVATIONS	
	17	NO REMARKABLE OBSERVATIONS	
8843	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
8858	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 10
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 1: 0 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8858(CONTINUED)	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
8871	2	NO REMARKABLE OBSERVATIONS	
	3	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
8883	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 11
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 1: 0 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8883(CONTINUED)	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
8886	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
8894	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 12
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 1: 0 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8894(CONTINUED)	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
	16	NO REMARKABLE OBSERVATIONS	
8926	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

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PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 13
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	VISCERAL OBSERVATION	GRADE
8740	1	NO REMARKABLE OBSERVATIONS	
	2	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	3	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	5	NO REMARKABLE OBSERVATIONS	
	9	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	11	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	13	M INTERVENTRICULAR SEPTAL DEFECT 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	14	M INTERVENTRICULAR SEPTAL DEFECT 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	15	NO REMARKABLE OBSERVATIONS	
	17	NO REMARKABLE OBSERVATIONS	
8743	2	M INTERRUPTED AORTIC ARCH BRACHIOCEPHALIC TRUNK AND LEFT CAROTID ARISE FROM ASCENDING AORTA, LEFT SUBCLAVIAN ARISES FROM DESCENDING AORTA; DUCTUS ARTERIOSUS COMMUNICATES WITH DESCENDING AORTA	P
		M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	6	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	7	M INTERVENTRICULAR SEPTAL DEFECT 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	8	M RETROESOPHAGEAL AORTIC ARCH AORTIC ARCH COURSES RETROESOPHAGEAL IMMEDIATELY FOLLOWING	P

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PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 14
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	VISCERAL OBSERVATION	GRADE
8743(CONTINUED)	8	LEFT CAROTID AND RETURNS IN NORMAL POSITION ADJACENT TO DUCTUS ARTERIOSUS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	13	NO REMARKABLE OBSERVATIONS	
8756	1	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	2	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	5	M INTERVENTRICULAR SEPTAL DEFECT 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	6	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	7	NO REMARKABLE OBSERVATIONS	
	8	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	M INTERVENTRICULAR SEPTAL DEFECT 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	16	NO REMARKABLE OBSERVATIONS	
	17	M INTERVENTRICULAR SEPTAL DEFECT	P

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

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PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 15
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	VISCERAL OBSERVATION	GRADE
8756(CONTINUED)	17	LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	
8757	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	V MAJOR BLOOD VESSEL VARIATION RIGHT CAROTID AND RIGHT SUBCLAVIAN ARISE INDEPENDENTLY FROM THE AORTIC ARCH (NO BRACHIOCEPHALIC TRUNK)	P
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	9	V MAJOR BLOOD VESSEL VARIATION RETROESOPHAGEAL RIGHT SUBCLAVIAN: RIGHT SUBCLAVIAN COURSES RETROESOPHAGEAL AND JOINS AORTIC ARCH ADJACENT TO DUCTUS ARTERIOSUS (NO BRACHIOCEPHALIC TRUNK)	P
	10	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	11	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	12	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
	16	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
8780	1	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P

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TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 16
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	VISCERAL OBSERVATION	GRADE
8780(CONTINUED)	2	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	3	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	4	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	5	NO REMARKABLE OBSERVATIONS	
	7	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	8	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	9	V MAJOR BLOOD VESSEL VARIATION RIGHT CAROTID AND RIGHT SUBCLAVIAN ARISE INDEPENDENTLY FROM THE AORTIC ARCH (NO BRACHIOCEPHALIC TRUNK)	P
		M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	10	M COARCTATION OF THE AORTIC ARCH	P
		M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	11	NO REMARKABLE OBSERVATIONS	
	12	V MAJOR BLOOD VESSEL VARIATION RIGHT CAROTID AND RIGHT SUBCLAVIAN ARISE INDEPENDENTLY FROM THE AORTIC ARCH (NO BRACHIOCEPHALIC TRUNK)	P
		M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	13	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	14	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	15	M INTERVENTRICULAR SEPTAL DEFECT	P

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 17
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	VISCERAL OBSERVATION	GRADE
8780(CONTINUED)	15	LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	
	16	M INTERVENTRICULAR SEPTAL DEFECT	P
		1 MM IN DIAMETER, MEMBRANOUS PORTION	
	17	M INTERVENTRICULAR SEPTAL DEFECT	P
		LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	
	18	M INTERVENTRICULAR SEPTAL DEFECT	P
		LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	
8789	1	M INTERVENTRICULAR SEPTAL DEFECT	P
		LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	
	2	NO REMARKABLE OBSERVATIONS	
	3	M INTERVENTRICULAR SEPTAL DEFECT	P
		LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	
	4	NO REMARKABLE OBSERVATIONS	
8800	2	V MAJOR BLOOD VESSEL VARIATION	P
		RIGHT CAROTID AND RIGHT SUBCLAVIAN ARISE INDEPENDENTLY FROM THE AORTIC ARCH (NO BRACHIOCEPHALIC TRUNK)	
		M INTERVENTRICULAR SEPTAL DEFECT	P
		LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	
	3	M INTERVENTRICULAR SEPTAL DEFECT	P
		LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	
	5	M INTERVENTRICULAR SEPTAL DEFECT	P
		LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	
	6	M INTERVENTRICULAR SEPTAL DEFECT	P
		LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	
	9	M INTERVENTRICULAR SEPTAL DEFECT	P
		LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	
	10	M INTERVENTRICULAR SEPTAL DEFECT	P
		LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 18
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	VISCERAL OBSERVATION	GRADE
8800(CONTINUED)	11	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	12	NO REMARKABLE OBSERVATIONS	
	13	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	14	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	15	NO REMARKABLE OBSERVATIONS	
8801	3	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	4	NO REMARKABLE OBSERVATIONS	
	5	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	6	V MAJOR BLOOD VESSEL VARIATION RETROESOPHAGEAL RIGHT SUBCLAVIAN: RIGHT SUBCLAVIAN COURSES RETROESOPHAGEAL AND JOINS AORTIC ARCH ADJACENT TO DUCTUS ARTERIOSUS (NO BRACHIOCEPHALIC TRUNK)	P
		M TRANSPOSITION OF THE GREAT VESSELS	P
	8	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
8802	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 19
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	VISCERAL OBSERVATION	GRADE
8802(CONTINUED)	7	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	11	V MAJOR BLOOD VESSEL VARIATION RIGHT CAROTID AND RIGHT SUBCLAVIAN ARISE INDEPENDENTLY FROM THE AORTIC ARCH (NO BRACHIOCEPHALIC TRUNK)	P
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
8808	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	12	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
8809	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 20
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	VISCERAL OBSERVATION	GRADE
8809(CONTINUED)	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
8810	1	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	2	NO REMARKABLE OBSERVATIONS	
	3	V MAJOR BLOOD VESSEL VARIATION RETROESOPHAGEAL RIGHT SUBCLAVIAN: RIGHT SUBCLAVIAN COURSES RETROESOPHAGEAL AND JOINS AORTIC ARCH ADJACENT TO DUCTUS ARTERIOSUS (NO BRACHIOCEPHALIC TRUNK)	P
		M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	4	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	5	M INTERRUPTED AORTIC ARCH BRACHIOCEPHALIC TRUNK AND LEFT CAROTID ARISE FROM ASCENDING AORTA, LEFT SUBCLAVIAN ARISES FROM DESCENDING AORTA; DUCTUS ARTERIOSUS COMMUNICATES WITH DESCENDING AORTA	P
		M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	6	V MAJOR BLOOD VESSEL VARIATION RETROESOPHAGEAL RIGHT SUBCLAVIAN: RIGHT SUBCLAVIAN COURSES RETROESOPHAGEAL AND JOINS AORTIC ARCH ADJACENT TO DUCTUS ARTERIOSUS (NO BRACHIOCEPHALIC TRUNK)	P

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 21
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	VISCERAL OBSERVATION	GRADE
8810(CONTINUED)	6	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	7	M STENOTIC AORTIC ARCH ASCENDING AND AORTIC ARCH	P
		V MAJOR BLOOD VESSEL VARIATION ELONGATED- BRACHIOCEPHALIC TRUNK	P
		M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	8	NO REMARKABLE OBSERVATIONS	
	9	V MAJOR BLOOD VESSEL VARIATION RETROESOPHAGEAL RIGHT SUBCLAVIAN: RIGHT SUBCLAVIAN COURSES RETROESOPHAGEAL AND JOINS AORTIC ARCH ADJACENT TO DUCTUS ARTERIOSUS (NO BRACHIOCEPHALIC TRUNK)	P
		M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	10	NO REMARKABLE OBSERVATIONS	
	11	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	12	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	13	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
8818	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 22
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	VISCERAL OBSERVATION	GRADE
8818(CONTINUED)	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
8822	8	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	9	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	11	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
8827	2	V MAJOR BLOOD VESSEL VARIATION RIGHT CAROTID AND RIGHT SUBCLAVIAN ARISE INDEPENDENTLY FROM THE AORTIC ARCH (NO BRACHIOCEPHALIC TRUNK)	P
	3	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	4	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	10	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	11	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	13	NO REMARKABLE OBSERVATIONS	
	15	M INTERVENTRICULAR SEPTAL DEFECT	P

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 23
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	VISCERAL OBSERVATION	GRADE
8827(CONTINUED)	15	LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	
8840	2	V MAJOR BLOOD VESSEL VARIATION	P
		RETROESOPHAGEAL RIGHT SUBCLAVIAN: RIGHT SUBCLAVIAN COURSES RETROESOPHAGEAL AND JOINS AORTIC ARCH ADJACENT TO DUCTUS ARTERIOSUS (NO BRACHIOCEPHALIC TRUNK)	
		M TRANSPOSITION OF THE GREAT VESSELS	P
		M INTERVENTRICULAR SEPTAL DEFECT	P
		LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	
	3	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
8842	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	16	NO REMARKABLE OBSERVATIONS	
8847	1	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 24
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	VISCERAL OBSERVATION	GRADE
8847(CONTINUED)	2	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	M SITUS INVERSUS HEART AND MAJOR VESSELS LATERALLY TRANSPOSED	P
	9	M RETROESOPHAGEAL AORTIC ARCH AORTIC ARCH COURSES RETROESOPHAGEAL IMMEDIATELY FOLLOWING RIGHT CAROTID AND RETURNS IN NORMAL POSITION ADJACENT TO DUCTUS ARTERIOSUS; LEFT CAROTID AND LEFT SUBCLAVIAN ARISE FROM A COMMON VESSEL FROM THE AORTIC ARCH	P
	10	NO REMARKABLE OBSERVATIONS	
8850	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	8	NO REMARKABLE OBSERVATIONS	
	9	M INTERVENTRICULAR SEPTAL DEFECT 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	14	NO REMARKABLE OBSERVATIONS	

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TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 25
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	VISCERAL OBSERVATION	GRADE
8850(CONTINUED)	16	NO REMARKABLE OBSERVATIONS	
8851	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	V MAJOR BLOOD VESSEL VARIATION RIGHT CAROTID AND RIGHT SUBCLAVIAN ARISE INDEPENDENTLY FROM THE AORTIC ARCH (NO BRACHIOCEPHALIC TRUNK)	P
		M INTERVENTRICULAR SEPTAL DEFECT 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	8	NO REMARKABLE OBSERVATIONS	
	9	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	11	NO REMARKABLE OBSERVATIONS	
	12	V MAJOR BLOOD VESSEL VARIATION RIGHT CAROTID AND RIGHT SUBCLAVIAN ARISE INDEPENDENTLY FROM THE AORTIC ARCH (NO BRACHIOCEPHALIC TRUNK)	P
8854	1	V MAJOR BLOOD VESSEL VARIATION RETROESOPHAGEAL RIGHT SUBCLAVIAN: RIGHT SUBCLAVIAN COURSES RETROESOPHAGEAL AND JOINS AORTIC ARCH ADJACENT TO DUCTUS ARTERIOSUS (NO BRACHIOCEPHALIC TRUNK)	P
	9	M TRANSPOSITION OF THE GREAT VESSELS	P
	10	M TRANSPOSITION OF THE GREAT VESSELS	P
		M INTERVENTRICULAR SEPTAL DEFECT GREATER THAN 2 MM IN DIAMETER, MEMBRANOUS AND MUSCULAR PORTION	P

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PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 26
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	VISCERAL OBSERVATION	GRADE
8854(CONTINUED)	12	M TRANSPOSITION OF THE GREAT VESSELS	P
8900	1	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	5	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	13	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	14	NO REMARKABLE OBSERVATIONS	
	15	V MAJOR BLOOD VESSEL VARIATION RETROESOPHAGEAL RIGHT SUBCLAVIAN: RIGHT SUBCLAVIAN COURSES RETROESOPHAGEAL AND JOINS AORTIC ARCH ADJACENT TO DUCTUS ARTERIOSUS (NO BRACHIOCEPHALIC TRUNK)	P
	16	NO REMARKABLE OBSERVATIONS	
8901	1	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	2	V MAJOR BLOOD VESSEL VARIATION RETROESOPHAGEAL RIGHT SUBCLAVIAN: RIGHT SUBCLAVIAN COURSES	P

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SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	VISCERAL OBSERVATION	GRADE
8901(CONTINUED)	2	RETROESOPHAGEAL AND JOINS AORTIC ARCH ADJACENT TO DUCTUS ARTERIOSUS (NO BRACHIOCEPHALIC TRUNK)	
	3	M RETROESOPHAGEAL AORTIC ARCH	P
		AORTIC ARCH COURSES RETROESOPHAGEAL IMMEDIATELY FOLLOWING LEFT CAROTID AND RETURNS IN NORMAL POSITION ADJACENT TO DUCTUS ARTERIOSUS	
		M INTERVENTRICULAR SEPTAL DEFECT	P
		LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	
	4	NO REMARKABLE OBSERVATIONS	
	6	M INTERVENTRICULAR SEPTAL DEFECT	P
		LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	
	7	NO REMARKABLE OBSERVATIONS	
	8	M INTERVENTRICULAR SEPTAL DEFECT	P
		LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	
	9	M INTERVENTRICULAR SEPTAL DEFECT	P
		LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	
	10	M INTERVENTRICULAR SEPTAL DEFECT	P
		LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	V MAJOR BLOOD VESSEL VARIATION	P
		RIGHT CAROTID AND RIGHT SUBCLAVIAN ARISE INDEPENDENTLY FROM THE AORTIC ARCH (NO BRACHIOCEPHALIC TRUNK)	
		M INTERVENTRICULAR SEPTAL DEFECT	P
		LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	
	14	NO REMARKABLE OBSERVATIONS	
	15	M INTERVENTRICULAR SEPTAL DEFECT	P
		LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	
8930	1	M INTERVENTRICULAR SEPTAL DEFECT	P

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

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SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	VISCERAL OBSERVATION	GRADE
8930(CONTINUED)	1	LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	
	2	M INTERVENTRICULAR SEPTAL DEFECT	P
		LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	
	3	NO REMARKABLE OBSERVATIONS	
	4	M INTERVENTRICULAR SEPTAL DEFECT	P
		LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	
	6	M INTERVENTRICULAR SEPTAL DEFECT	P
		LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	
	7	M INTERVENTRICULAR SEPTAL DEFECT	P
		LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	
	10	M RETROESOPHAGEAL AORTIC ARCH	P
		AORTIC ARCH COURSES RETROESOPHAGEAL IMMEDIATELY FOLLOWING LEFT CAROTID AND RETURNS IN NORMAL POSITION ADJACENT TO DUCTUS ARTERIOSUS	
		M INTERVENTRICULAR SEPTAL DEFECT	P
		LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	
	11	NO REMARKABLE OBSERVATIONS	
	13	M INTERVENTRICULAR SEPTAL DEFECT	P
		LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	
	14	M CAROTID- STENOTIC	P
		LEFT	
		M INTERVENTRICULAR SEPTAL DEFECT	P
		LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	
		M HEART- VENTRICLE(S), SMALL	P
		RIGHT	
8931	1	NO REMARKABLE OBSERVATIONS	
	3	M INTERVENTRICULAR SEPTAL DEFECT	P
		LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	
	4	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

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SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 2: 15 MG/KG RA	FETUS#	VISCERAL OBSERVATION	GRADE
8931(CONTINUED)	5	NO REMARKABLE OBSERVATIONS	
	6	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	7	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	8	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	9	NO REMARKABLE OBSERVATIONS	
	10	M RETROESOPHAGEAL AORTIC ARCH AORTIC ARCH COURSES RETROESOPHAGEAL IMMEDIATELY FOLLOWING LEFT CAROTID AND RETURNS IN NORMAL POSITION ADJACENT TO DUCTUS ARTERIOSUS	P
		M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	11	NO REMARKABLE OBSERVATIONS	
	12	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

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PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 30
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 3: 0.25 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8747	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
	16	NO REMARKABLE OBSERVATIONS	
8758	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

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PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 31
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 3: 0.25 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8758(CONTINUED)	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
8764	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
	16	NO REMARKABLE OBSERVATIONS	
8767	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

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PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 32
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 3: 0.25 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8767(CONTINUED)	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
	16	NO REMARKABLE OBSERVATIONS	
	17	NO REMARKABLE OBSERVATIONS	
8774	4	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
8807	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
	16	NO REMARKABLE OBSERVATIONS	
8814	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 33
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 3: 0.25 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8814(CONTINUED)	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
8826	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	4	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
8834	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

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PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 34
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 3: 0.25 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8834(CONTINUED)	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
8835	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
8839	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 35
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 3: 0.25 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8839(CONTINUED)	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
	16	NO REMARKABLE OBSERVATIONS	
8849	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
8853	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 36
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 3: 0.25 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8853(CONTINUED)	13	NO REMARKABLE OBSERVATIONS	
8859	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
8869	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
8879	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	M INTERVENTRICULAR SEPTAL DEFECT	P

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 37
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 3: 0.25 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8879(CONTINUED)	5	LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	
	6	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
	16	NO REMARKABLE OBSERVATIONS	
8889	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	V MAJOR BLOOD VESSEL VARIATION RIGHT CAROTID AND RIGHT SUBCLAVIAN ARISE INDEPENDENTLY FROM THE AORTIC ARCH (NO BRACHIOCEPHALIC TRUNK)	P
	16	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 38
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 3: 0.25 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8891	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
8893	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
8897	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 39
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 3: 0.25 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8897(CONTINUED)	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
8908	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
8910	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 40
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 3: 0.25 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8910(CONTINUED)	12	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	13	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 41
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 4: 1.5 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8741	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
	16	NO REMARKABLE OBSERVATIONS	
	17	NO REMARKABLE OBSERVATIONS	
8765	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 42
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 4: 1.5 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8765(CONTINUED)	13	NO REMARKABLE OBSERVATIONS	
8783	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
8786	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 43
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 4: 1.5 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8786(CONTINUED)	14	NO REMARKABLE OBSERVATIONS	
8788	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
8792	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
8805	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 44
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 4: 1.5 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8805(CONTINUED)	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
8806	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
8811	1	NO REMARKABLE OBSERVATIONS	
	2	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	M INTERVENTRICULAR SEPTAL DEFECT	P

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 45
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 4: 1.5 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8811(CONTINUED)	7	LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	M INTERVENTRICULAR SEPTAL DEFECT	P
		LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
	16	NO REMARKABLE OBSERVATIONS	
8813	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
8823	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 46
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 4: 1.5 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8823(CONTINUED)	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	V MAJOR BLOOD VESSEL VARIATION RIGHT CAROTID AND RIGHT SUBCLAVIAN ARISE INDEPENDENTLY FROM THE AORTIC ARCH (NO BRACHIOCEPHALIC TRUNK)	P
	9	V MAJOR BLOOD VESSEL VARIATION RETROESOPHAGEAL RIGHT SUBCLAVIAN: RIGHT SUBCLAVIAN COURSES RETROESOPHAGEAL AND JOINS AORTIC ARCH ADJACENT TO DUCTUS ARTERIOSUS (NO BRACHIOCEPHALIC TRUNK)	P
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
8844	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 47
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 4: 1.5 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8848	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	11	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
	16	NO REMARKABLE OBSERVATIONS	
	17	NO REMARKABLE OBSERVATIONS	
	18	NO REMARKABLE OBSERVATIONS	
	19	NO REMARKABLE OBSERVATIONS	
8857	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 48

SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 4: 1.5 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8867	1	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
8873	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
	16	NO REMARKABLE OBSERVATIONS	
8876	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 49
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 4: 1.5 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8876(CONTINUED)	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
	16	NO REMARKABLE OBSERVATIONS	
	17	NO REMARKABLE OBSERVATIONS	
8881	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
8890	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 50
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 4: 1.5 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8890(CONTINUED)	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
8895	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
8899	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 51
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 4: 1.5 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8899(CONTINUED)	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
	16	NO REMARKABLE OBSERVATIONS	
8907	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
	16	NO REMARKABLE OBSERVATIONS	
	17	NO REMARKABLE OBSERVATIONS	
8941	1	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 52
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 4: 1.5 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8941(CONTINUED)	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
8942	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 53
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 5: 500 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8735	1	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
8763	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 54
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 5: 500 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8763(CONTINUED)	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
8775	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	V MAJOR BLOOD VESSEL VARIATION RIGHT CAROTID AND RIGHT SUBCLAVIAN ARISE INDEPENDENTLY FROM THE AORTIC ARCH (NO BRACHIOCEPHALIC TRUNK)	P
	12	NO REMARKABLE OBSERVATIONS	
8778	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 55
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 5: 500 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8778(CONTINUED)	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
8784	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
	16	NO REMARKABLE OBSERVATIONS	
8790	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	5	NO REMARKABLE OBSERVATIONS	
	6	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	7	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 56
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 5: 500 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8790(CONTINUED)	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
8824	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
8828	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 57
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 5: 500 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8828(CONTINUED)	10	NO REMARKABLE OBSERVATIONS	
	11	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	12	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
8830	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
	16	NO REMARKABLE OBSERVATIONS	
8833	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 58
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 5: 500 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8833(CONTINUED)	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
8837	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	16	NO REMARKABLE OBSERVATIONS	
8838	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 59
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 5: 500 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8838(CONTINUED)	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
8845	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
8846	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 60
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 5: 500 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8846(CONTINUED)	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
	16	NO REMARKABLE OBSERVATIONS	
8855	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	4	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	5	NO REMARKABLE OBSERVATIONS	
	6	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
8863	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 61
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 5: 500 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8863(CONTINUED)	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
8864	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
8868	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 62
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 5: 500 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8868(CONTINUED)	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
8874	1	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
	16	NO REMARKABLE OBSERVATIONS	
8875	1	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 63
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 5: 500 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8875(CONTINUED)	3	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
8878	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
8928	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 64
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 5: 500 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8928(CONTINUED)	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
8933	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
8936	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 65
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 5: 500 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8936(CONTINUED)	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	16	NO REMARKABLE OBSERVATIONS	
	17	NO REMARKABLE OBSERVATIONS	
	18	NO REMARKABLE OBSERVATIONS	
	19	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 66
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 6: 1000 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8739	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
	16	NO REMARKABLE OBSERVATIONS	
8760	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	7	NO REMARKABLE OBSERVATIONS	
	8	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	9	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 67
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 6: 1000 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8760(CONTINUED)	12	NO REMARKABLE OBSERVATIONS	
8769	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
8770	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
8771	1	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 68
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 6: 1000 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8771(CONTINUED)	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
8785	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
8793	1	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 69
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 6: 1000 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8793(CONTINUED)	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
8795	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
8799	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 70
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 6: 1000 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8799(CONTINUED)	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
8804	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
8815	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 71
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 6: 1000 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8815(CONTINUED)	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
	16	NO REMARKABLE OBSERVATIONS	
	17	NO REMARKABLE OBSERVATIONS	
	18	NO REMARKABLE OBSERVATIONS	
8819	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
	16	NO REMARKABLE OBSERVATIONS	
	17	NO REMARKABLE OBSERVATIONS	
8821	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 72
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 6: 1000 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8821(CONTINUED)	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
	16	V MAJOR BLOOD VESSEL VARIATION RIGHT CAROTID AND RIGHT SUBCLAVIAN ARISE INDEPENDENTLY FROM THE AORTIC ARCH (NO BRACHIOCEPHALIC TRUNK)	P
	17	NO REMARKABLE OBSERVATIONS	
	18	NO REMARKABLE OBSERVATIONS	
8829	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 73
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 6: 1000 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8829(CONTINUED)	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
	16	NO REMARKABLE OBSERVATIONS	
	17	NO REMARKABLE OBSERVATIONS	
8831	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
	16	NO REMARKABLE OBSERVATIONS	
	17	NO REMARKABLE OBSERVATIONS	
	18	NO REMARKABLE OBSERVATIONS	
8860	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 74
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 6: 1000 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8860(CONTINUED)	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
8861	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
8865	1	NO REMARKABLE OBSERVATIONS	
	2	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 75
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 6: 1000 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8865(CONTINUED)	4	NO REMARKABLE OBSERVATIONS	
	5	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
	16	NO REMARKABLE OBSERVATIONS	
	17	NO REMARKABLE OBSERVATIONS	
	18	NO REMARKABLE OBSERVATIONS	
8870	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	V MAJOR BLOOD VESSEL VARIATION RIGHT CAROTID AND RIGHT SUBCLAVIAN ARISE INDEPENDENTLY FROM THE AORTIC ARCH (NO BRACHIOCEPHALIC TRUNK)	P

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 76
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 6: 1000 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8870(CONTINUED)	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
	16	NO REMARKABLE OBSERVATIONS	
8872	1	NO REMARKABLE OBSERVATIONS	
	3	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
8885	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 77
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 6: 1000 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8885(CONTINUED)	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
8888	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
	16	NO REMARKABLE OBSERVATIONS	
	17	NO REMARKABLE OBSERVATIONS	
	18	NO REMARKABLE OBSERVATIONS	
8896	1	NO REMARKABLE OBSERVATIONS	
	2	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	3	NO REMARKABLE OBSERVATIONS	
	4	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

TABLE 4.16

PROJECT NO.: 00459506 AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 78
SPONSOR:HSIA INDIVIDUAL FETAL VISCERAL FINDINGS

DAMS FROM GROUP 6: 1000 PPM	FETUS#	VISCERAL OBSERVATION	GRADE
8896(CONTINUED)	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	M INTERVENTRICULAR SEPTAL DEFECT LESS THAN 1 MM IN DIAMETER, MEMBRANOUS PORTION	P
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
8917	1	NO REMARKABLE OBSERVATIONS	
	2	NO REMARKABLE OBSERVATIONS	
	3	NO REMARKABLE OBSERVATIONS	
	5	NO REMARKABLE OBSERVATIONS	
	6	NO REMARKABLE OBSERVATIONS	
	7	NO REMARKABLE OBSERVATIONS	
	8	NO REMARKABLE OBSERVATIONS	
	9	NO REMARKABLE OBSERVATIONS	
	10	NO REMARKABLE OBSERVATIONS	
	11	NO REMARKABLE OBSERVATIONS	
	12	NO REMARKABLE OBSERVATIONS	
	13	NO REMARKABLE OBSERVATIONS	
	14	NO REMARKABLE OBSERVATIONS	
	15	NO REMARKABLE OBSERVATIONS	
	16	NO REMARKABLE OBSERVATIONS	

GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT M-MALFORMATION V-VARIATION

PSVRDv4.04
11/02/2018

APPENDIX 5

Exposure Assessment Phase

TABLE 5.1 (DAILY EXAMINATIONS - EXPOSURE ASSESSMENT PHASE)
PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 1
SPONSOR:HSIA INDIVIDUAL CLINICAL OBSERVATIONS

OBSERVATION	ANIMAL	GROUP	GESTATIONAL DAY 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
NO SIGNIFICANT CLINICAL OBSERVATIONS	8752	1	P	P	P	P	P	P	P	P	P	P	P	P	P							P		P
	8742	1	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8794	1	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8744	1	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8753	3	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8748	3	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8749	3	P	P	P	P	P	P	P	P	P	P	P	P	P	P		P			P		P	P
	8781	3	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8736	4	P	P		P						P			P				P			P	
	8746	4	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		P
	8745	4	P	P	P	P	P	P	P	P	P			P		P	P	P	P	P	P	P	P	P
	8787	4	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8737	5	P	P	P	P	P	P	P	P	P	P			P							P		P
	8762	5	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8761	5	P	P	P	P	P	P	P	P	P			P		P	P	P	P	P	P	P	P	P
	8750	5	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8754	6	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8734	6	P	P		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		P
	8797	6	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	8759	6	P	P	P	P	P	P	P	P	P	P	P	P	P	P		P	P		P		P	P
SCHEDULED EUTHANASIA; GESTATION DAY 21	8752	1																						P
	8742	1																						P
	8794	1																						P
	8744	1																						P
	8753	3																						P
	8748	3																						P

GRADE CODE: P = PRESENT 1 = SLIGHT 2 = MODERATE 3 = SEVERE

1- 0 PPM 2- 15 MG/KG RA 3- 0.25 PPM 4- 1.5 PPM 5- 500 PPM 6- 1000 PPM

TABLE 5.1 (DAILY EXAMINATIONS - EXPOSURE ASSESSMENT PHASE)
PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 2
SPONSOR:HSIA INDIVIDUAL CLINICAL OBSERVATIONS

OBSERVATION	ANIMAL	GROUP	GESTATIONAL DAY 0 1 2 3 4 5 6 7 8 9	1 0	1 1 1 1 1 1 1 1 1 2 2 1 2 3 4 5 6 7 8 9 0 1
SCHEDULED EUTHANASIA; GESTATION DAY 21	8749	3			P
	8781	3			P
	8736	4			P
	8746	4			P
	8745	4			P
	8787	4			P
	8737	5			P
	8762	5			P
	8761	5			P
	8750	5			P
	8754	6			P
	8734	6			P
	8797	6			P
	8759	6			P
HAIR LOSS FORELIMB(S)	8752	1			P P P P P P P
	8749	3			P P P P
	8736	4	P P P P P P	P P	P P P P P P P
	8746	4			P
	8737	5		P P	P P P P P P P
	8759	6			P P P
HAIR LOSS FACIAL AREA	8745	4		P P	
	8761	5		P P	
HAIR LOSS DORSAL HEAD	8745	4			P
	8761	5			P

GRADE CODE: P = PRESENT 1 = SLIGHT 2 = MODERATE 3 = SEVERE

1- 0 PPM 2- 15 MG/KG RA 3- 0.25 PPM 4- 1.5 PPM 5- 500 PPM 6- 1000 PPM

TABLE 5.1 (DAILY EXAMINATIONS - EXPOSURE ASSESSMENT PHASE)
PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 3
SPONSOR:HSIA INDIVIDUAL CLINICAL OBSERVATIONS

OBSERVATION	ANIMAL	GROUP	GESTATIONAL DAY 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
PUPIL DILATED LEFT EYE	8736	4	P P P P
	8734	6	P P P
PUPIL DILATED RIGHT EYE	8736	4	P P P P
	8734	6	P P

GRADE CODE: P = PRESENT 1 = SLIGHT 2 = MODERATE 3 = SEVERE

1- 0 PPM 2- 15 MG/KG RA 3- 0.25 PPM 4- 1.5 PPM 5- 500 PPM 6- 1000 PPM

PCOv3.14
09/24/2018

TABLE 5.2 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 1

SPONSOR:HSIA INDIVIDUAL BODY WEIGHTS DURING GESTATION [G]

PREGNANCY STATUS	DAY	0	1	2	3	4	5	6	7	8
DAMS FROM GROUP 1: 0 PPM										
8742	G	262.	264.	269.	274.	287.	289.	302.	298.	313.
8744	G	256.	272.	278.	288.	288.	296.	298.	310.	308.
8752	G	248.	252.	260.	265.	276.	271.	278.	282.	292.
8794	G	258.	267.	268.	280.	282.	289.	290.	297.	303.
MEAN		256.	264.	269.	277.	283.	286.	292.	297.	304.
S.D.		5.9	8.5	7.4	9.7	5.5	10.7	10.6	11.5	9.0
N		4	4	4	4	4	4	4	4	4

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 5.2 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 2

SPONSOR:HSIA INDIVIDUAL BODY WEIGHTS DURING GESTATION [G]

PREGNANCY STATUS	DAY	9	10	11	12	13	14	15	16	17
DAMS FROM GROUP 1: 0 PPM										
8742	G	315.	319.	331.	336.	342.	348.	365.	382.	395.
8744	G	317.	317.	328.	342.	339.	349.	349.	362.	363.
8752	G	294.	306.	309.	313.	315.	320.	332.	345.	354.
8794	G	303.	316.	321.	328.	330.	340.	342.	357.	368.
MEAN		307.	315.	322.	330.	332.	339.	347.	362.	370.
S.D.		10.8	5.8	9.8	12.6	12.1	13.5	13.9	15.4	17.6
N		4	4	4	4	4	4	4	4	4

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 5.2 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 3

SPONSOR:HSIA INDIVIDUAL BODY WEIGHTS DURING GESTATION [G]

	PREGNANCY STATUS	DAY 18	19	20	21	
DAMS FROM GROUP 1: 0 PPM						
8742	G	407.	434.	462.	479.	GRAVID, EUTHANIZED DAY 21
8744	G	384.	408.	417.	441.	GRAVID, EUTHANIZED DAY 21
8752	G	368.	389.	406.	426.	GRAVID, EUTHANIZED DAY 21
8794	G	384.	408.	426.	458.	GRAVID, EUTHANIZED DAY 21
MEAN		386.	410.	428.	451.	
S.D.		16.0	18.5	24.3	22.8	
N		4	4	4	4	

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 5.2 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 4

SPONSOR:HSIA INDIVIDUAL BODY WEIGHTS DURING GESTATION [G]

	PREGNANCY STATUS	DAY 0	1	2	3	4	5	6	7	8
DAMS FROM GROUP 3: 0.25 PPM										
8748	G	260.	266.	265.	269.	281.	279.	289.	294.	300.
8749	G	267.	286.	285.	285.	288.	296.	302.	309.	312.
8753	G	255.	250.	259.	262.	273.	271.	283.	281.	292.
8781	G	243.	240.	245.	252.	251.	257.	262.	262.	263.
MEAN		256.	261.	264.	267.	273.	276.	284.	287.	292.
S.D.		10.1	20.1	16.6	13.9	16.0	16.3	16.7	19.9	20.9
N		4	4	4	4	4	4	4	4	4

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 5.2 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 5

SPONSOR:HSIA INDIVIDUAL BODY WEIGHTS DURING GESTATION [G]

	PREGNANCY STATUS	DAY 9	10	11	12	13	14	15	16	17
DAMS FROM GROUP 3: 0.25 PPM										
8748	G	304.	316.	317.	323.	328.	334.	348.	355.	370.
8749	G	300.	317.	320.	330.	335.	350.	352.	364.	387.
8753	G	291.	306.	307.	318.	323.	326.	340.	350.	368.
8781	G	269.	276.	280.	286.	289.	298.	307.	306.	317.
MEAN		291.	304.	306.	314.	319.	327.	337.	344.	361.
S.D.		15.6	19.2	18.2	19.5	20.4	21.8	20.5	25.8	30.2
N		4	4	4	4	4	4	4	4	4

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 5.2 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 6

SPONSOR:HSIA INDIVIDUAL BODY WEIGHTS DURING GESTATION [G]

	PREGNANCY STATUS	DAY 18	19	20	21	
DAMS FROM GROUP 3: 0.25 PPM						
8748	G	385.	405.	426.	458.	GRAVID, EUTHANIZED DAY 21
8749	G	396.	419.	437.	470.	GRAVID, EUTHANIZED DAY 21
8753	G	382.	401.	422.	447.	GRAVID, EUTHANIZED DAY 21
8781	G	338.	343.	359.	378.	GRAVID, EUTHANIZED DAY 21
MEAN		375.	392.	411.	438.	
S.D.		25.6	33.6	35.2	41.3	
N		4	4	4	4	

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 5.2 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 7

SPONSOR:HSIA INDIVIDUAL BODY WEIGHTS DURING GESTATION [G]

PREGNANCY STATUS	DAY	0	1	2	3	4	5	6	7	8
DAMS FROM GROUP 4: 1.5 PPM										
8736	G	240.	241.	241.	247.	251.	256.	268.	268.	279.
8745	G	256.	263.	270.	271.	279.	285.	288.	293.	301.
8746	G	256.	269.	272.	278.	285.	284.	297.	297.	307.
8787	G	221.	229.	233.	233.	241.	240.	247.	253.	253.
MEAN		243.	251.	254.	257.	264.	266.	275.	278.	285.
S.D.		16.6	18.7	19.9	20.9	21.3	22.1	22.3	20.9	24.5
N		4	4	4	4	4	4	4	4	4

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 5.2 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 8

SPONSOR:HSIA INDIVIDUAL BODY WEIGHTS DURING GESTATION [G]

PREGNANCY STATUS	DAY	9	10	11	12	13	14	15	16	17
DAMS FROM GROUP 4: 1.5 PPM										
8736	G	284.	292.	296.	305.	299.	311.	324.	332.	350.
8745	G	309.	319.	325.	331.	336.	349.	351.	366.	377.
8746	G	309.	321.	317.	330.	335.	340.	351.	363.	372.
8787	G	256.	264.	272.	277.	279.	289.	299.	309.	321.
MEAN		290.	299.	303.	311.	312.	322.	331.	343.	355.
S.D.		25.3	26.8	23.7	25.5	28.1	27.5	25.0	27.1	25.5
N		4	4	4	4	4	4	4	4	4

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 5.2 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 9

SPONSOR:HSIA INDIVIDUAL BODY WEIGHTS DURING GESTATION [G]

	PREGNANCY STATUS	DAY 18	19	20	21	
DAMS FROM GROUP 4: 1.5 PPM						
8736	G	370.	389.	408.	404.	GRAVID, EUTHANIZED DAY 21
8745	G	399.	422.	437.	464.	GRAVID, EUTHANIZED DAY 21
8746	G	383.	397.	412.	433.	GRAVID, EUTHANIZED DAY 21
8787	G	340.	357.	366.	384.	GRAVID, EUTHANIZED DAY 21
MEAN		373.	391.	406.	421.	
S.D.		25.0	26.8	29.4	34.9	
N		4	4	4	4	

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 5.2 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 10

SPONSOR:HSIA INDIVIDUAL BODY WEIGHTS DURING GESTATION [G]

PREGNANCY STATUS	DAY	0	1	2	3	4	5	6	7	8
DAMS FROM GROUP 5: 500 PPM										
8737	G	250.	260.	263.	262.	270.	272.	283.	279.	291.
8750	G	253.	253.	258.	264.	265.	275.	270.	279.	287.
8761	G	259.	264.	271.	272.	283.	278.	286.	296.	297.
8762	G	257.	261.	265.	270.	271.	270.	276.	282.	286.
MEAN		255.	260.	264.	267.	272.	274.	279.	284.	290.
S.D.		4.0	4.7	5.4	4.8	7.6	3.5	7.2	8.1	5.0
N		4	4	4	4	4	4	4	4	4

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 5.2 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 11

SPONSOR:HSIA INDIVIDUAL BODY WEIGHTS DURING GESTATION [G]

PREGNANCY STATUS	DAY	9	10	11	12	13	14	15	16	17
DAMS FROM GROUP 5: 500 PPM										
8737	G	298.	298.	306.	314.	319.	321.	334.	343.	359.
8750	G	280.	287.	298.	299.	299.	307.	314.	320.	325.
8761	G	296.	308.	309.	316.	328.	333.	340.	342.	364.
8762	G	294.	299.	304.	312.	318.	322.	332.	340.	360.
MEAN		292.	298.	304.	310.	316.	321.	330.	336.	352.
S.D.		8.2	8.6	4.6	7.7	12.2	10.7	11.2	10.9	18.1
N		4	4	4	4	4	4	4	4	4

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 5.2 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 12

SPONSOR:HSIA INDIVIDUAL BODY WEIGHTS DURING GESTATION [G]

	PREGNANCY STATUS	DAY 18	19	20	21	
DAMS FROM GROUP 5: 500 PPM						
8737	G	371.	398.	418.	433.	GRAVID, EUTHANIZED DAY 21
8750	G	341.	351.	354.	370.	GRAVID, EUTHANIZED DAY 21
8761	G	374.	388.	402.	434.	GRAVID, EUTHANIZED DAY 21
8762	G	370.	386.	406.	426.	GRAVID, EUTHANIZED DAY 21
MEAN		364.	381.	395.	416.	
S.D.		15.4	20.5	28.2	30.7	
N		4	4	4	4	

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 5.2 (EXPOSURE ASSESSMENT PHASE)
PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 13
SPONSOR:HSIA INDIVIDUAL BODY WEIGHTS DURING GESTATION [G]

PREGNANCY STATUS	DAY	0	1	2	3	4	5	6	7	8
DAMS FROM GROUP 6: 1000 PPM										
8734	G	262.	262.	265.	274.	281.	286.	296.	293.	301.
8754	G	241.	247.	248.	249.	255.	256.	260.	260.	274.
8759	G	252.	257.	259.	266.	268.	271.	282.	284.	287.
8797	G	256.	259.	262.	269.	270.	273.	274.	281.	287.
MEAN		253.	256.	259.	265.	269.	272.	278.	280.	287.
S.D.		8.8	6.5	7.4	10.8	10.7	12.3	15.1	14.0	11.0
N		4	4	4	4	4	4	4	4	4

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 5.2 (EXPOSURE ASSESSMENT PHASE)
PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 14
SPONSOR:HSIA INDIVIDUAL BODY WEIGHTS DURING GESTATION [G]

PREGNANCY STATUS	DAY	9	10	11	12	13	14	15	16	17
DAMS FROM GROUP 6:		1000 PPM								
8734	G	307.	315.	323.	335.	340.	340.	352.	361.	382.
8754	G	275.	280.	289.	293.	292.	295.	309.	319.	334.
8759	G	291.	297.	310.	303.	309.	314.	328.	342.	356.
8797	G	292.	293.	305.	309.	311.	315.	328.	335.	344.
MEAN		291.	296.	307.	310.	313.	316.	329.	339.	354.
S.D.		13.1	14.5	14.1	17.9	19.9	18.5	17.6	17.4	20.7
N		4	4	4	4	4	4	4	4	4

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 5.2 (EXPOSURE ASSESSMENT PHASE)
PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 15
SPONSOR:HSIA INDIVIDUAL BODY WEIGHTS DURING GESTATION [G]

	PREGNANCY STATUS	DAY 18	19	20	21	
DAMS FROM GROUP 6:		1000 PPM				
8734	G	386.	406.	429.	444.	GRAVID, EUTHANIZED DAY 21
8754	G	349.	361.	369.	380.	GRAVID, EUTHANIZED DAY 21
8759	G	366.	389.	411.	436.	GRAVID, EUTHANIZED DAY 21
8797	G	358.	370.	389.	410.	GRAVID, EUTHANIZED DAY 21
MEAN		365.	382.	400.	418.	
S.D.		15.8	20.1	26.1	28.9	
N		4	4	4	4	

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

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09/24/2018

TABLE 5.3 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 1

SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY	0- 1	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 1: 0 PPM											
8742	G		22.	29.	36.	32.	31.	35.	29.	34.	32.
8744	G		30.	35.	34.	33.	35.	33.	35.	35.	34.
8752	G		30.	31.	38.	36.	29.	29.	34.	43.	31.
8794	G		24.	29.	33.	31.	30.	34.	27.	35.	31.
MEAN			27.	31.	35.	33.	31.	33.	31.	37.	32.
S.D.			4.1	2.8	2.2	2.2	2.6	2.6	3.9	4.2	1.4
N			4	4	4	4	4	4	4	4	4

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 5.3 (EXPOSURE ASSESSMENT PHASE)
PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 2
SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

PREGNANCY STATUS	DAY	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 1: 0 PPM										
8742	G	27.	44.	36.	42.	42.	46.	48.	55.	54.
8744	G	35.	40.	45.	43.	39.	38.	47.	52.	51.
8752	G	41.	32.	43.	31.	42.	40.	40.	45.	43.
8794	G	36.	46.	36.	39.	40.	39.	50.	55.	47.
MEAN		35.	41.	40.	39.	41.	41.	46.	52.	49.
S.D.		5.8	6.2	4.7	5.4	1.5	3.6	4.3	4.7	4.8
N		4	4	4	4	4	4	4	4	4

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 5.3 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 3

SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 18-19	19-20	20-21	
DAMS FROM GROUP 1:		0 PPM			
8742	G	53.	52.	47.	GRAVID, EUTHANIZED DAY 21
8744	G	50.	42.	45.	GRAVID, EUTHANIZED DAY 21
8752	G	54.	45.	54.	GRAVID, EUTHANIZED DAY 21
8794	G	48.	46.	50.	GRAVID, EUTHANIZED DAY 21
MEAN		51.	46.	49.	
S.D.		2.8	4.2	3.9	
N		4	4	4	

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 5.3 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 4

SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 0- 1	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 3: 0.25 PPM										
8748	G	28.	37.	25.	32.	32.	33.	33.	34.	36.
8749	G	35.	43.	34.	46.	61.	40.	43.	39.	NA
8753	G	23.	18.	33.	37.	42.	32.	28.	36.	34.
8781	G	NA	19.	22.	23.	19.	21.	24.	21.	NA
MEAN		29.	29.	29.	35.	39.	32.	32.	33.	35.
S.D.		6.0	12.7	5.9	9.6	17.7	7.9	8.2	7.9	1.4
N		3	4	4	4	4	4	4	4	2

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 5.3 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 5

SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

PREGNANCY STATUS	DAY	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 3: 0.25 PPM										
8748	G	36.	40.	39.	44.	40.	46.	49.	50.	57.
8749	G	58.	51.	55.	61.	56.	66.	NA	NA	NA
8753	G	37.	40.	44.	41.	44.	43.	58.	64.	72.
8781	G	24.	23.	26.	27.	25.	31.	NA	NA	74.
MEAN		39.	39.	41.	43.	41.	47.	54.	57.	68.
S.D.		14.1	11.6	12.0	14.0	12.8	14.5	6.4	9.9	9.3
N		4	4	4	4	4	4	2	2	3

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 5.3 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 6

SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 18-19	19-20	20-21	
DAMS FROM GROUP 3:		0.25 PPM			
8748	G	46.	53.	59.	GRAVID, EUTHANIZED DAY 21
8749	G	NA	68.	57.	GRAVID, EUTHANIZED DAY 21
8753	G	55.	59.	47.	GRAVID, EUTHANIZED DAY 21
8781	G	31.	32.	32.	GRAVID, EUTHANIZED DAY 21
MEAN		44.	53.	49.	
S.D.		12.1	15.3	12.3	
N		3	4	4	

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

NA = NOT APPLICABLE

TABLE 5.3 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 7

SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

PREGNANCY STATUS	DAY	0- 1	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 4: 1.5 PPM										
8736	G	24.	22.	27.	23.	34.	26.	30.	30.	31.
8745	G	27.	42.	40.	44.	38.	38.	40.	41.	40.
8746	G	30.	28.	32.	38.	33.	37.	38.	36.	33.
8787	G	21.	20.	17.	22.	NA	21.	18.	19.	20.
MEAN		26.	28.	29.	32.	35.	31.	32.	32.	31.
S.D.		3.9	9.9	9.6	11.0	2.6	8.3	10.0	9.5	8.3
N		4	4	4	4	3	4	4	4	4

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 5.3 (EXPOSURE ASSESSMENT PHASE)
PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 8
SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

PREGNANCY STATUS	DAY	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 4: 1.5 PPM										
8736	G	29.	34.	35.	32.	33.	36.	41.	43.	49.
8745	G	48.	45.	45.	44.	51.	50.	54.	71.	61.
8746	G	38.	41.	53.	42.	52.	59.	54.	63.	55.
8787	G	24.	28.	21.	22.	26.	28.	31.	34.	38.
MEAN		35.	37.	39.	35.	41.	43.	45.	53.	51.
S.D.		10.6	7.5	13.8	10.1	13.0	13.9	11.2	17.2	9.8
N		4	4	4	4	4	4	4	4	4

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 5.3 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 9

SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 18-19	19-20	20-21	
DAMS FROM GROUP 4: 1.5 PPM					
8736	G	40.	36.	20.	GRAVID, EUTHANIZED DAY 21
8745	G	NA	61.	59.	GRAVID, EUTHANIZED DAY 21
8746	G	NA	65.	69.	GRAVID, EUTHANIZED DAY 21
8787	G	40.	31.	28.	GRAVID, EUTHANIZED DAY 21
MEAN		40.	48.	44.	
S.D.		0.0	17.2	23.7	
N		2	4	4	

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

NA = NOT APPLICABLE

TABLE 5.3 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 10

SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 0- 1	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 5: 500 PPM										
8737	G	27.	25.	27.	28.	29.	27.	21.	31.	28.
8750	G	20.	23.	24.	28.	27.	20.	26.	27.	NA
8761	G	26.	30.	23.	37.	23.	30.	30.	22.	26.
8762	G	25.	26.	32.	31.	27.	28.	33.	28.	33.
MEAN		25.	26.	27.	31.	27.	26.	28.	27.	29.
S.D.		3.1	2.9	4.0	4.2	2.5	4.3	5.2	3.7	3.6
N		4	4	4	4	4	4	4	4	3

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 5.3 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 11

SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

PREGNANCY STATUS	DAY	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 5: 500 PPM										
8737	G	24.	27.	31.	27.	32.	32.	35.	43.	40.
8750	G	23.	26.	22.	27.	24.	27.	28.	34.	31.
8761	G	30.	29.	31.	34.	31.	34.	33.	44.	37.
8762	G	33.	38.	35.	40.	35.	38.	43.	51.	54.
MEAN		28.	30.	30.	32.	31.	33.	35.	43.	41.
S.D.		4.8	5.5	5.5	6.3	4.7	4.6	6.2	7.0	9.7
N		4	4	4	4	4	4	4	4	4

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 5.3 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 12

SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 18-19	19-20	20-21	
DAMS FROM GROUP 5: 500 PPM					
8737	G	40.	41.	41.	GRAVID, EUTHANIZED DAY 21
8750	G	32.	28.	30.	GRAVID, EUTHANIZED DAY 21
8761	G	43.	46.	38.	GRAVID, EUTHANIZED DAY 21
8762	G	45.	53.	55.	GRAVID, EUTHANIZED DAY 21
MEAN		40.	42.	41.	
S.D.		5.7	10.6	10.4	
N		4	4	4	

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 5.3 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 13

SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

PREGNANCY STATUS	DAY	0- 1	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 6:		1000 PPM								
8734	G	21.	23.	24.	25.	30.	25.	22.	27.	24.
8754	G	21.	20.	15.	21.	18.	20.	15.	NA	21.
8759	G	21.	24.	21.	25.	27.	27.	20.	20.	28.
8797	G	20.	23.	22.	24.	21.	17.	21.	22.	21.
MEAN		21.	23.	21.	24.	24.	22.	20.	23.	24.
S.D.		0.5	1.7	3.9	1.9	5.5	4.6	3.1	3.6	3.3
N		4	4	4	4	4	4	4	3	4

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 5.3 (EXPOSURE ASSESSMENT PHASE)
PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 14
SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 6: 1000 PPM										
8734	G	NA	25.	33.	28.	27.	26.	28.	38.	31.
8754	G	21.	24.	21.	19.	25.	24.	28.	28.	35.
8759	G	24.	28.	21.	37.	25.	36.	34.	38.	34.
8797	G	19.	24.	24.	27.	20.	31.	30.	34.	34.
MEAN		21.	25.	25.	28.	24.	29.	30.	35.	34.
S.D.		2.5	1.9	5.7	7.4	3.0	5.4	2.8	4.7	1.7
N		3	4	4	4	4	4	4	4	4

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 5.3 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 15

SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/ANIMAL/DAY]

	PREGNANCY STATUS	DAY 18-19	19-20	20-21	
DAMS FROM GROUP 6:		1000 PPM			
8734	G	34.	37.	34.	GRAVID, EUTHANIZED DAY 21
8754	G	31.	28.	25.	GRAVID, EUTHANIZED DAY 21
8759	G	41.	40.	42.	GRAVID, EUTHANIZED DAY 21
8797	G	32.	33.	33.	GRAVID, EUTHANIZED DAY 21
MEAN		35.	35.	34.	
S.D.		4.5	5.2	7.0	
N		4	4	4	

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

PGFWv4.11
10/22/2018

TABLE 5.4 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 1

SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY	0- 1	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 1: 0 PPM											
8742	G		84.	109.	132.	114.	108.	118.	97.	111.	102.
8744	G		114.	127.	120.	115.	120.	111.	115.	113.	109.
8752	G		120.	121.	144.	133.	106.	105.	121.	150.	106.
8794	G		91.	108.	120.	110.	105.	117.	92.	117.	102.
MEAN			102.	116.	129.	118.	110.	113.	106.	123.	105.
S.D.			17.4	9.3	11.5	10.2	6.9	6.0	13.9	18.3	3.4
N			4	4	4	4	4	4	4	4	4

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 5.4 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 2

SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 1: 0 PPM											
8742	G		85.	135.	108.	124.	122.	129.	128.	141.	135.
8744	G		110.	124.	134.	126.	113.	109.	132.	143.	136.
8752	G		137.	104.	138.	99.	132.	123.	118.	129.	119.
8794	G		116.	144.	111.	119.	119.	114.	143.	152.	125.
MEAN			112.	127.	123.	117.	122.	119.	130.	141.	129.
S.D.			21.4	17.2	15.4	12.4	7.9	9.0	10.3	9.5	8.2
N			4	4	4	4	4	4	4	4	4

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 5.4 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 3

SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY 18-19	19-20	20-21	
DAMS FROM GROUP 1: 0 PPM					
8742	G	126.	116.	100.	GRAVID, EUTHANIZED DAY 21
8744	G	126.	102.	105.	GRAVID, EUTHANIZED DAY 21
8752	G	142.	113.	130.	GRAVID, EUTHANIZED DAY 21
8794	G	121.	110.	113.	GRAVID, EUTHANIZED DAY 21
MEAN		129.	110.	112.	
S.D.		9.1	6.0	13.1	
N		4	4	4	

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 5.4 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 4

SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/KG/DAY]

PREGNANCY STATUS	DAY	0- 1	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 3: 0.25 PPM										
8748	G	106.	139.	94.	116.	114.	116.	113.	114.	119.
8749	G	126.	150.	119.	160.	209.	134.	141.	125.	NA
8753	G	91.	71.	126.	138.	154.	116.	99.	125.	116.
8781	G	NA	78.	88.	91.	75.	81.	92.	80.	NA
MEAN		108.	110.	107.	126.	138.	112.	111.	111.	118.
S.D.		17.6	40.8	18.6	29.6	57.3	22.2	21.7	21.3	2.1
N		3	4	4	4	4	4	4	4	2

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 5.4 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 5

SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/KG/DAY]

PREGNANCY STATUS	DAY	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 3: 0.25 PPM										
8748	G	116.	126.	122.	135.	121.	135.	139.	138.	151.
8749	G	188.	160.	169.	183.	163.	188.	NA	NA	NA
8753	G	124.	130.	141.	128.	135.	129.	168.	178.	192.
8781	G	88.	83.	92.	94.	85.	102.	NA	NA	226.
MEAN		129.	125.	131.	135.	126.	139.	154.	158.	190.
S.D.		42.3	31.7	32.4	36.7	32.4	36.0	20.5	28.3	37.6
N		4	4	4	4	4	4	2	2	3

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 5.4 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 6

SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY 18-19	19-20	20-21	
DAMS FROM GROUP 3:		0.25 PPM			
8748	G	116.	127.	133.	GRAVID, EUTHANIZED DAY 21
8749	G	NA	159.	126.	GRAVID, EUTHANIZED DAY 21
8753	G	140.	143.	108.	GRAVID, EUTHANIZED DAY 21
8781	G	91.	91.	87.	GRAVID, EUTHANIZED DAY 21
MEAN		116.	130.	114.	
S.D.		24.5	29.1	20.6	
N		3	4	4	

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

NA = NOT APPLICABLE

TABLE 5.4 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 7

SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY	0- 1	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 4: 1.5 PPM											
8736	G		100.	91.	111.	92.	134.	99.	112.	109.	110.
8745	G		104.	157.	148.	160.	135.	132.	137.	138.	131.
8746	G		114.	103.	116.	135.	116.	127.	128.	119.	107.
8787	G		93.	87.	73.	93.	NA	86.	72.	75.	78.
MEAN			103.	110.	112.	120.	128.	111.	112.	110.	107.
S.D.			8.8	32.4	30.7	33.4	10.7	22.1	28.8	26.4	21.8
N			4	4	4	4	3	4	4	4	4

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 5.4 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 8

SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/KG/DAY]

PREGNANCY STATUS	DAY	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 4: 1.5 PPM										
8736	G	101.	116.	116.	106.	108.	113.	125.	126.	136.
8745	G	153.	140.	137.	132.	149.	143.	150.	191.	157.
8746	G	121.	129.	164.	126.	154.	171.	151.	171.	146.
8787	G	92.	104.	76.	79.	92.	95.	102.	108.	115.
MEAN		117.	122.	123.	111.	126.	131.	132.	149.	139.
S.D.		27.0	15.6	37.1	23.9	30.5	33.5	23.3	38.5	17.9
N		4	4	4	4	4	4	4	4	4

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 5.4 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 9

SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY 18-19	19-20	20-21	
DAMS FROM GROUP 4: 1.5 PPM					
8736	G	105.	90.	49.	GRAVID, EUTHANIZED DAY 21
8745	G	NA	142.	131.	GRAVID, EUTHANIZED DAY 21
8746	G	NA	160.	163.	GRAVID, EUTHANIZED DAY 21
8787	G	115.	86.	75.	GRAVID, EUTHANIZED DAY 21
MEAN		110.	120.	105.	
S.D.		7.1	37.1	51.9	
N		2	4	4	

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

NA = NOT APPLICABLE

TABLE 5.4 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 10

SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/KG/DAY]

PREGNANCY STATUS	DAY	0- 1	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 5: 500 PPM										
8737	G	106.	95.	103.	105.	107.	97.	75.	109.	95.
8750	G	79.	90.	92.	106.	100.	73.	95.	95.	NA
8761	G	99.	112.	85.	133.	82.	106.	103.	74.	88.
8762	G	97.	99.	119.	114.	100.	103.	118.	99.	114.
MEAN		95.	99.	100.	115.	97.	95.	98.	94.	99.
S.D.		11.5	9.4	14.8	13.0	10.7	15.0	17.9	14.7	13.5
N		4	4	4	4	4	4	4	4	3

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 5.4 (EXPOSURE ASSESSMENT PHASE)
PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 11
SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/KG/DAY]

PREGNANCY STATUS	DAY	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 5: 500 PPM										
8737	G	81.	89.	100.	85.	100.	98.	103.	123.	110.
8750	G	81.	89.	74.	90.	79.	87.	88.	105.	93.
8761	G	99.	94.	99.	106.	94.	101.	97.	125.	100.
8762	G	111.	126.	114.	127.	109.	116.	128.	146.	148.
MEAN		93.	100.	97.	102.	96.	101.	104.	125.	113.
S.D.		14.7	17.8	16.6	18.9	12.6	12.0	17.1	16.8	24.5
N		4	4	4	4	4	4	4	4	4

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 5.4 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 12

SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY 18-19	19-20	20-21	
DAMS FROM GROUP 5: 500 PPM					
8737	G	104.	100.	96.	GRAVID, EUTHANIZED DAY 21
8750	G	92.	79.	83.	GRAVID, EUTHANIZED DAY 21
8761	G	113.	116.	91.	GRAVID, EUTHANIZED DAY 21
8762	G	119.	134.	132.	GRAVID, EUTHANIZED DAY 21
MEAN		107.	107.	101.	
S.D.		11.7	23.4	21.7	
N		4	4	4	

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

TABLE 5.4 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 13

SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/KG/DAY]

PREGNANCY STATUS	DAY	0- 1	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 6:		1000 PPM								
8734	G	80.	87.	89.	90.	106.	86.	75.	91.	79.
8754	G	86.	81.	60.	83.	70.	78.	58.	NA	76.
8759	G	82.	93.	80.	94.	100.	97.	71.	70.	97.
8797	G	78.	88.	83.	89.	77.	62.	76.	77.	72.
MEAN		82.	87.	78.	89.	88.	81.	70.	79.	81.
S.D.		3.4	4.9	12.6	4.5	17.4	14.7	8.3	10.7	11.0
N		4	4	4	4	4	4	4	3	4

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 5.4 (EXPOSURE ASSESSMENT PHASE)
PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 14
SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 6: 1000 PPM											
8734	G		NA	78.	100.	83.	79.	75.	78.	102.	81.
8754	G		76.	84.	72.	65.	85.	79.	89.	86.	102.
8759	G		82.	92.	68.	121.	80.	112.	101.	109.	94.
8797	G		65.	80.	78.	87.	64.	96.	90.	100.	97.
MEAN			74.	84.	80.	89.	77.	91.	90.	99.	94.
S.D.			8.6	6.2	14.3	23.4	9.1	17.0	9.4	9.6	9.0
N			3	4	4	4	4	4	4	4	4

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN
NA = NOT APPLICABLE

TABLE 5.4 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 15

SPONSOR:HSIA INDIVIDUAL WATER CONSUMPTION DURING GESTATION [G/KG/DAY]

	PREGNANCY STATUS	DAY 18-19	19-20	20-21	
DAMS FROM GROUP 6:		1000 PPM			
8734	G	86.	89.	78.	GRAVID, EUTHANIZED DAY 21
8754	G	87.	77.	67.	GRAVID, EUTHANIZED DAY 21
8759	G	108.	100.	99.	GRAVID, EUTHANIZED DAY 21
8797	G	88.	87.	83.	GRAVID, EUTHANIZED DAY 21
MEAN		92.	88.	82.	
S.D.		10.5	9.4	13.3	
N		4	4	4	

G = GRAVID NG = NONGRAVID - WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

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10/22/2018

TABLE 5.5 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 1

SPONSOR:HSIA INDIVIDUAL CALCULATED GESTATION COMPOUND CONSUMPTION [MG/KG/DAY]

PREGNANCY STATUS	DAY 1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 1: 0 PPM								
8742 G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8744 G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8752 G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8794 G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

G = GRAVID NG = NONGRAVID

TABLE 5.5 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 2

SPONSOR:HSIA INDIVIDUAL CALCULATED GESTATION COMPOUND CONSUMPTION [MG/KG/DAY]

PREGNANCY STATUS	DAY	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 1:		0 PPM								
8742	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8744	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8752	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8794	G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

G = GRAVID NG = NONGRAVID

TABLE 5.5 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 3

SPONSOR:HSIA INDIVIDUAL CALCULATED GESTATION COMPOUND CONSUMPTION [MG/KG/DAY]

PREGNANCY STATUS	DAY 18-19	19-20	20-21
DAMS FROM GROUP 1:	0 PPM		
8742 G	0.00	0.00	0.00
8744 G	0.00	0.00	0.00
8752 G	0.00	0.00	0.00
8794 G	0.00	0.00	0.00

G = GRAVID NG = NONGRAVID

TABLE 5.5 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 4

SPONSOR:HSIA INDIVIDUAL CALCULATED GESTATION COMPOUND CONSUMPTION [MG/KG/DAY]

PREGNANCY STATUS	DAY	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 3:		0.25 PPM							
8748	G	0.04	0.03	0.03	0.03	0.03	0.04	0.04	0.04
8749	G	0.04	0.04	0.05	0.06	0.04	0.05	0.04	NA
8753	G	0.02	0.04	0.04	0.05	0.03	0.03	0.04	0.04
8781	G	0.02	0.03	0.03	0.02	0.03	0.03	0.03	NA

G = GRAVID NG = NONGRAVID
NA = NOT APPLICABLE

TABLE 5.5 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 5
SPONSOR:HSIA INDIVIDUAL CALCULATED GESTATION COMPOUND CONSUMPTION [MG/KG/DAY]

PREGNANCY STATUS	DAY 9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 3:	0.25 PPM								
8748 G	0.04	0.04	0.04	0.05	0.05	0.06	0.05	0.05	0.05
8749 G	0.06	0.06	0.06	0.07	0.07	0.07	NA	NA	NA
8753 G	0.04	0.04	0.05	0.05	0.05	0.05	0.06	0.06	0.07
8781 G	0.03	0.03	0.04	0.04	0.04	0.04	NA	NA	0.08

G = GRAVID NG = NONGRAVID
NA = NOT APPLICABLE

TABLE 5.5 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 6

SPONSOR:HSIA INDIVIDUAL CALCULATED GESTATION COMPOUND CONSUMPTION [MG/KG/DAY]

PREGNANCY STATUS	DAY 18-19	19-20	20-21
DAMS FROM GROUP 3:	0.25 PPM		
8748 G	0.04	0.05	0.05
8749 G	NA	0.06	0.04
8753 G	0.05	0.05	0.04
8781 G	0.03	0.03	0.03

G = GRAVID NG = NONGRAVID
NA = NOT APPLICABLE

TABLE 5.5 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 7

SPONSOR:HSIA INDIVIDUAL CALCULATED GESTATION COMPOUND CONSUMPTION [MG/KG/DAY]

PREGNANCY STATUS	DAY 1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 4: 1.5 PPM								
8736 G	0.15	0.18	0.17	0.25	0.19	0.25	0.22	0.22
8745 G	0.25	0.28	0.30	0.26	0.29	0.28	0.28	0.27
8746 G	0.17	0.18	0.26	0.22	0.24	0.28	0.24	0.22
8787 G	0.14	0.14	0.18	NA	0.19	0.15	0.15	0.16

G = GRAVID NG = NONGRAVID
NA = NOT APPLICABLE

TABLE 5.5 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 8

SPONSOR:HSIA INDIVIDUAL CALCULATED GESTATION COMPOUND CONSUMPTION [MG/KG/DAY]

PREGNANCY STATUS	DAY	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 4:		1.5 PPM								
8736	G	0.21	0.24	0.22	0.18	0.18	0.16	0.21	0.21	0.23
8745	G	0.31	0.26	0.23	0.22	0.22	0.24	0.25	0.32	0.26
8746	G	0.25	0.26	0.31	0.21	0.26	0.25	0.25	0.28	0.24
8787	G	0.19	0.19	0.13	0.13	0.13	0.16	0.17	0.18	0.19

G = GRAVID NG = NONGRAVID

TABLE 5.5 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 9

SPONSOR:HSIA INDIVIDUAL CALCULATED GESTATION COMPOUND CONSUMPTION [MG/KG/DAY]

PREGNANCY STATUS	DAY 18-19	19-20	20-21
DAMS FROM GROUP 4:	1.5 PPM		
8736 G	0.17	0.15	0.08
8745 G	NA	0.24	0.24
8746 G	NA	0.27	0.27
8787 G	0.19	0.14	0.14

G = GRAVID NG = NONGRAVID
NA = NOT APPLICABLE

TABLE 5.5 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 10
SPONSOR:HSIA INDIVIDUAL CALCULATED GESTATION COMPOUND CONSUMPTION [MG/KG/DAY]

PREGNANCY STATUS	DAY	1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 5:		500 PPM							
8737	G	51.02	59.43	60.48	61.63	55.87	43.05	65.40	57.00
8750	G	51.93	52.99	61.06	57.60	41.90	57.00	57.00	NA
8761	G	64.62	48.96	76.61	47.23	60.84	61.80	44.40	52.80
8762	G	53.16	68.66	65.66	57.60	59.33	67.73	59.40	68.40

G = GRAVID NG = NONGRAVID
NA = NOT APPLICABLE

TABLE 5.5 (EXPOSURE ASSESSMENT PHASE)
PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 11
SPONSOR:HSIA INDIVIDUAL CALCULATED GESTATION COMPOUND CONSUMPTION [MG/KG/DAY]

PREGNANCY STATUS	DAY	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 5: 500 PPM										
8737	G	48.60	53.40	62.50	48.03	56.50	49.39	59.23	70.73	63.25
8750	G	48.60	55.63	41.81	50.85	39.82	50.03	50.60	60.38	53.48
8761	G	59.40	58.75	55.94	59.89	47.38	58.08	55.78	71.88	57.50
8762	G	66.60	75.60	71.25	71.76	61.59	58.46	73.60	83.95	85.10

G = GRAVID NG = NONGRAVID

TABLE 5.5 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 12

SPONSOR:HSIA INDIVIDUAL CALCULATED GESTATION COMPOUND CONSUMPTION [MG/KG/DAY]

PREGNANCY STATUS	DAY 18-19	19-20	20-21
DAMS FROM GROUP 5:	500 PPM		
8737 G	59.80	57.50	55.20
8750 G	52.90	45.43	53.62
8761 G	64.98	66.70	58.79
8762 G	68.43	77.05	75.90

G = GRAVID NG = NONGRAVID

TABLE 5.5 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 13
SPONSOR:HSIA INDIVIDUAL CALCULATED GESTATION COMPOUND CONSUMPTION [MG/KG/DAY]

	PREGNANCY STATUS	DAY 1- 2	2- 3	3- 4	4- 5	5- 6	6- 7	7- 8	8- 9
DAMS FROM GROUP 6:		1000 PPM							
8734	G	88.74	95.85	96.66	113.84	92.36	80.25	106.11	92.11
8754	G	82.62	64.62	89.14	75.18	83.77	62.06	NA	88.62
8759	G	100.16	85.92	100.96	107.40	103.79	82.79	81.62	113.10
8797	G	94.78	89.14	95.59	82.70	66.34	88.62	89.78	83.95

G = GRAVID NG = NONGRAVID
NA = NOT APPLICABLE

TABLE 5.5 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 14
SPONSOR:HSIA INDIVIDUAL CALCULATED GESTATION COMPOUND CONSUMPTION [MG/KG/DAY]

PREGNANCY STATUS	DAY	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
DAMS FROM GROUP 6:		1000 PPM								
8734	G	NA	90.95	126.20	98.85	94.09	83.93	93.76	122.60	97.36
8754	G	88.62	97.94	90.86	77.42	101.24	88.40	106.98	103.37	122.60
8759	G	95.61	116.10	80.99	144.11	89.52	134.62	121.40	131.02	112.99
8797	G	75.79	100.96	92.90	103.62	71.62	115.39	108.18	120.20	116.59

G = GRAVID NG = NONGRAVID
NA = NOT APPLICABLE

TABLE 5.5 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 15
SPONSOR:HSIA INDIVIDUAL CALCULATED GESTATION COMPOUND CONSUMPTION [MG/KG/DAY]

PREGNANCY STATUS	DAY	18-19	19-20	20-21
DAMS FROM GROUP 6:		1000 PPM		
8734	G	103.37	106.98	93.76
8754	G	104.57	92.55	80.53
8759	G	129.82	120.20	127.12
8797	G	105.78	104.57	106.57

G = GRAVID NG = NONGRAVID

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10/22/2018
R:11/05/2018

TABLE 5.6 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 1

SPONSOR:HSIA INDIVIDUAL PREGNANCY STATUS

DAMS FROM GROUP 1: 0 PPM	MATERNAL GROSS OBSERVATION
8742	GRAVID
8744	GRAVID
8752	GRAVID
8794	GRAVID

TABLE 5.6 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 2

SPONSOR:HSIA INDIVIDUAL PREGNANCY STATUS

DAMS FROM GROUP 3: 0.25 PPM	MATERNAL GROSS OBSERVATION
8748	GRAVID
8749	GRAVID
8753	GRAVID
8781	GRAVID

TABLE 5.6 (EXPOSURE ASSESSMENT PHASE)
PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 3
SPONSOR:HSIA INDIVIDUAL PREGNANCY STATUS

DAMS FROM GROUP 4: 1.5 PPM	MATERNAL GROSS OBSERVATION
8736	GRAVID
8745	GRAVID
8746	GRAVID
8787	GRAVID

TABLE 5.6 (EXPOSURE ASSESSMENT PHASE)

PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 4

SPONSOR:HSIA INDIVIDUAL PREGNANCY STATUS

DAMS FROM GROUP 5: 500 PPM	MATERNAL GROSS OBSERVATION
8737	GRAVID
8750	GRAVID
8761	GRAVID
8762	GRAVID

TABLE 5.6 (EXPOSURE ASSESSMENT PHASE)
PROJECT NO.: 00459506T AN ORAL STUDY OF THE EFFECTS OF TCE ON FETAL HEART DEV IN RATS PAGE 5
SPONSOR:HSIA INDIVIDUAL PREGNANCY STATUS

DAMS FROM GROUP 6: 1000 PPM	MATERNAL GROSS OBSERVATION
8734	GRAVID
8754	GRAVID
8759	GRAVID
8797	GRAVID

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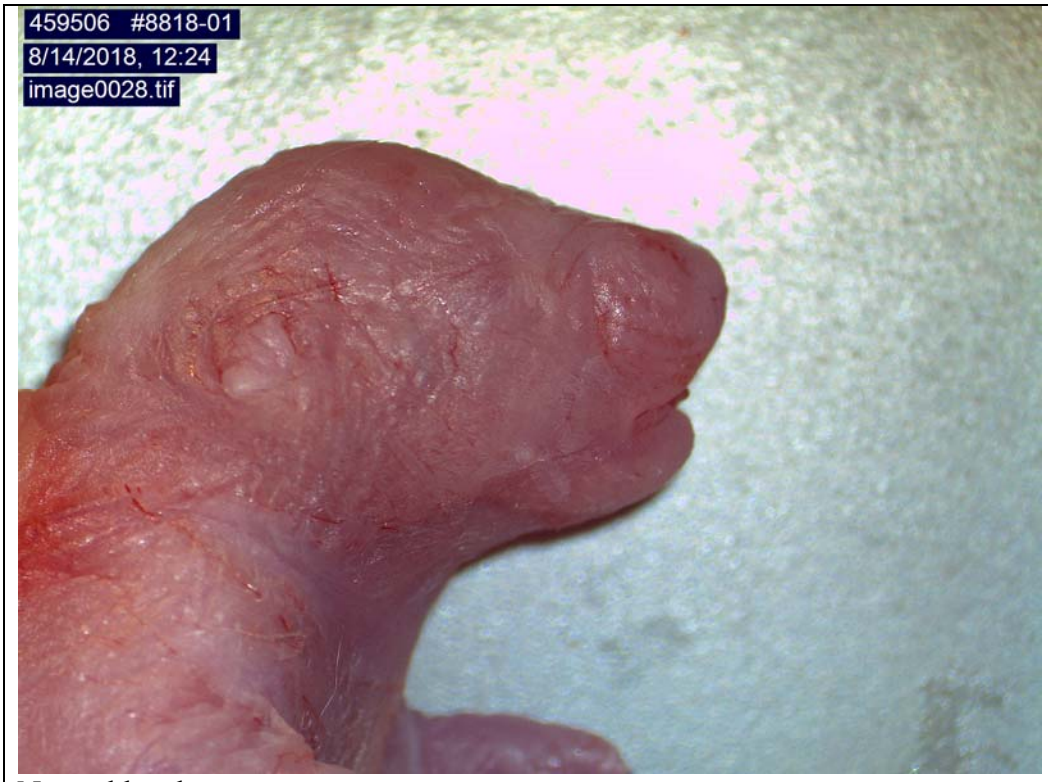
09/24/2018
R:09/24/2018

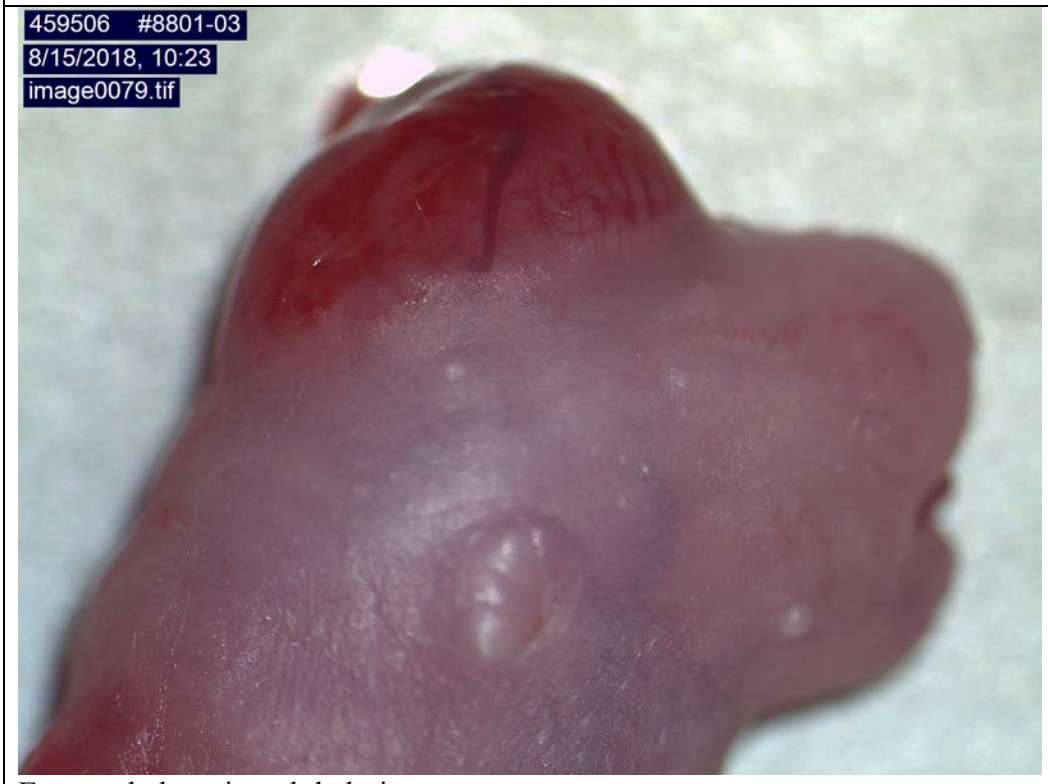
APPENDIX 6

Photographs of Representative Fetal Malformations

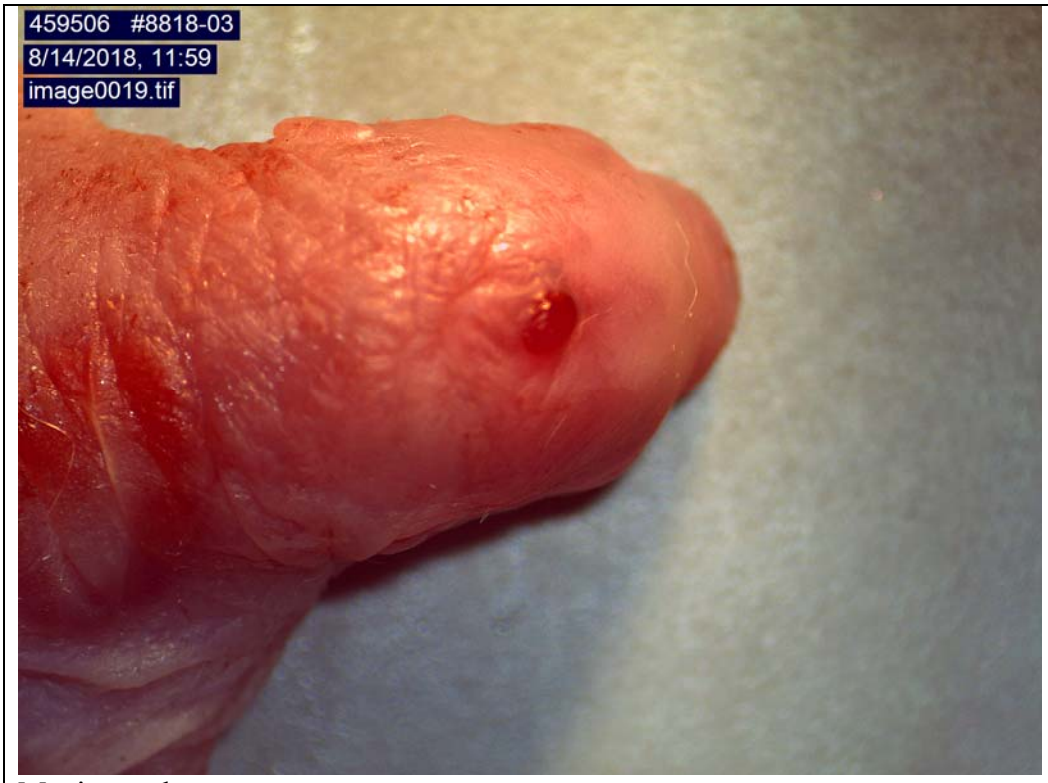
PHOTOGRAPHS OF REPRESENTATIVE FETAL MALFORMATIONS



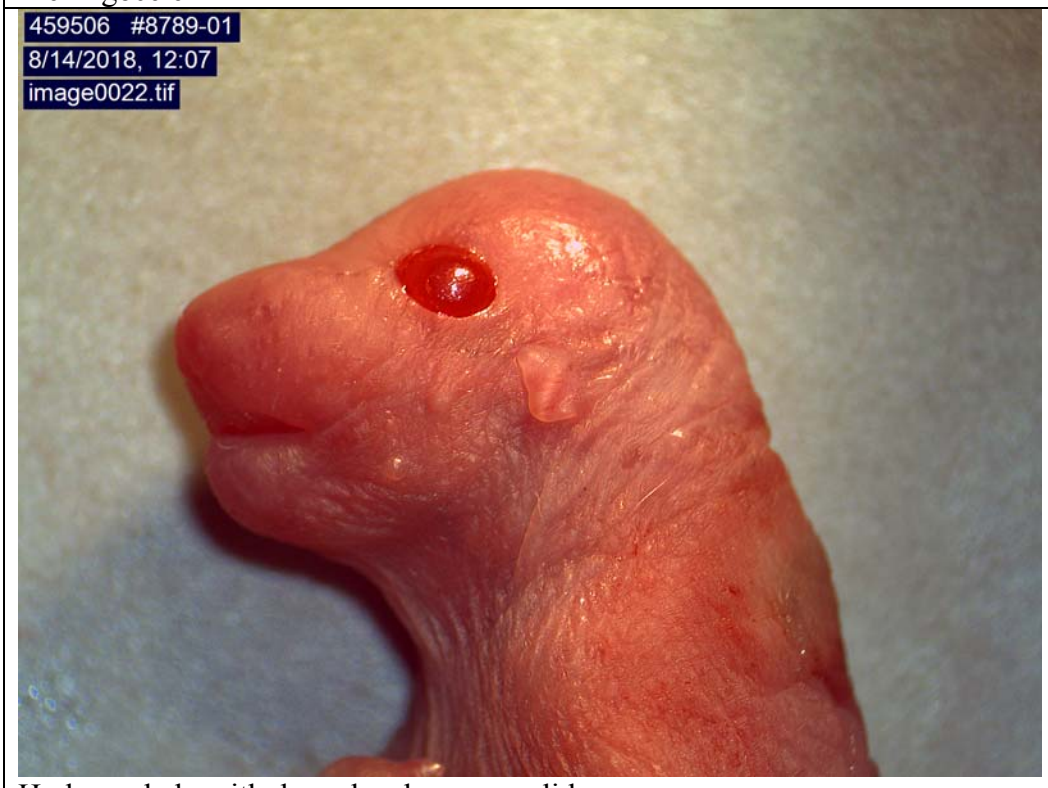
Normal head



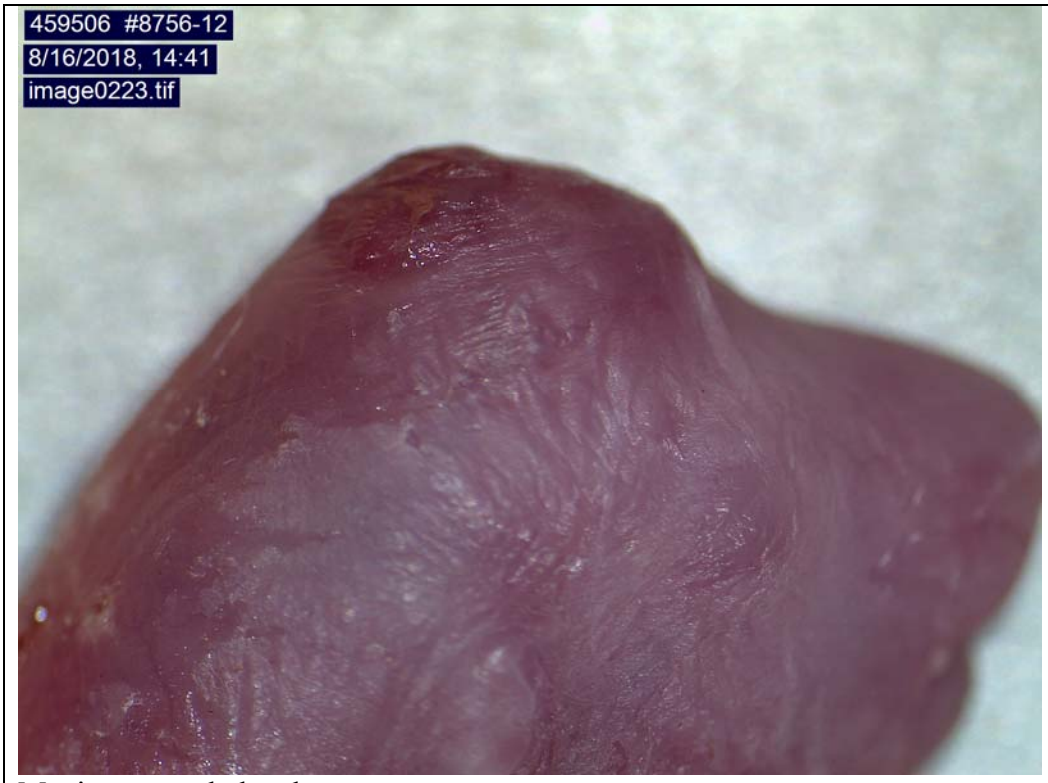
Exencephaly, microphthalmia



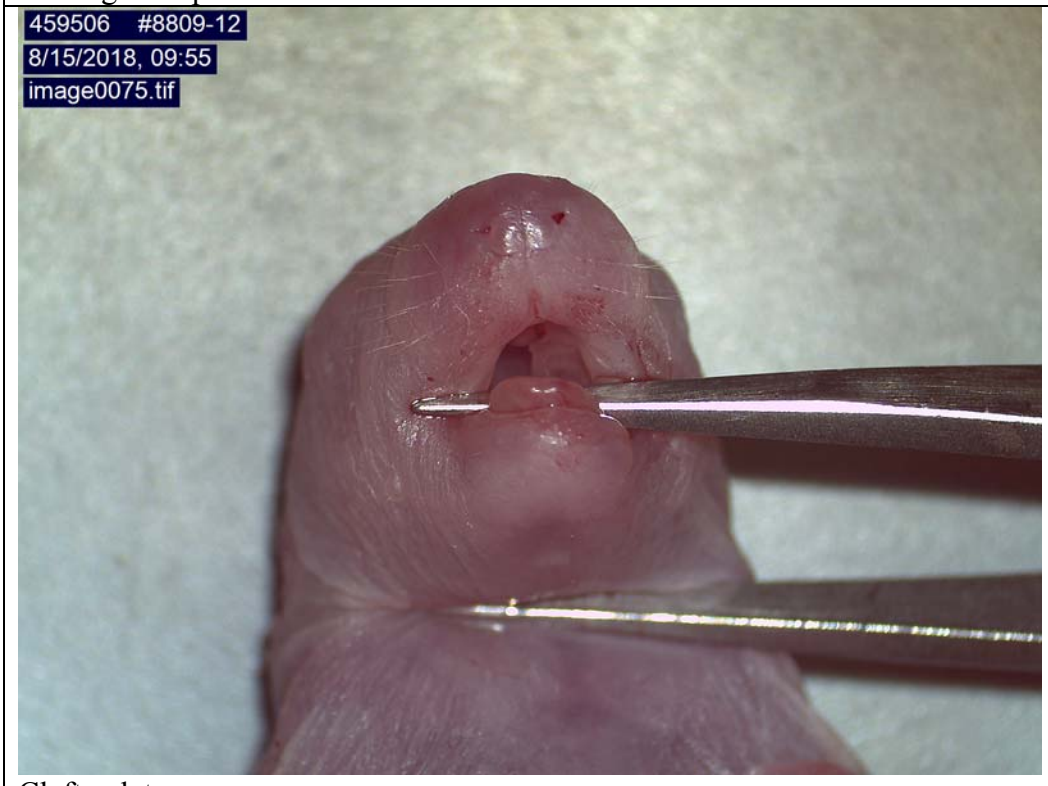
Meningocele



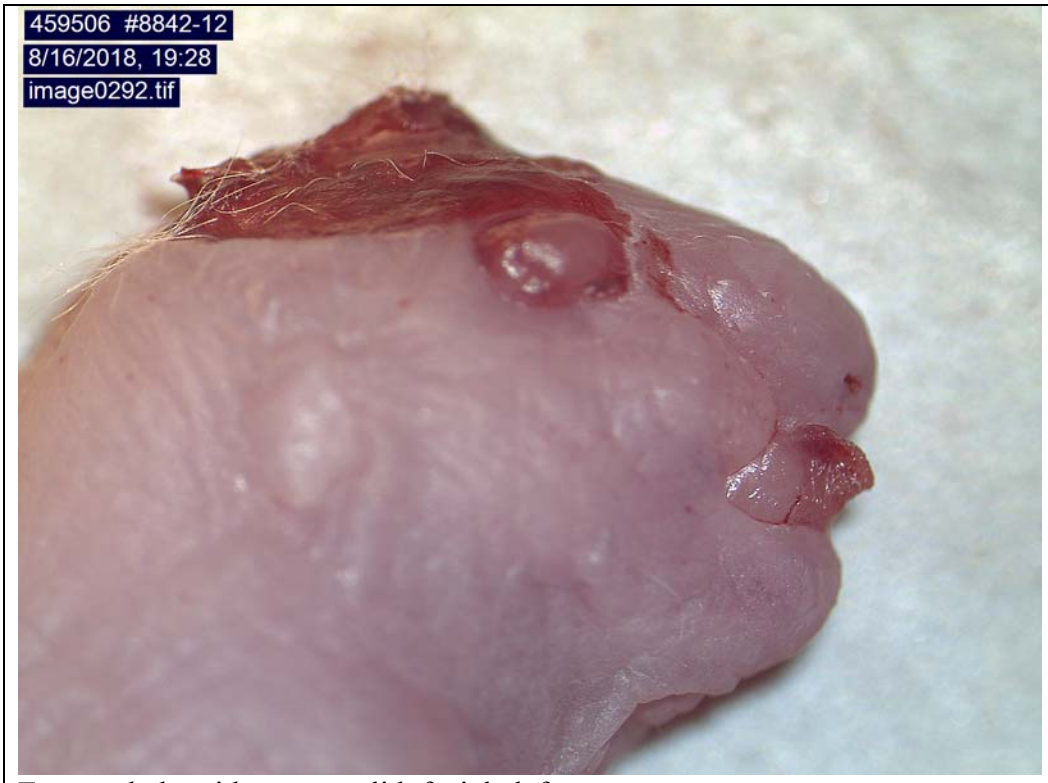
Hydrocephaly with dome head, open eyelide



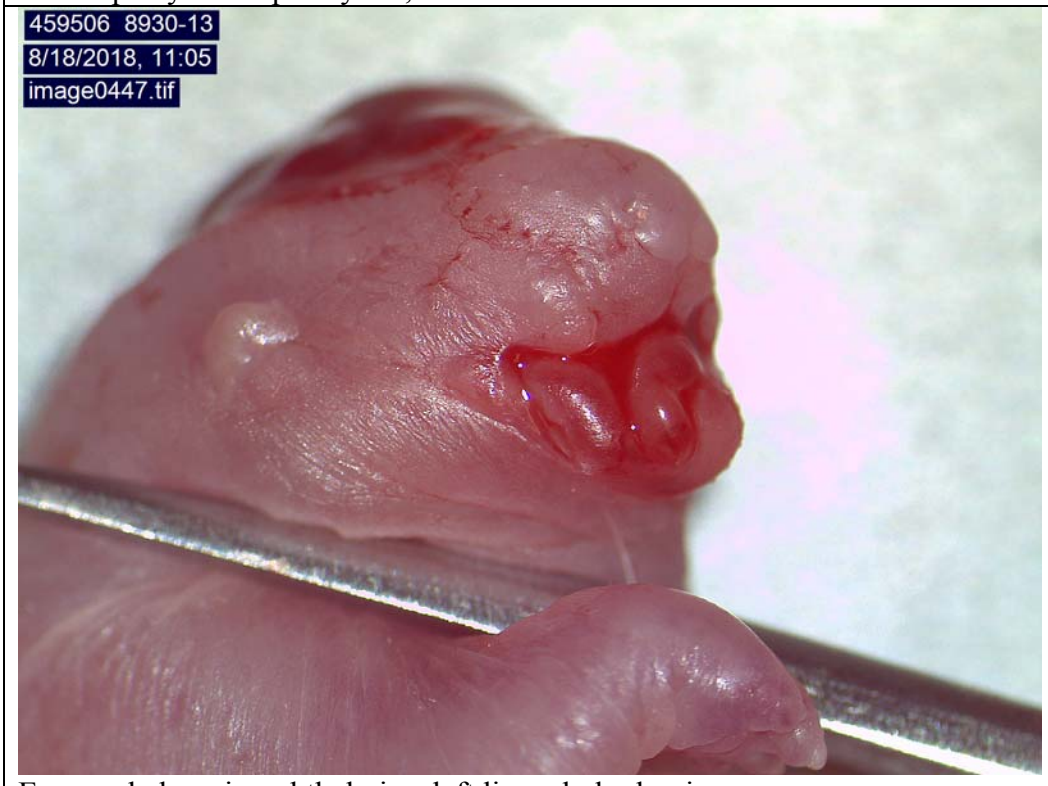
Meningoencephalocele



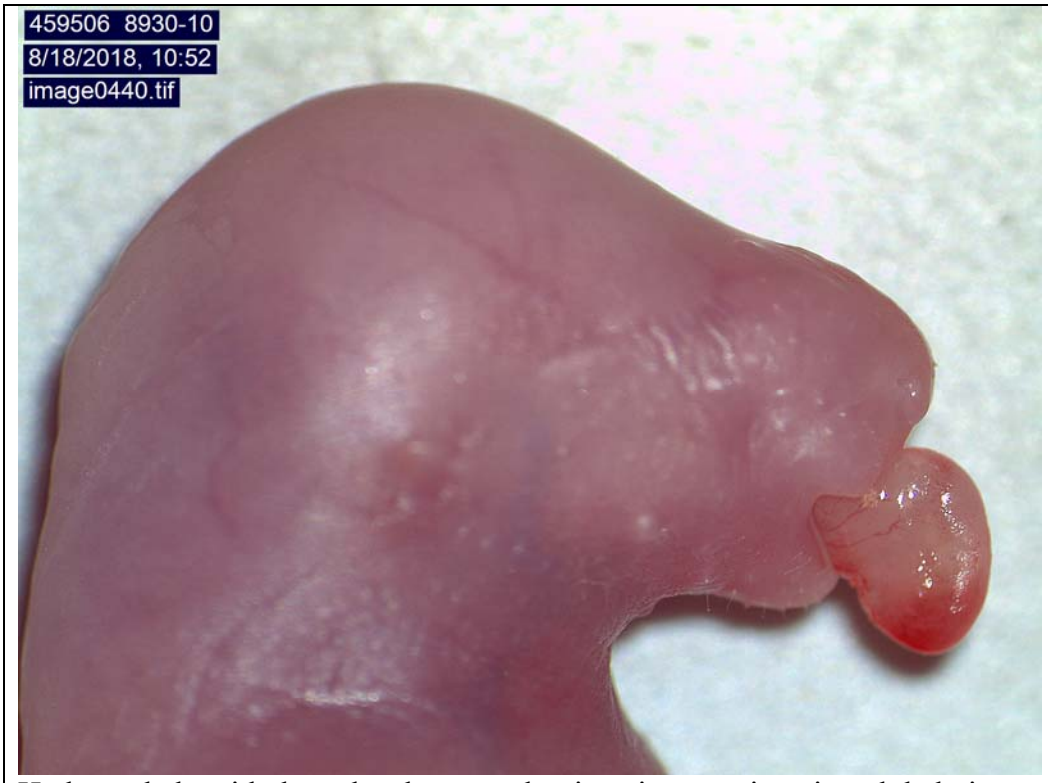
Cleft palate



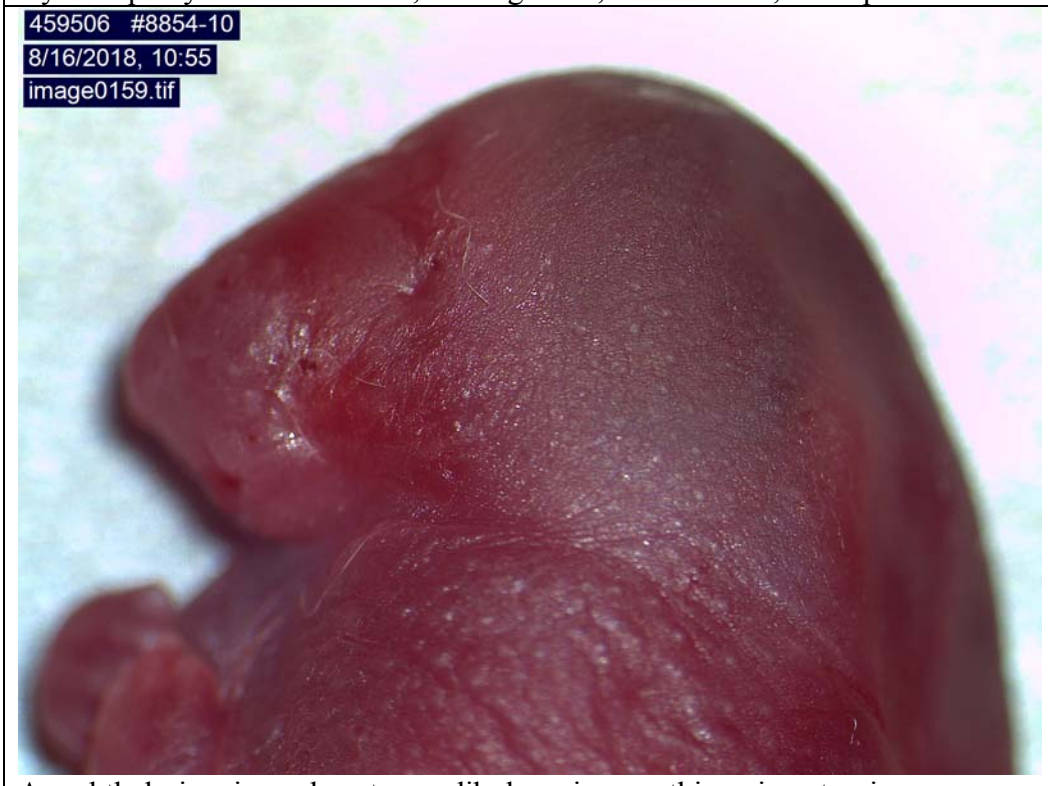
Exencephaly with open eyelid, facial cleft



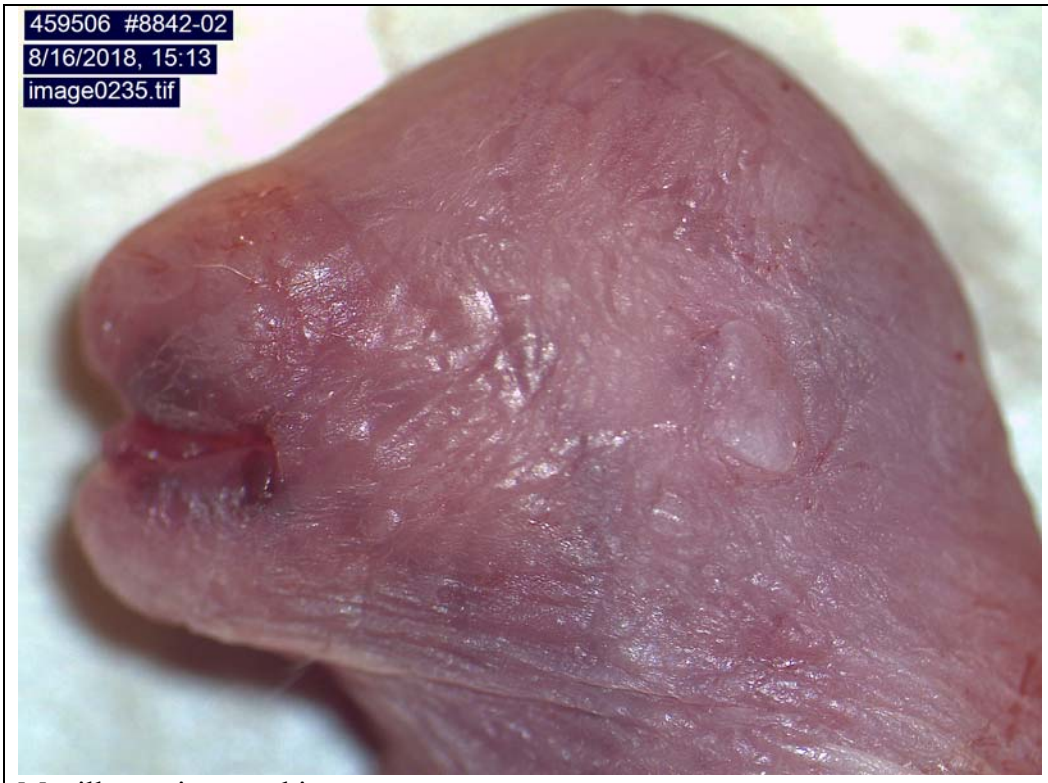
Exencephaly, microphthalmia, cleft lip, ankyloglossia



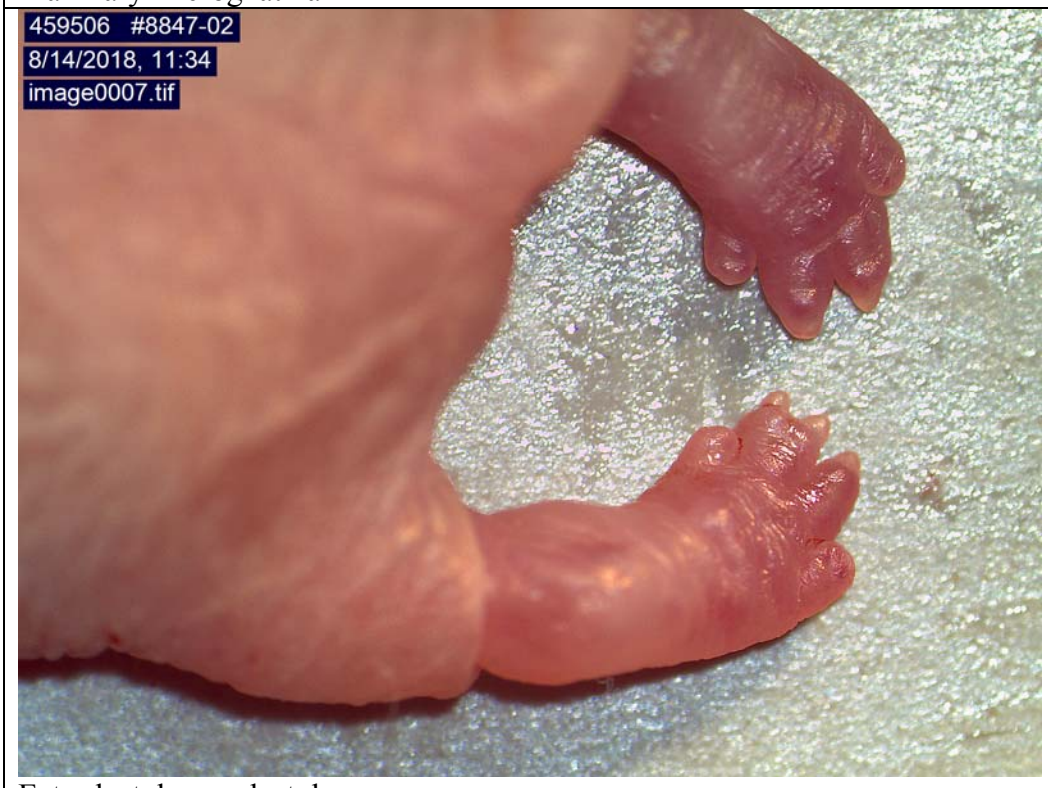
Hydrocephaly with dome head, macroglossia, microstomia, microphthalmia



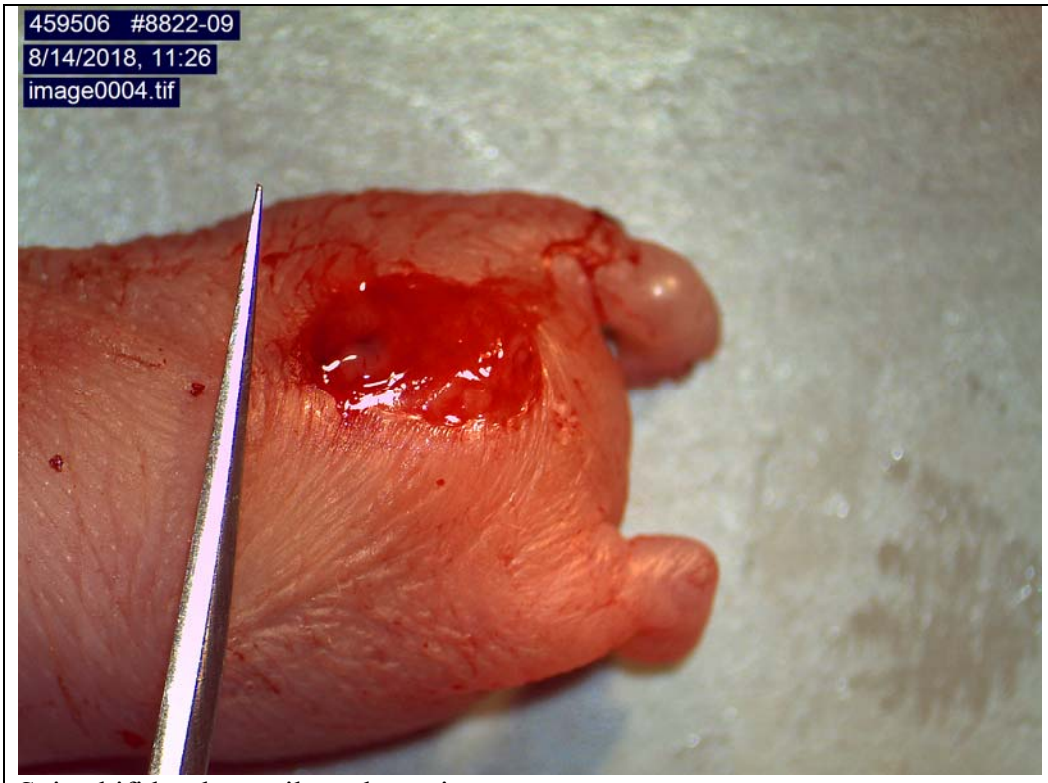
Anophthalmia, pinna absent, mandibular micrognathia, microstomia



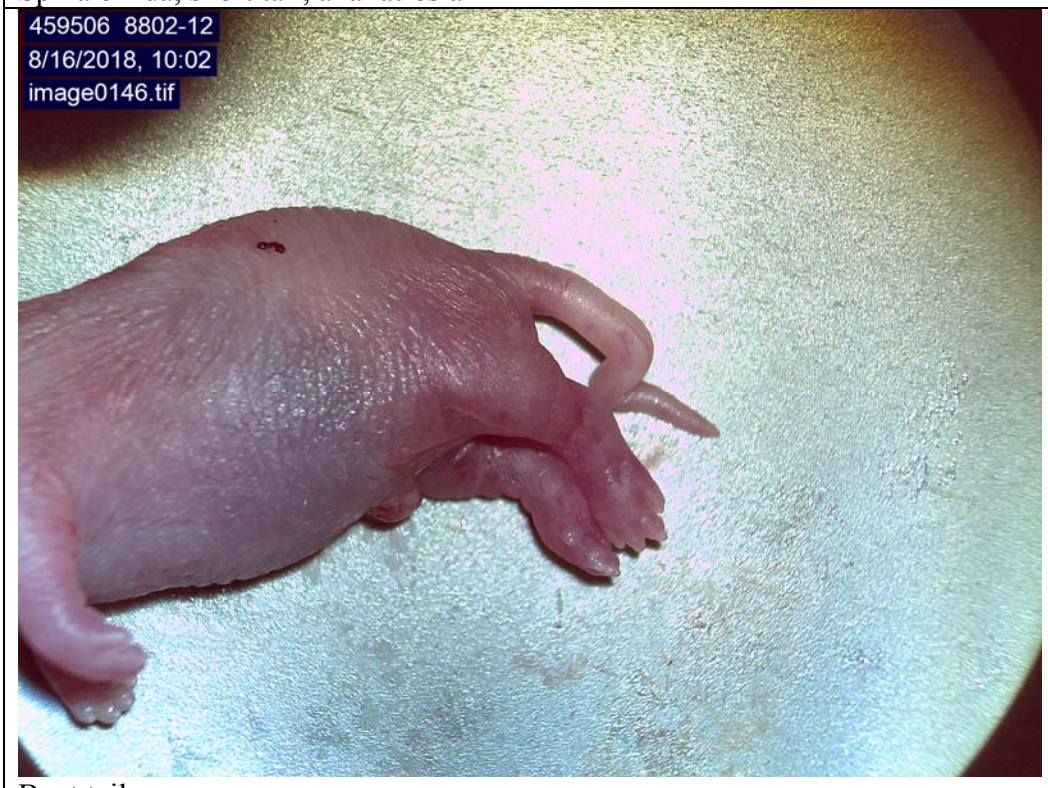
Maxillary micrognathia



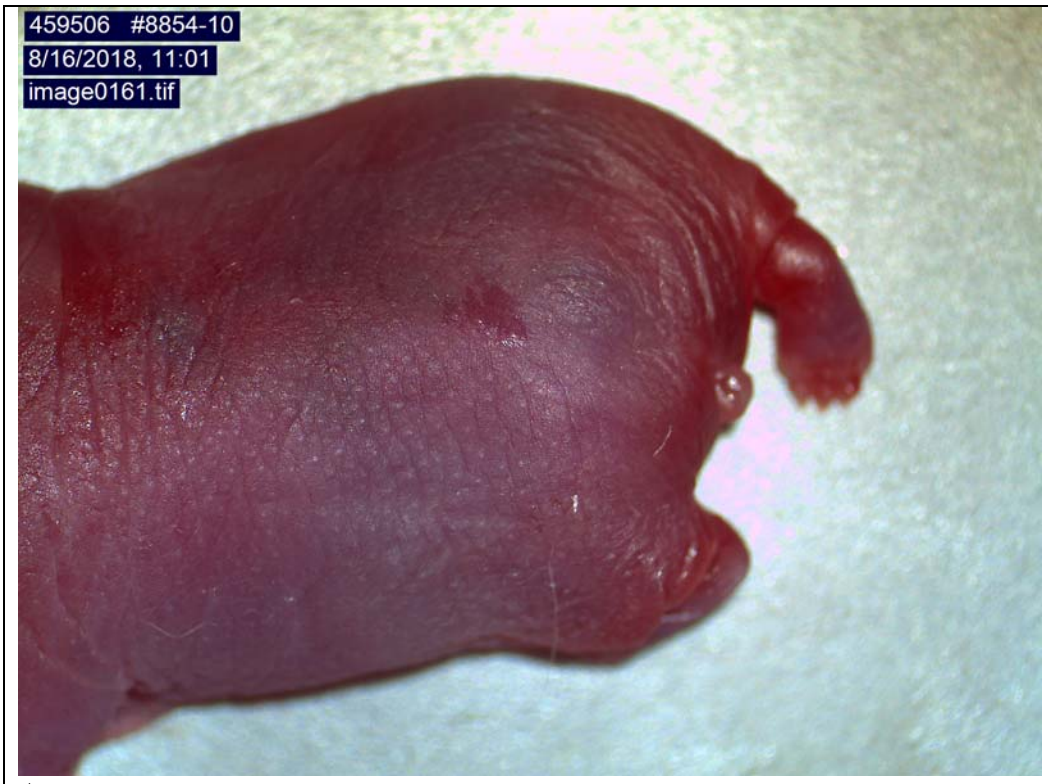
Ectrodactyly, syndactyly



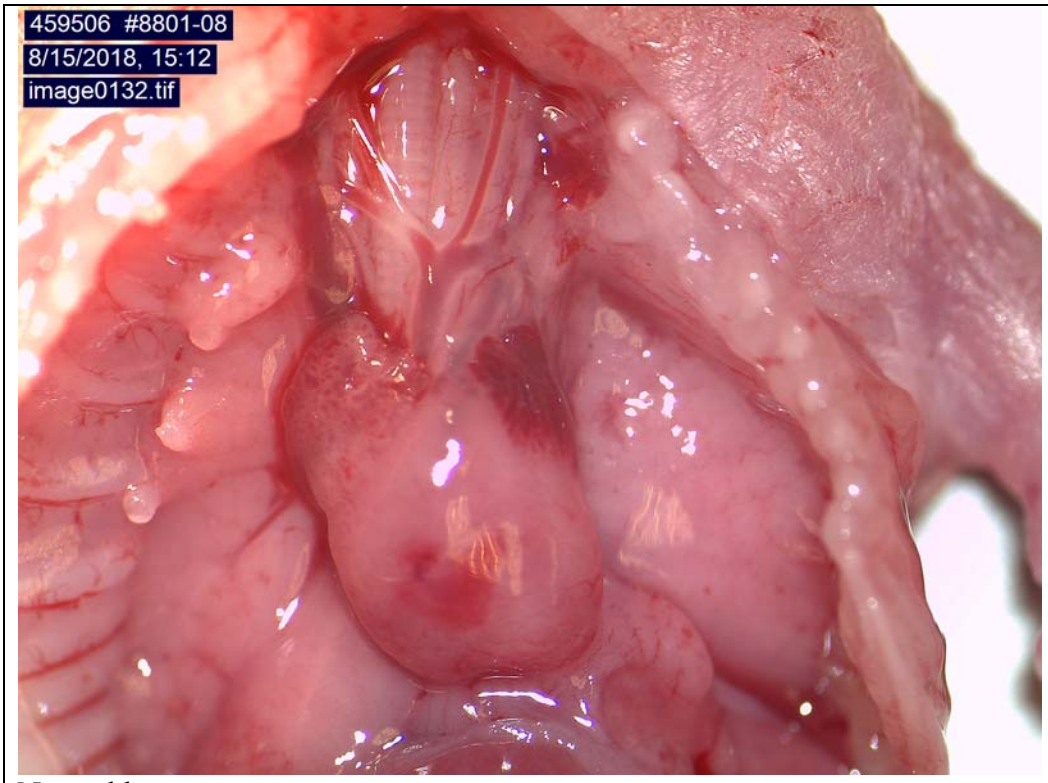
Spina bifida, short tail, anal atresia



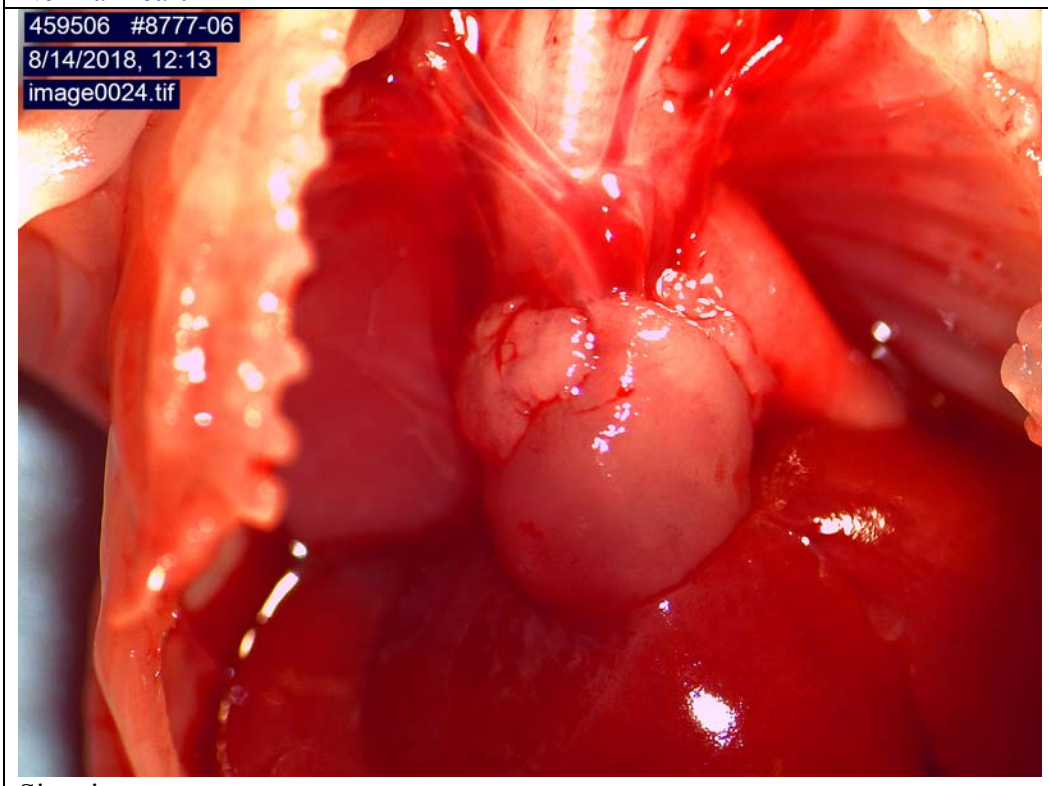
Bent tail



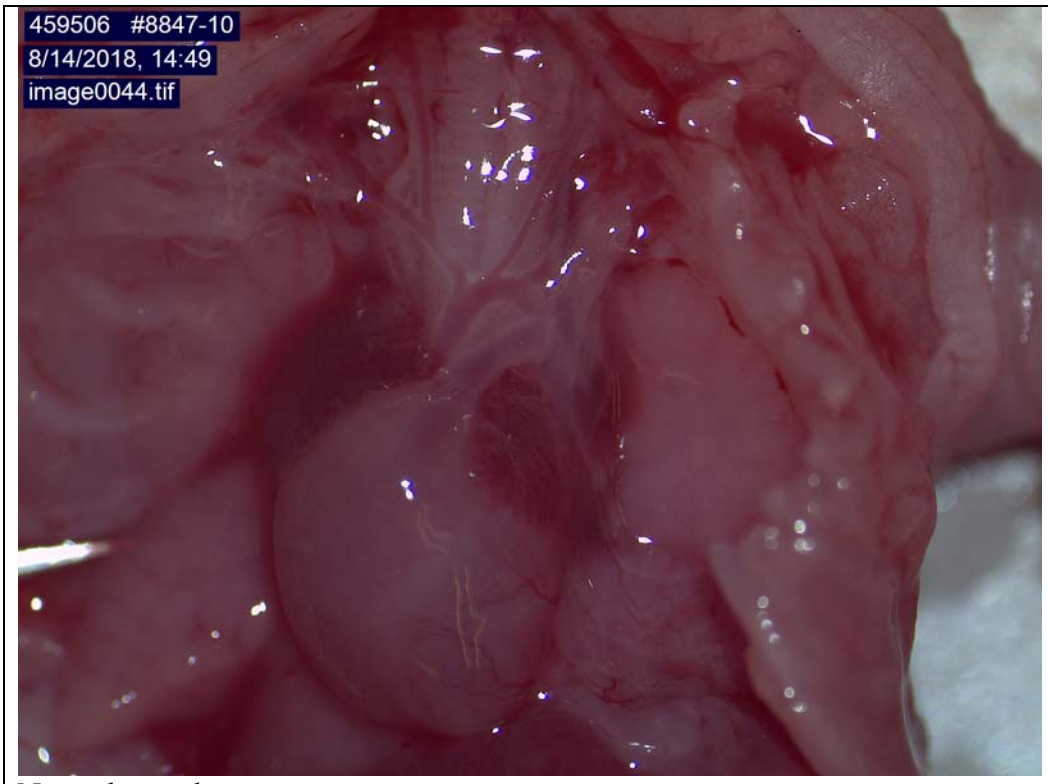
Anury



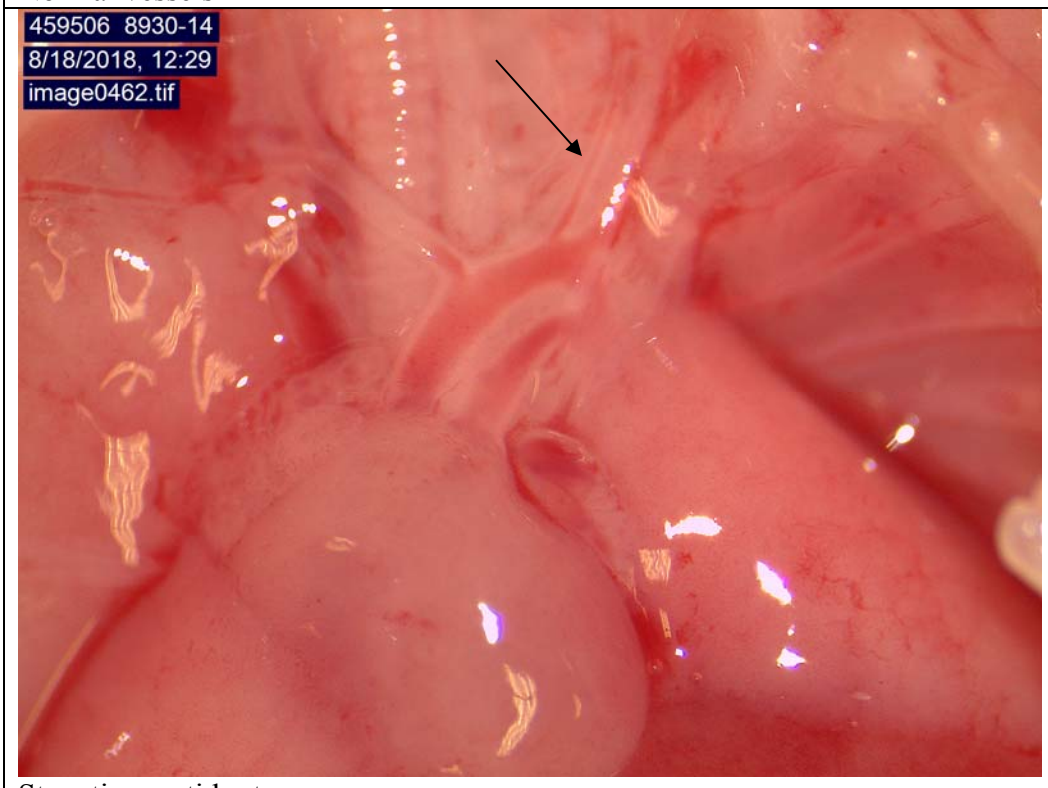
Normal heart



Situs inversus



Normal vessels



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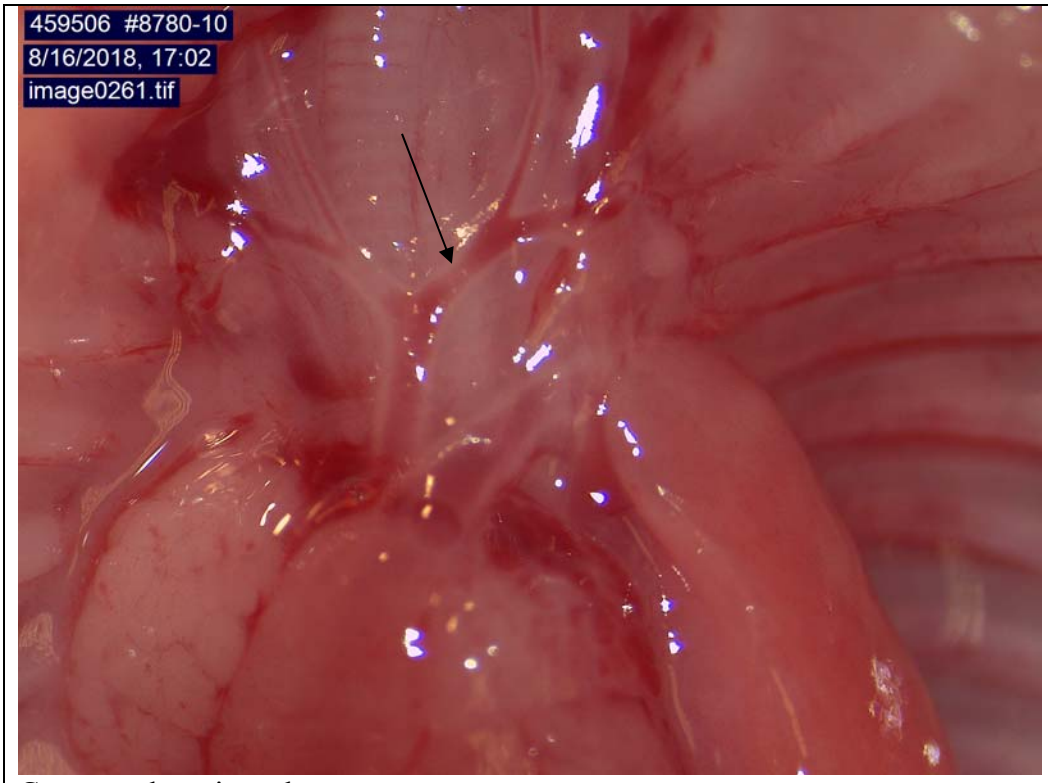
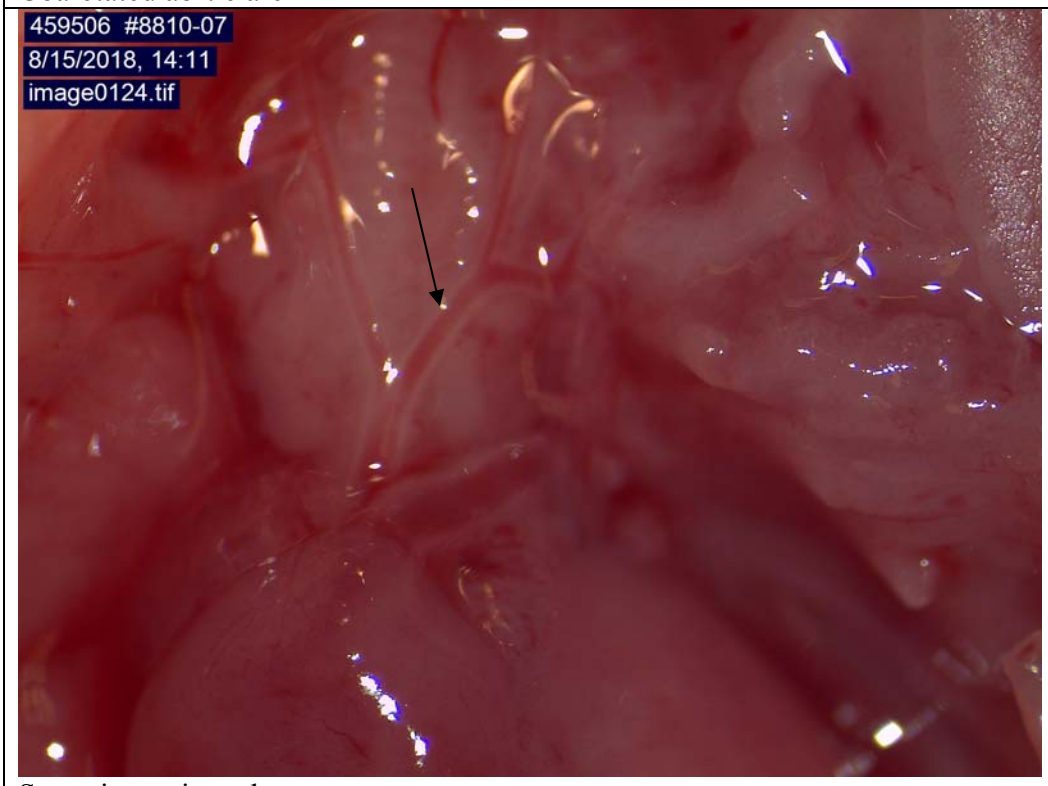
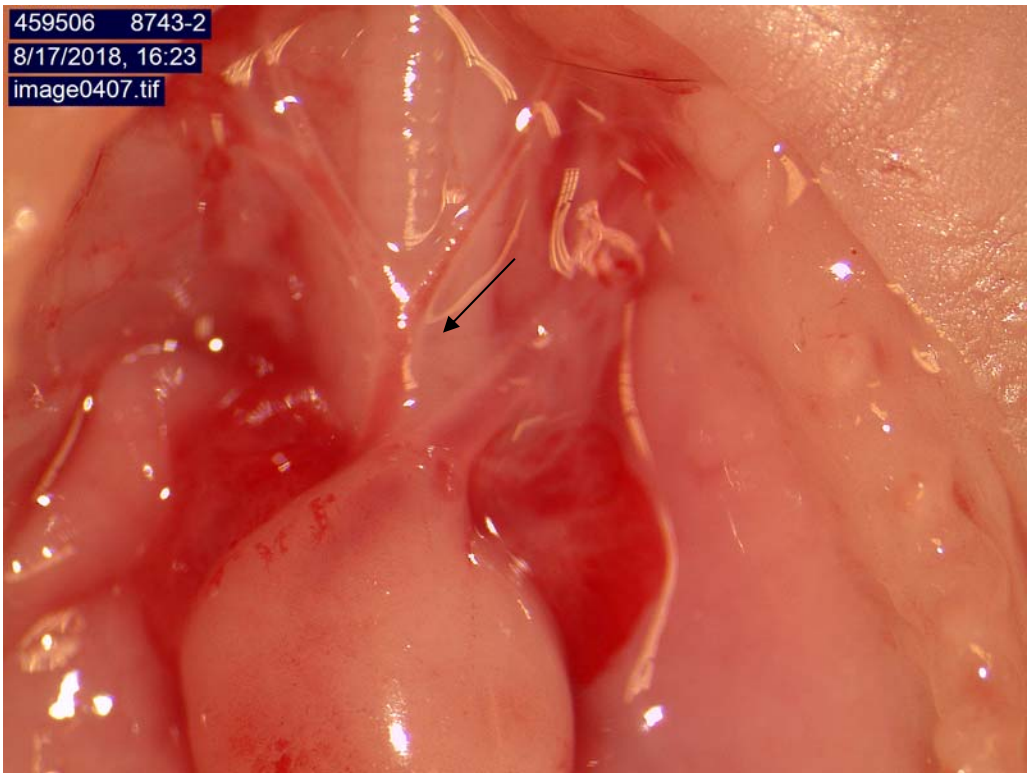


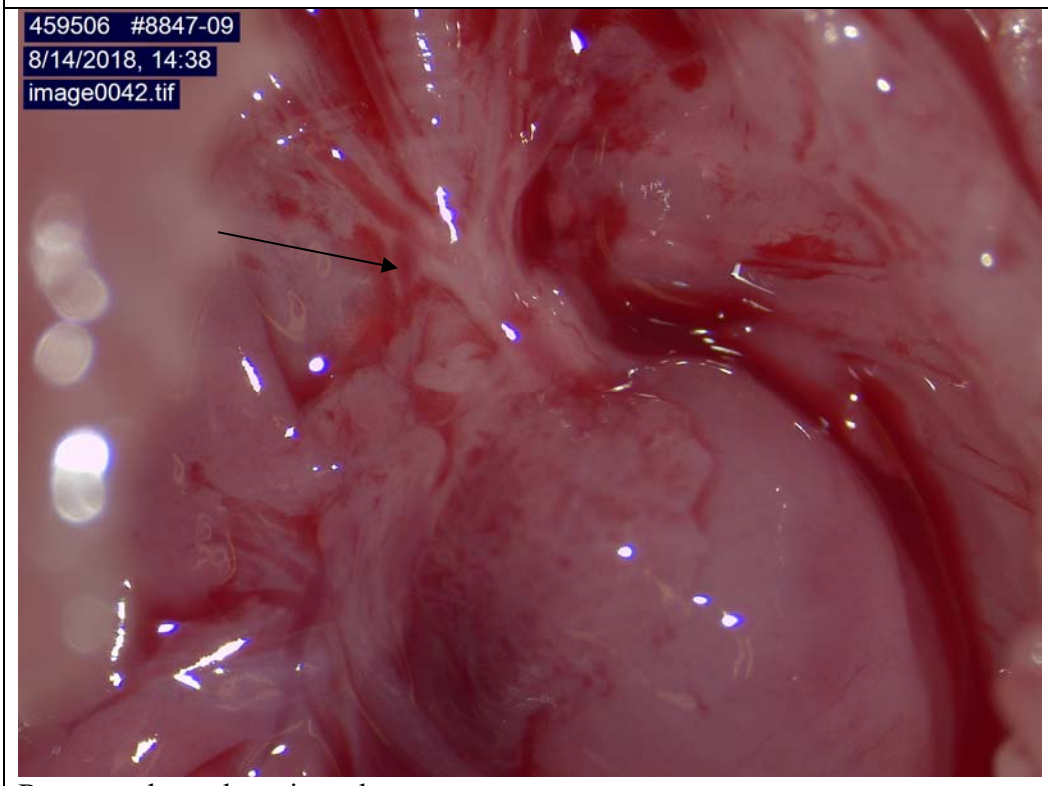
Coarctated aortic arch



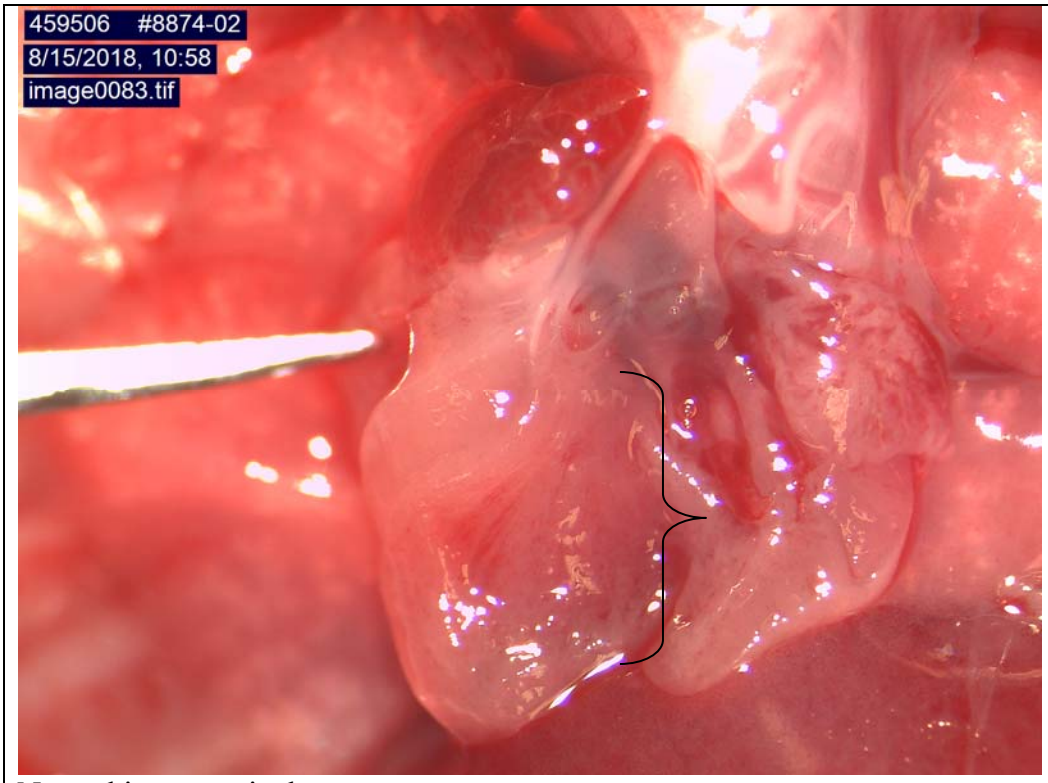
Stenotic aortic arch



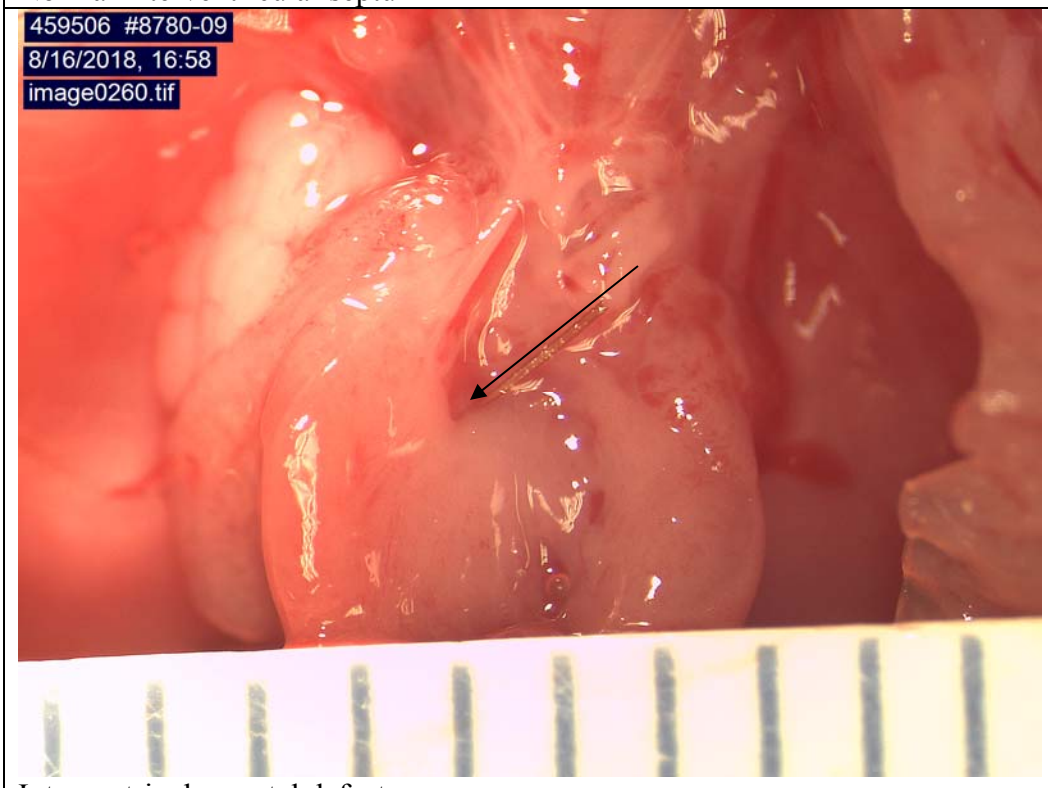
Interrupted aortic arch



Retroesophageal aortic arch



Normal interventricular septum



Interventricular septal defect

APPENDIX 7

Bioanalytical Report

charles river

AUDITED DRAFT REPORT

Study Phase: Bioanalytical

Laboratory Project ID 00459506

PERFORMING LABORATORY:
Charles River Laboratories Ashland, LLC
1407 George Road
Ashland, OH 44805
United States

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REPORT APPROVAL

Joelle M. Lucarell, BS
Research Scientist II, Bioanalytical Chemistry
Individual Scientist

RESPONSIBLE PERSONNEL

Individual Scientist	Joelle M. Lucarell, BS
Site Director	Erica L. Lashley, MBA, BS, LAT
Scientific Report Review	Seth R. Bell, PhD
Bioanalytical Chemistry Personnel	Shatha Matar, BS

1. INTRODUCTION

1.1. Objective

To quantitate trichloroacetic acid (TCA) in rat plasma samples.

1.2. Study Design

Experimental results for TCA were determined using an ultra-high performance liquid chromatography with tandem mass spectrometry (UHPLC-MS/MS) method in the negative electrospray ionization (ESI-) mode. The method was validated in a previous study over the concentration range of 150 to 2500 ng/mL using a 0.050-mL sample.[1]

Analyte (TCA) and internal standard (IS, trifluoroacetic acid [TFA]) were extracted from rat plasma by a protein precipitation extraction procedure and then analyzed by UHPLC-MS/MS using a Phenomenex Luna 3-µm particle-size NH2 100 Å, 50 x 2 mm column. The analyte/IS peak area ratios (y) and the theoretical concentrations (x) of the calibration samples were fit to a quadratic regression with $1/x^2$ weighting, excluding the origin.

1.3. Key Study Dates

First date of analysis	21 Sep 2018
Last date of analysis	27 Sep 2018

1.4. Sample Receipt

In total, 80 samples were received in 3 transfers on 02 Aug 2018, 07 Aug 2018, and 17 Aug 2018. Samples were received in good condition from the Clinical Pathology Laboratory and were stored frozen (approximately -70°C) until the time of analysis. All 80 samples were analyzed.

1.5. Computerized Systems

Critical computerized systems used in the study are listed below. All computerized systems used in the conduct of this study have been validated; when a particular system has not satisfied all requirements, appropriate administrative and procedural controls were implemented to assure the quality and integrity of data.

As Charles River Ashland transitions between various computer systems, the study number may appear as 00459506, 459506, or WIL-459506 in the data records and report.

Text Table 1
Critical Computerized Systems

Program/System	Description
Analyst®, ver. 1.5.2	Operation of the LC/MS/MS including data acquisition and integration.
Archive Management System (AMS), ver. 3.0	In-house developed application for storage, maintenance, and retrieval of information for archived materials (e.g., lab books, study data, wet tissues, slides, etc.).
Logbook™ ELN, ver. 5.5	System (Instem) used to document study events.
Metasys DDC Electronic Environmental Control System, ver. 12.04	In-house developed system used to record and report refrigerator/freezer conditions.
Microsoft Office 2007 or higher	Used in conjunction with the publishing software to generate study reports. Used in conjunction with data acquisition software for statistical calculations.
Provantis Dispense™, ver. 9.3.1.4	Comprehensive system (Instem LSS Limited) to manage test materials, including receipt, formulation instructions, and accountability.
Watson LIMS™, ver. 7.3.0.01	Laboratory Information Management System used for sample tracking, run planning, quantitation, and reporting results.

2. MATERIALS AND METHODS

2.1. Assay Overview

The materials and methods used during the course of these analyses are documented in Laboratory Method (LM) No. 459.503A.RP (presented in Appendix 2).

2.2. Reference and Internal Standards

2.2.1. Reference Standard

Identification: Trichloroacetic Acid (TCA)

Batch (Lot) No.: MKCC6282

Log No.: ARS-012302A

Receipt Date: 21 Jun 2018

Retest Date: 28 Feb 2019

Physical Description: Off-white solid

Purity: 100.2%

Purity Correction: 1.00

Storage Conditions: Kept in a refrigerator set to maintain 4°C

Supplier: Sigma-Aldrich

2.2.2. Internal Standard

Identification: Trifluoroacetic Acid (TFA)

Batch (Lot) No.: SHBJ7034

Log No.: ARS-012341A

Receipt Date: 27 Jul 2018

Retest Date: 30 Nov 2021

Physical Description: Liquid

Purity: 99.2%

Water Content: 0.01%

Purity Correction: 1.00

Storage Conditions: Kept in a controlled temperature area set to maintain 21°C

Supplier: Sigma-Aldrich

2.3. Reference and Internal Standards Characterization

The supplier provided to the Testing Facility documentation of the identity, strength, purity, composition, and stability for the reference and internal standards. Certificates of Analysis were provided to the Testing Facility and are presented in Appendix 1.

2.4. Reference and Internal Standards Inventory and Disposition

Records of the receipt, distribution, and storage of reference and internal standards were maintained. All unused reference and internal standards were maintained for use in future studies.

3. RESULTS

Eighty rat plasma samples collected from animals in Group 1 and Group 3 through Group 6 on Gestation Days (GD) 8, 12, and 21 were analyzed for TCA concentrations. A summary and description of the analytical runs is provided in Table 1.

The results for TCA in rat plasma samples are summarized in Table 2. All samples were not analyzed within established stability, since long-term frozen stability at approximately -70ºC is ongoing.

In addition to the experimental samples, each analytical run consisted of a minimum of duplicate calibration standards at 8 concentrations, at least 1 blank matrix sample, at least 1 blank matrix with IS sample, and at least duplicate quality control (QC) samples at a minimum of

3 concentrations. The acceptance criteria described in SOP BAC-008 were required to be met for an analytical run to be accepted. The results of the calibration samples, QC samples, and curve parameters for the assays for TCA are summarized in Table 3, Table 4, and Table 5, respectively.

Samples where no peak was detected or the interpolated concentration was less than the assay's lower limit of quantitation (LLOQ) are labeled as "below the limit of quantitation (BLQ) < (150)" for TCA concentrations.

Retention times for TCA and IS, TFA were approximately 0.78 and 0.65 minutes, respectively. The total run time for each analysis was 2.00 minutes. All reported results are from analytical runs that met the acceptance criteria.

Figure 1 through Figure 8 illustrate typical chromatograms for TCA. Figure 9 is a representative calibration curve regression.

3.1. Blood TCA Level Assessment

Mean TCA concentrations in plasma were calculated for dam and fetal samples in Group 1 and Group 3 through Group 6 from samples collected on GD 8, GD12, and GD 21 (Text Table 2).

Text Table 2
Summary Exposure Data

Interval		Group 1 (ng/mL)	Group 2	Group 3 (ng/mL)	Group 4 (ng/mL)	Group 5 (ng/mL)	Group 6 (ng/mL)
		(0 ppm)	-	(0.25 ppm)	(1.5 ppm)	(500 ppm)	(1000 ppm)
Gestation Day 8	Mean	BLQ<(150)	NA	BLQ<(150)	BLQ<(150)	1710.0	1695.0
	SD	NA	NA	NA	NA	436.3	592.0
	N	4	NA	4	4	4	4
Gestation Day 12	Mean	BLQ<(150)	NA	BLQ<(150)	BLQ<(150)	1805.0	2237.5
	SD	NA	NA	NA	NA	878.1	622.2
	N	4	NA	4	4	4	4
Gestation Day 21	Mean	BLQ<(150)	NA	BLQ<(150)	BLQ<(150)	1105.3	1164.5
(DAM)	SD	NA	NA	NA	NA	235.4	365.7
	N	4	NA	4	4	4	4
Gestation Day 21	Mean	BLQ<(150)	NA	BLQ<(150)	BLQ<(150)	1165.0	1235.5
(FETAL)	SD	NA	NA	NA	NA	273.1	432.9
	N	4	NA	4	4	4	4
Maternal/Fetal Ratio		NA	NA	NA	NA	0.95	0.94
(Summary)							
Maternal/Fetal Ratio			Dam	Fetal	M/F Ratio		
(Individual)	Group 5	8737	1400	1570	0.89		
	(500 ppm)	8750	1190	1030	1.16		
		8761	907	980	0.93		
		8762	924	1080	0.86		
	Group 6	8734	1440	1470	0.98		
	(1000 ppm)	8754	1110	1180	0.94		
		8759	1440	1640	0.88		
		8797	668	652	1.02		

4. CONCLUSIONS

Experimental study samples were analyzed using a validated UHPLC-MS/MS procedure in the ESI- mode to determine TCA concentrations in rat plasma samples. All reported values are from analytical runs that met the acceptance criteria.

5. REFERENCES

1 Lucarell, J. Validation of an UHPLC-MS/MS Assay for the Determination of Trichloroacetic Acid Concentrations in Rat Plasma (Study No. 00459503). Charles River, Ashland, OH, **Draft**.

FIGURES

Figure 1
Representative Chromatogram of a Processed Blank Rat Plasma Sample, Analyzed for TCA

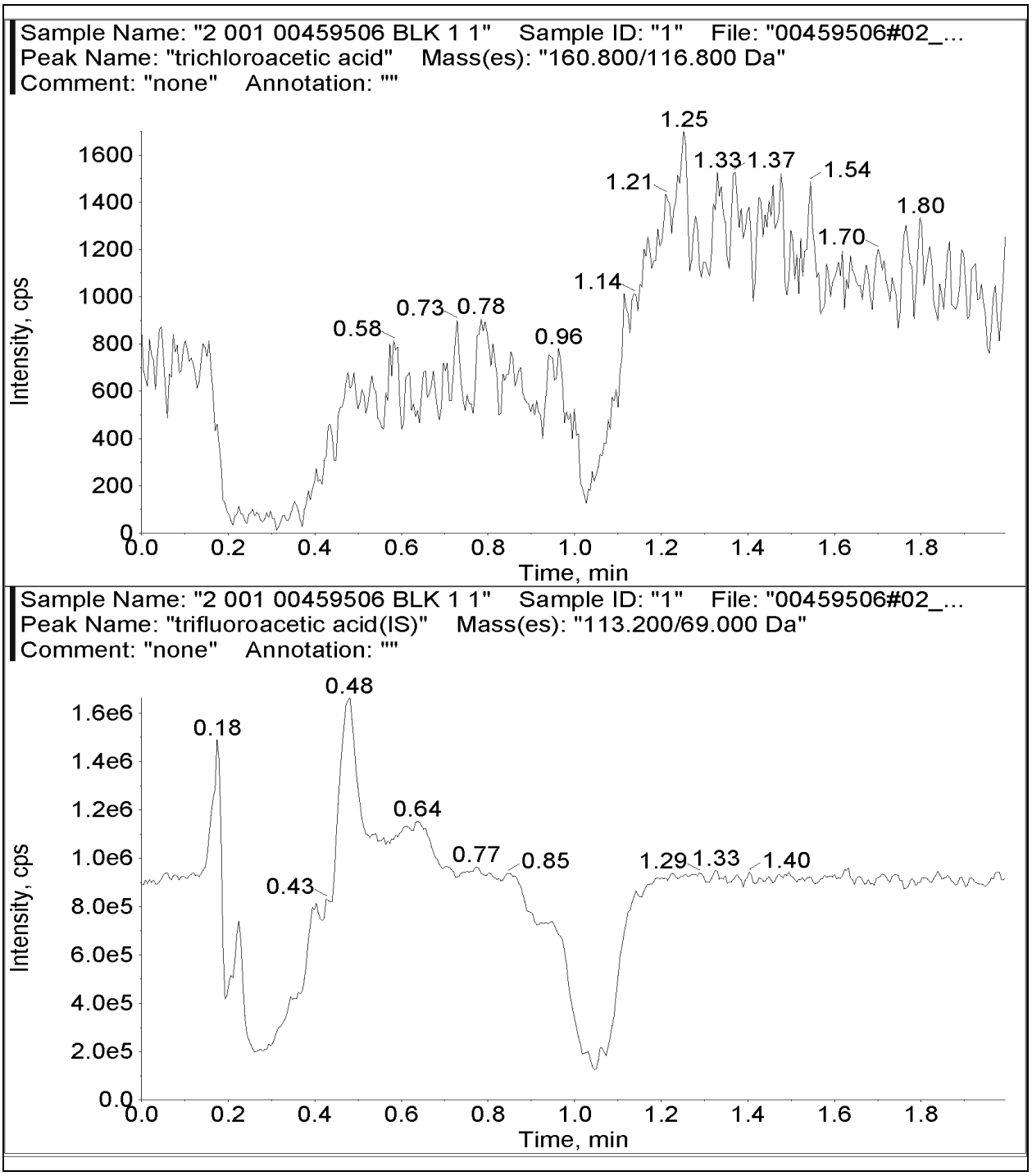


Figure 2
Representative Chromatogram of a Processed Blank Rat Plasma Sample with TFA (IS), Analyzed for TCA

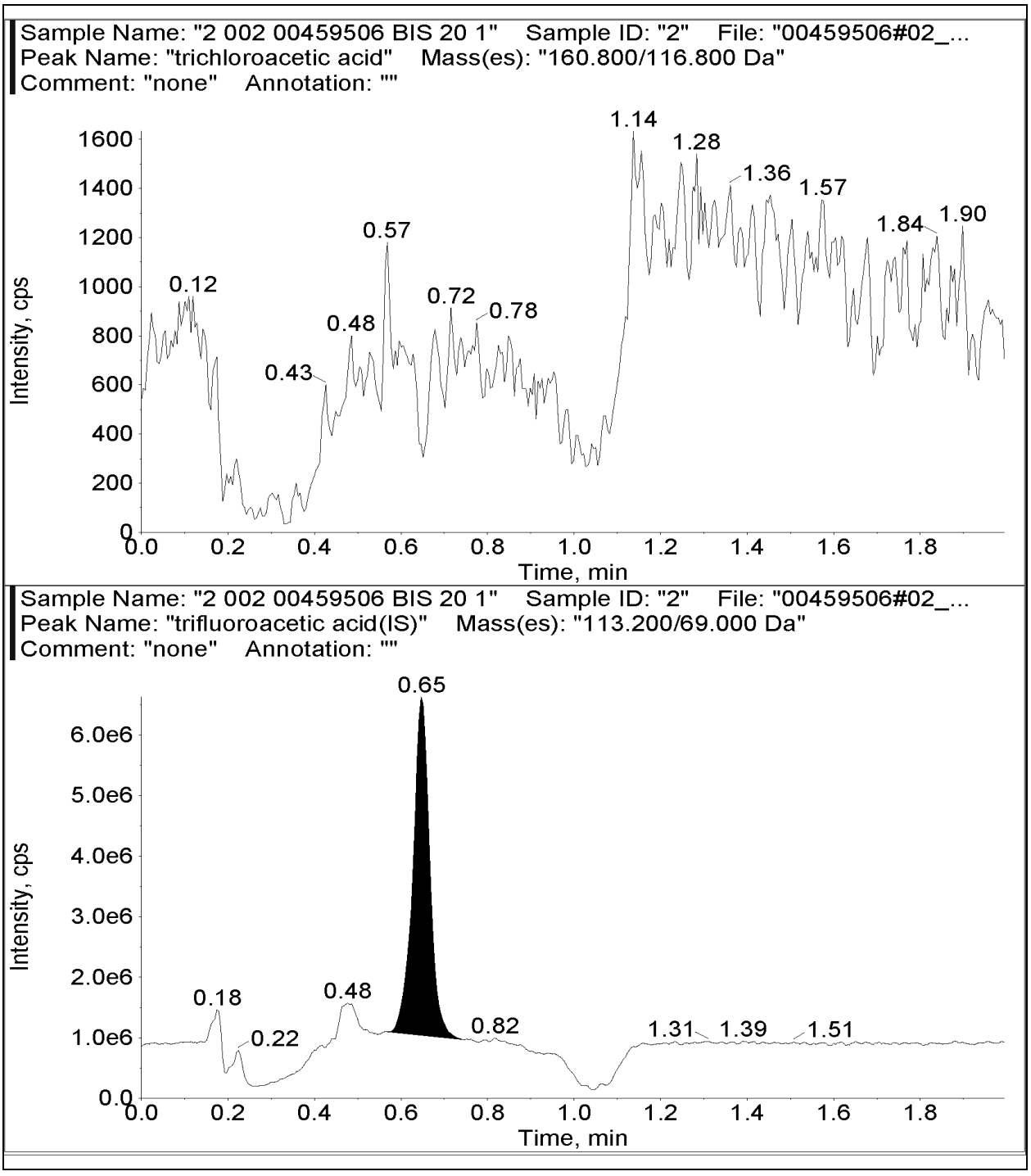


Figure 3
Representative Chromatogram of a Calibration Standard Sample at the LLOQ Level in Rat Plasma, Analyzed for TCA

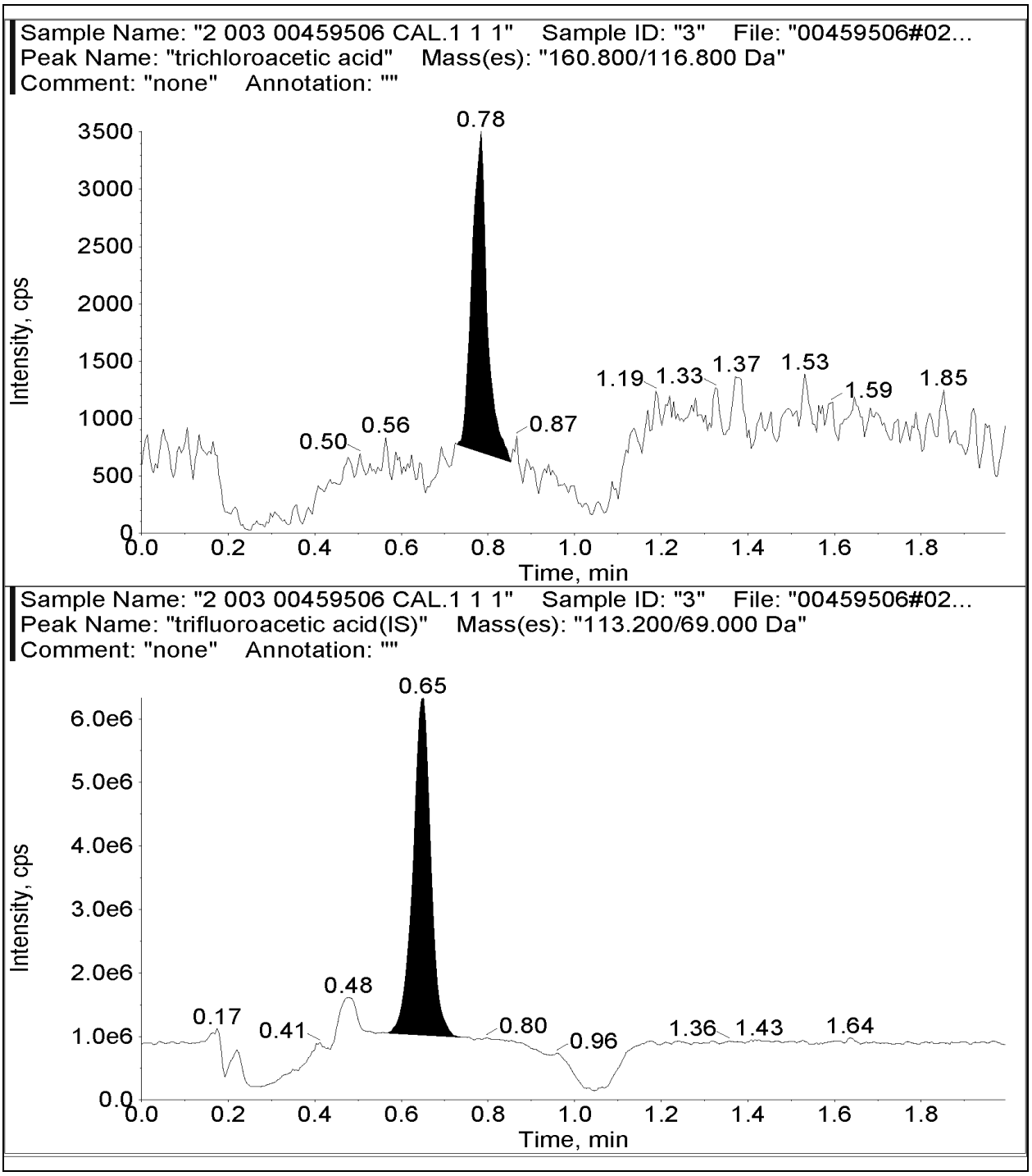


Figure 4
Representative Chromatogram of a Calibration Standard Sample at the ULOQ Level in Rat Plasma, Analyzed for TCA

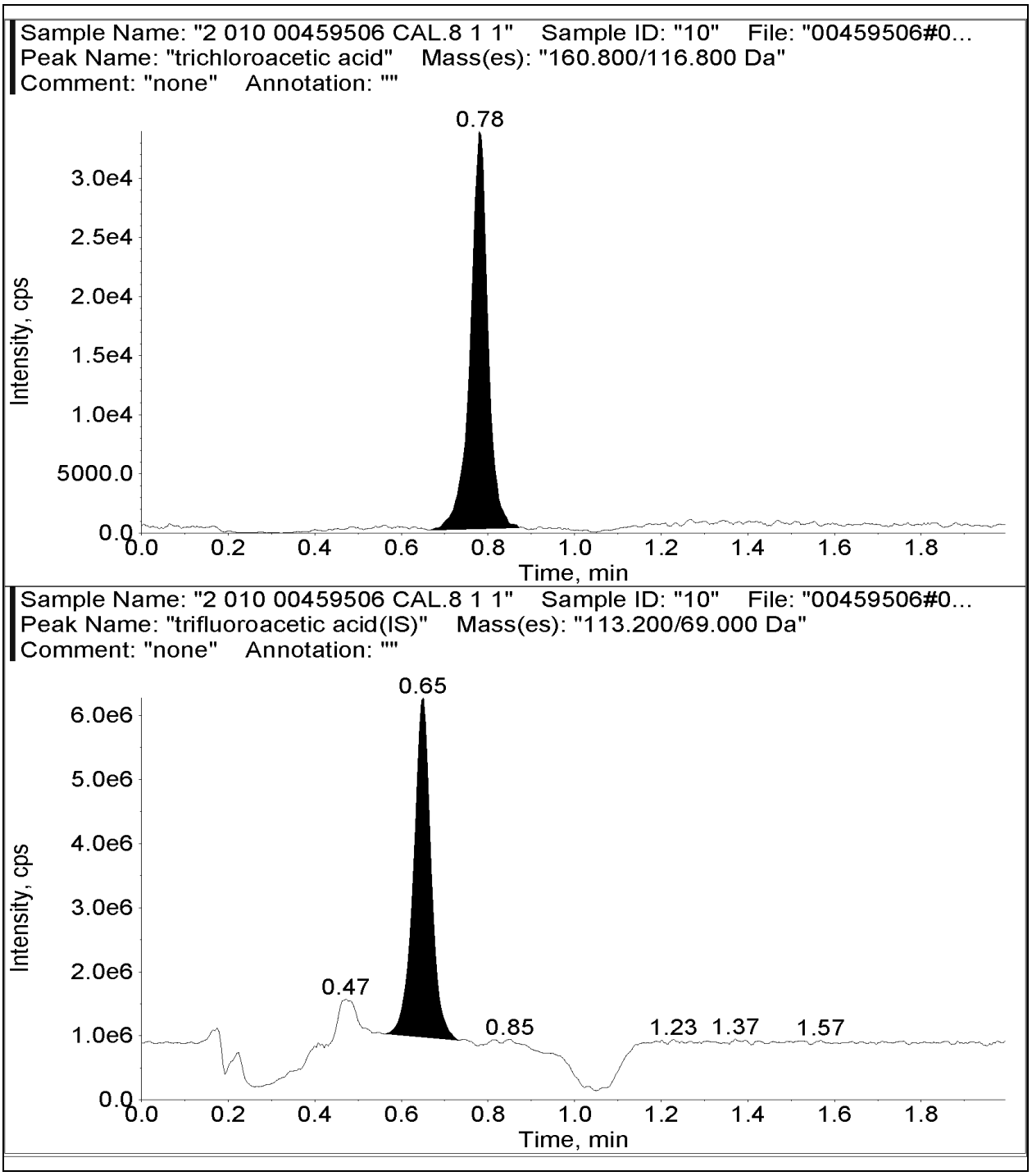


Figure 5
Chromatogram of a Processed Female Rat No. 8737 - Dam Plasma Sample from Gestation Day 8, Group 5, Analyzed for TCA

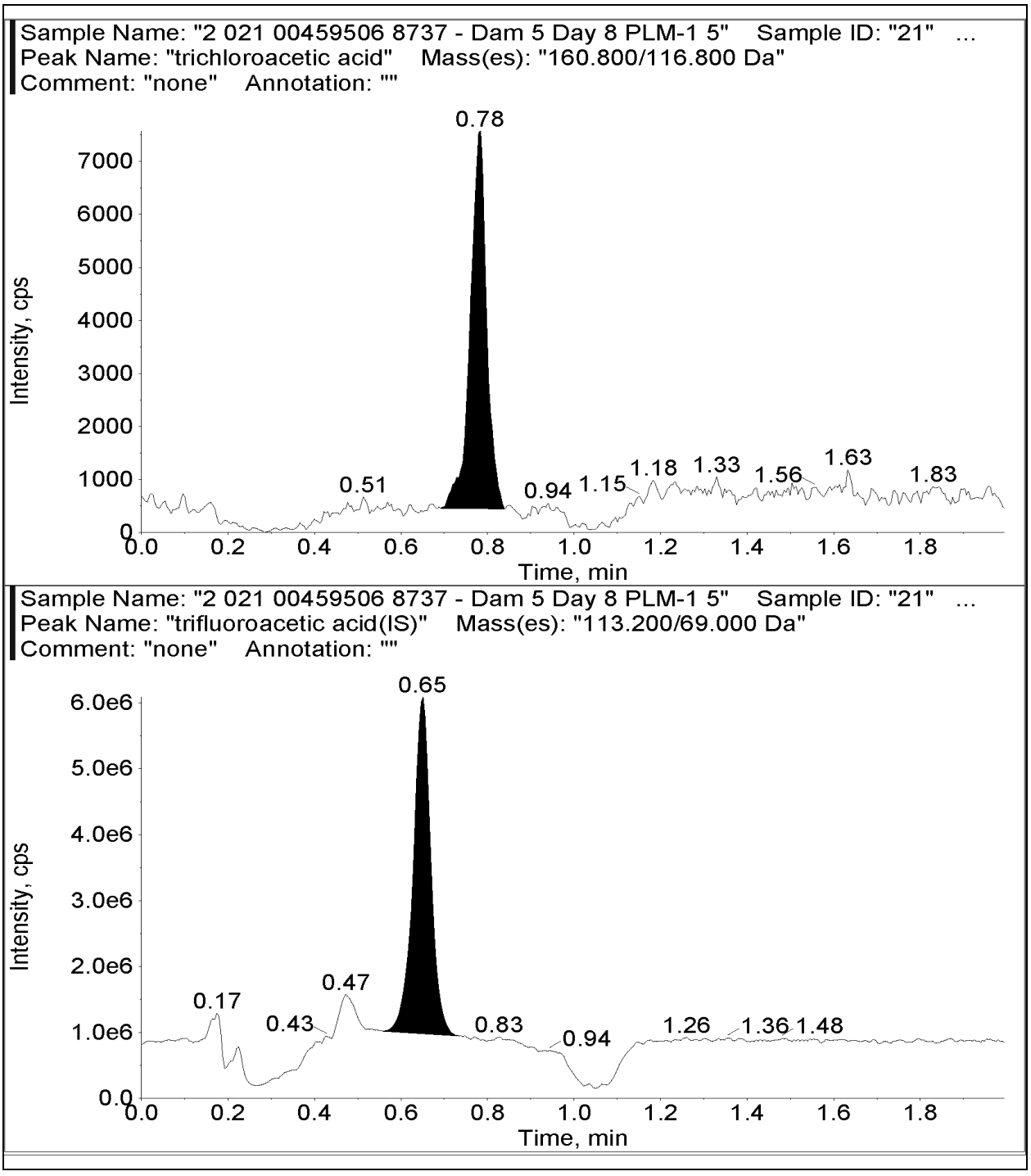


Figure 6
Chromatogram of a Processed Female No. 8737 - Dam Plasma Sample from Gestation Day 12, Group 5, Analyzed for TCA

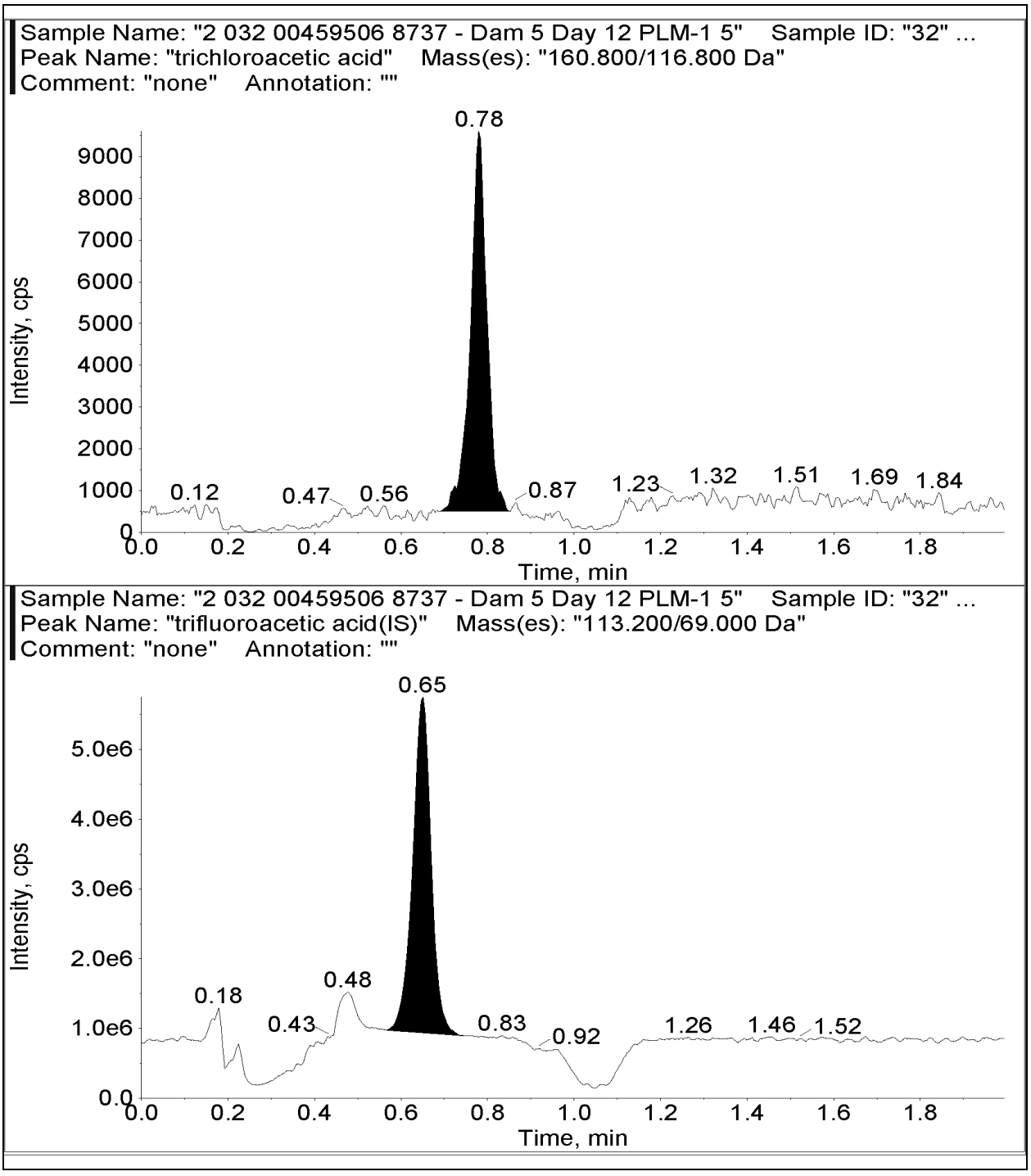


Figure 7
Chromatogram of a Processed Female No. 8737 - Fetal Plasma Sample from Gestation Day 21, Group 5, Analyzed for TCA

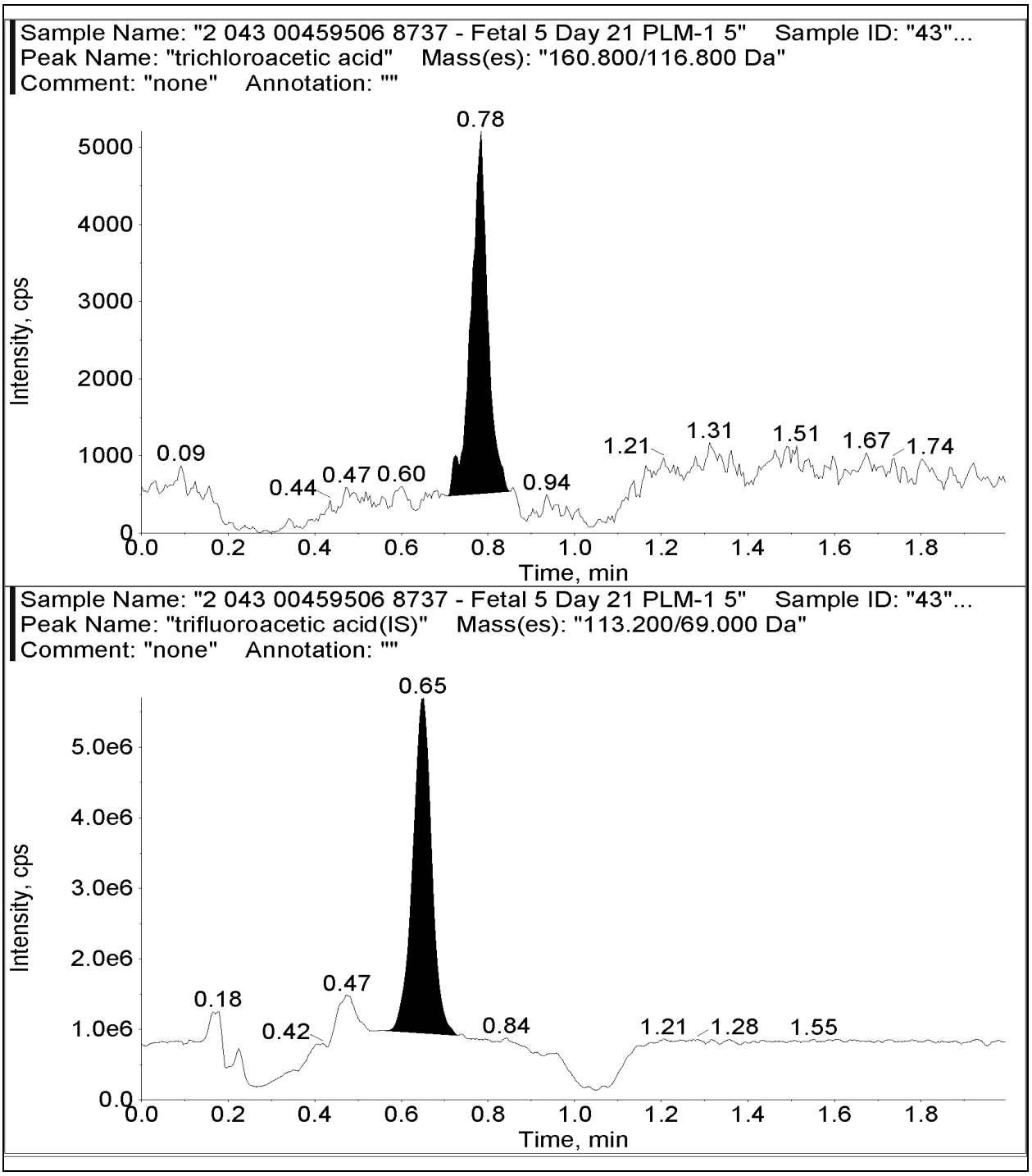


Figure 8
Chromatogram of a Processed Female No. 8737 - Dam Plasma Sample from Gestation Day 21, Group 5, Analyzed for TCA

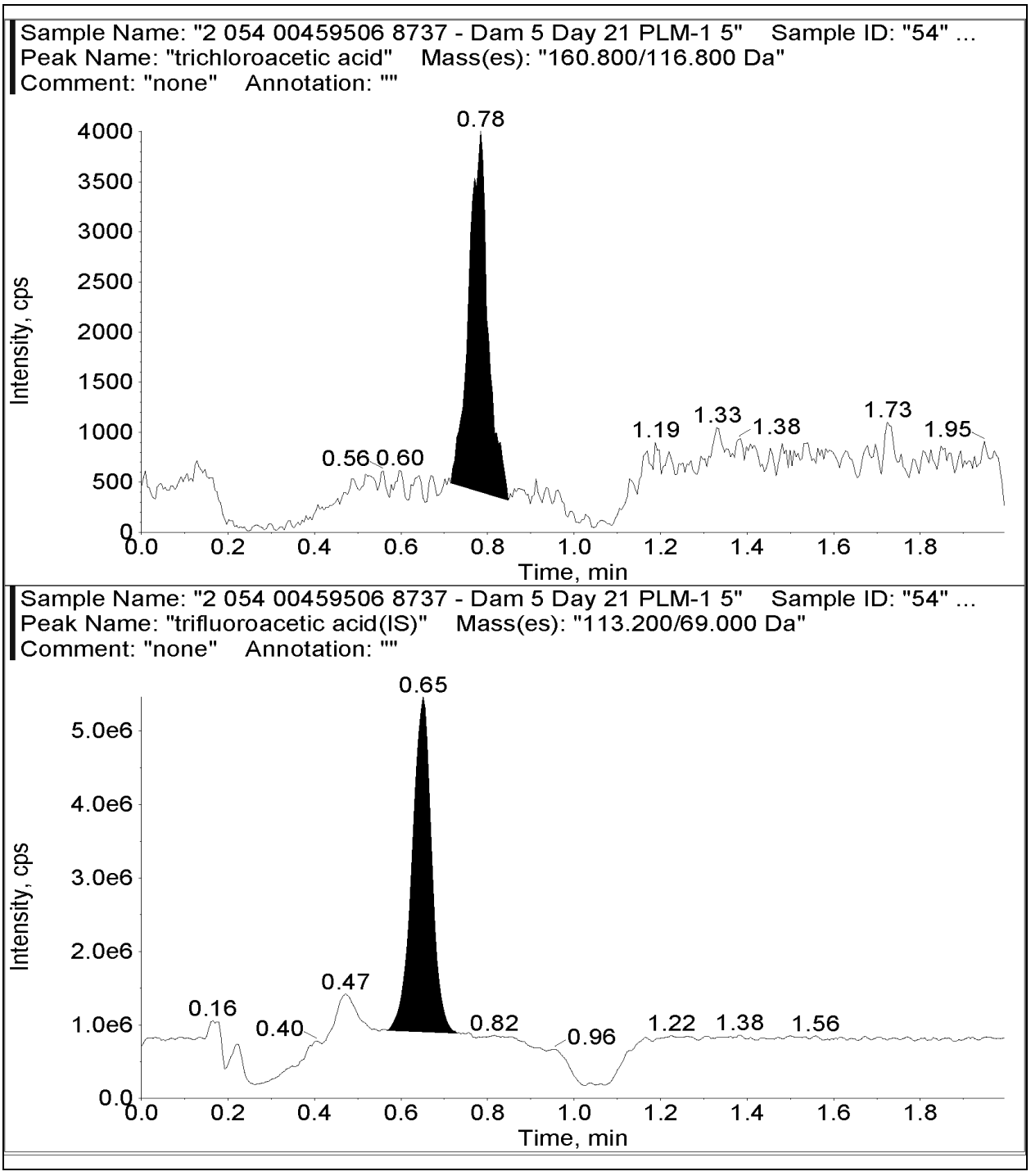
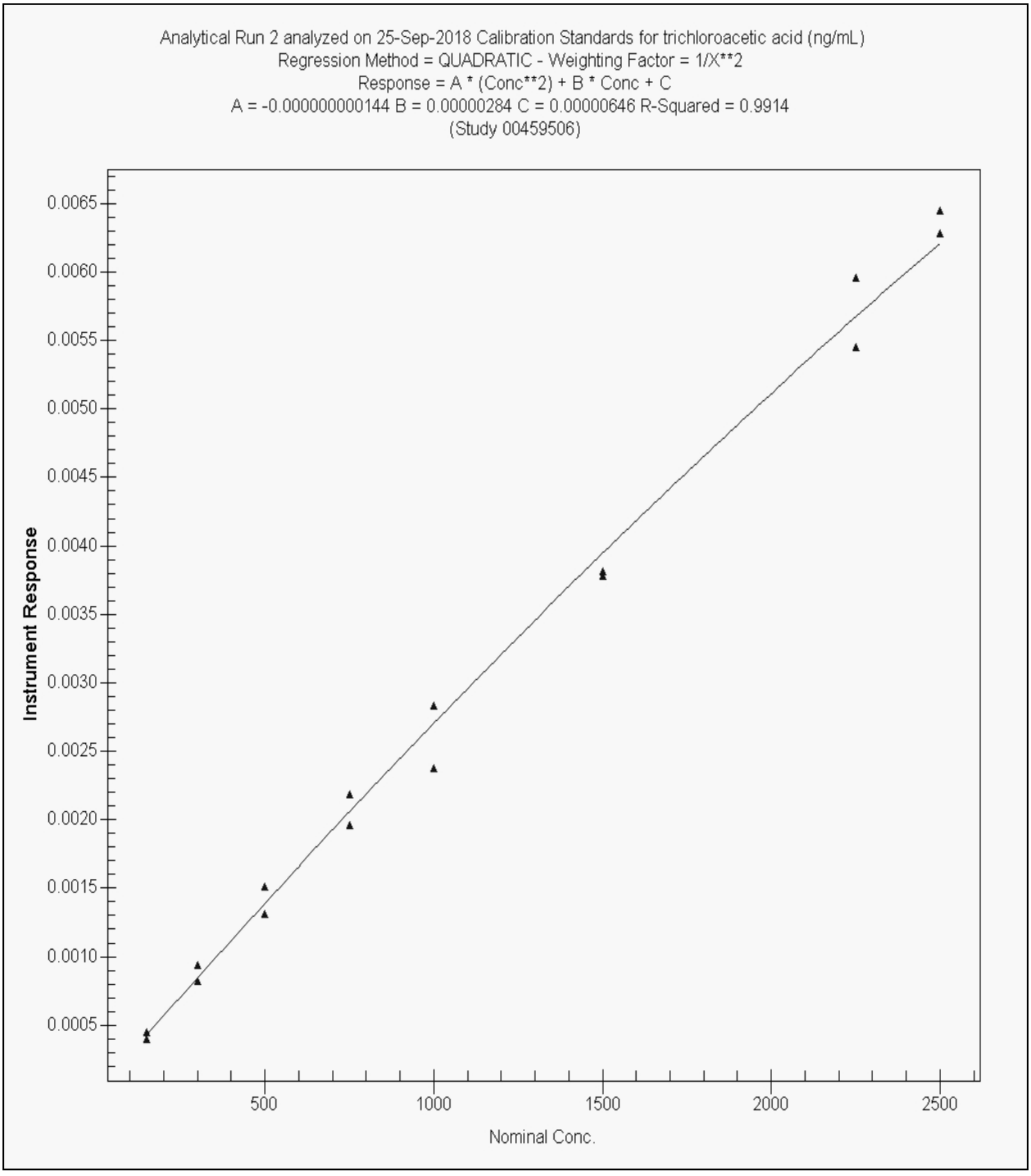


Figure 9
Representative Calibration Curve for TCA in Run No. 2



TABLES

Table 1
Summary of Analytical Runs for TCA in Rat Plasma

Watson Run ID	Extraction Date	Assay Date	Pass/Fail	Comments
1	21-Sep-2018	21-Sep-2018	Fail	Sample analysis of Groups 1 and Groups 3-6. Due to divergence, the batch failed to meet acceptance criteria.
2	25-Sep-2018	25-Sep-2018	Pass	Sample analysis of Groups 5 and 6.
3	26-Sep-2018	27-Sep-2018	Pass	Sample analysis of Groups 1, 3, and 4.

Table 2
TCA Concentrations in Rat Plasma Samples

	Group	Gestation Day	Animal	Gender	Concentration (ng/mL)	Dilution Factor
1	1	8	8742 - Dam	Female	BLQ<(150)	1
2	1	8	8744 - Dam	Female	BLQ<(150)	1
3	1	8	8752 - Dam	Female	BLQ<(150)	1
4	1	8	8794 - Dam	Female	BLQ<(150)	1
5	1	12	8742 - Dam	Female	BLQ<(150)	1
6	1	12	8744 - Dam	Female	BLQ<(150)	1
7	1	12	8752 - Dam	Female	BLQ<(150)	1
8	1	12	8794 - Dam	Female	BLQ<(150)	1
9	1	21	8742 - Dam	Female	BLQ<(150)	1
10	1	21	8742 - Fetal		BLQ<(150)	1
11	1	21	8744 - Dam	Female	BLQ<(150)	1
12	1	21	8744 - Fetal		BLQ<(150)	1
13	1	21	8752 - Dam	Female	BLQ<(150)	1
14	1	21	8752 - Fetal		BLQ<(150)	1
15	1	21	8794 - Dam	Female	BLQ<(150)	1
16	1	21	8794 - Fetal		BLQ<(150)	1
17	3	8	8748 - Dam	Female	BLQ<(150)	1
18	3	8	8749 - Dam	Female	BLQ<(150)	1
19	3	8	8753 - Dam	Female	BLQ<(150)	1
20	3	8	8781 - Dam	Female	BLQ<(150)	1
21	3	12	8748 - Dam	Female	BLQ<(150)	1
22	3	12	8749 - Dam	Female	BLQ<(150)	1
23	3	12	8753 - Dam	Female	BLQ<(150)	1
24	3	12	8781 - Dam	Female	BLQ<(150)	1
25	3	21	8748 - Dam	Female	BLQ<(150)	1
26	3	21	8748 - Fetal		BLQ<(150)	1
27	3	21	8749 - Dam	Female	BLQ<(150)	1
28	3	21	8749 - Fetal		BLQ<(150)	1
29	3	21	8753 - Dam	Female	BLQ<(150)	1
30	3	21	8753 - Fetal		BLQ<(150)	1
31	3	21	8781 - Dam	Female	BLQ<(150)	1
32	3	21	8781 - Fetal		BLQ<(150)	1
33	4	8	8736 - Dam	Female	BLQ<(150)	1
34	4	8	8745 - Dam	Female	BLQ<(150)	1
35	4	8	8746 - Dam	Female	BLQ<(150)	1
36	4	8	8787 - Dam	Female	BLQ<(150)	1
37	4	12	8736 - Dam	Female	BLQ<(150)	1
38	4	12	8745 - Dam	Female	BLQ<(150)	1
39	4	12	8746 - Dam	Female	BLQ<(150)	1
40	4	12	8787 - Dam	Female	BLQ<(150)	1

Table 2
TCA Concentrations in Rat Plasma Samples (Continued)

	Group	Gestation Day	Animal	Gender	Concentration (ng/mL)	Dilution Factor
41	4	21	8736 - Dam	Female	BLQ<(150)	1
42	4	21	8736 - Fetal		BLQ<(150)	1
43	4	21	8745 - Dam	Female	BLQ<(150)	1
44	4	21	8745 - Fetal		BLQ<(150)	1
45	4	21	8746 - Dam	Female	BLQ<(150)	1
46	4	21	8746 - Fetal		BLQ<(150)	1
47	4	21	8787 - Dam	Female	BLQ<(150)	1
48	4	21	8787 - Fetal		BLQ<(150)	1
49	5	8	8737 - Dam	Female	2350	5
50	5	8	8750 - Dam	Female	1580	5
51	5	8	8761 - Dam	Female	1370	5
52	5	8	8762 - Dam	Female	1540	5
53	5	12	8737 - Dam	Female	3090	5
54	5	12	8750 - Dam	Female	1460	5
55	5	12	8761 - Dam	Female	1560	5
56	5	12	8762 - Dam	Female	1110	5
57	5	21	8737 - Dam	Female	1400	5
58	5	21	8737 - Fetal		1570	5
59	5	21	8750 - Dam	Female	1190	5
60	5	21	8750 - Fetal		1030	1
61	5	21	8761 - Dam	Female	907	5
62	5	21	8761 - Fetal		980	5
63	5	21	8762 - Dam	Female	924	1
64	5	21	8762 - Fetal		1080	5
65	6	8	8734 - Dam	Female	2240	5
66	6	8	8754 - Dam	Female	1120	5
67	6	8	8759 - Dam	Female	1250	5
68	6	8	8797 - Dam	Female	2170	5
69	6	12	8734 - Dam	Female	3100	5
70	6	12	8754 - Dam	Female	2280	5
71	6	12	8759 - Dam	Female	1840	5
72	6	12	8797 - Dam	Female	1730	5
73	6	21	8734 - Dam	Female	1440	5
74	6	21	8734 - Fetal		1470	5
75	6	21	8754 - Dam	Female	1110	5
76	6	21	8754 - Fetal		1180	5
77	6	21	8759 - Dam	Female	1440	5
78	6	21	8759 - Fetal		1640	5
79	6	21	8797 - Dam	Female	668	1
80	6	21	8797 - Fetal		652	1

Table 3
Results of TCA Rat Plasma Calibration Standards from Sample Analysis Runs

Assay Date	Run ID	CAL.1 150 ng/mL	CAL.2 300 ng/mL	CAL.3 500 ng/mL	CAL.4 750 ng/mL	CAL.5 1000 ng/mL	CAL.6 1500 ng/mL	CAL.7 2250 ng/mL	CAL.8 2500 ng/mL
25-Sep-2018	2	156	335	544	798	1050	1450	2380	2610
		138	292	469	714	872	1430	2150	2530
27-Sep-2018	3	137	301	492	642	961	1430	2170	2460
		164	285	567	777	1020	1680	2250	2550
Mean		149	303	518	733	976	1500	2240	2540
S.D.		13.4	22.2	45.3	70.2	78.4	122	104	61.8
%RSD		9.0	7.3	8.7	9.6	8.0	8.1	4.6	2.4
%RE		-0.7	1.0	3.6	-2.3	-2.4	0.0	-0.4	1.6
n		4	4	4	4	4	4	4	4

Table 4
TCA Concentrations of QC Samples in Rat Plasma

Assay Date	Run ID	QC.2 450 ng/mL	QC.3 750 ng/mL	QC.4 2000 ng/mL	QC.5 12500 ng/mL
25-Sep-2018	2	386	689	1900	11200
		430	665	1870	11400
27-Sep-2018	3	443	678	1710	~10100
		479	727	1960	11700
Mean		435	690	1860	11100
S.D.		38.4	26.7	107	698
%RSD		8.8	3.9	5.8	6.3
%Theoretical		96.7	92.0	93.0	88.8
%RE		-3.3	-8.0	-7.0	-11.2
n		4	4	4	4
~ > 15%RE					

Table 5
Calibration Curve Parameters for TCA in Rat Plasma

Assay Date	Run ID	A	B	C	R-Squared	LLOQ	ULOQ	Regression Footnote(s)
25-Sep-2018	2	-0.000000000144	0.00000284	0.00000646	0.9914	150	2500	1
27-Sep-2018	3	-0.000000000194	0.00000296	0.0000204	0.9898	150	2500	1
Mean		-0.000000000169	0.00000290	0.0000134	0.9906			
n		2	2	2	2			
Regression Footnote(s):								
1) Resp. = A * (Conc.**2) + B * Conc. + C								

APPENDIX 1

Test Material Information

SIGMA-ALDRICH®

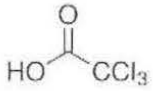
sigma-aldrich.com

3050 Spruce Street, Saint Louis, MO 63103, USA
Website: www.sigmaaldrich.com
Email USA: techserv@sial.com
Outside USA: eurtechserv@sial.com

Certificate of Analysis

Product Name:
Trichloroacetic acid - ACS reagent, ≥99.0%

Product Number:	**T6399**
Batch Number:	**MKCC6282**
Brand:	SIAL
CAS Number:	76-03-9
MDL Number:	MFCD00004177
Formula:	C2HCl3O2
Formula Weight:	163.39 g/mol
Storage Temperature:	Store at 2 - 8 °C
Quality Release Date:	08 MAR 2017
Recommended Retest Date:	FEB 2019



Test	Specification	Result
Appearance (Clarity) Clarity of solution	Pass	Pass
Identity by IR	Conforms to Structure	Conforms
Insoluble Matter	≤ 0.01 %	0.01 %
Chloride Content	≤ 0.002 %	0.002 %
Nitrate	≤ 0.002 %	0.001 %
Phosphate (PO4)	≤ 5 ppm	5 ppm
Sulfate (SO4)	≤ 0.02 %	0.02 %
Heavy Metals (as Lead)	≤ 0.002 %	0.001 %
Iron (Fe)	≤ 0.001 %	0.001 %
Substances Darkened (by H2SO4)	Pass	Pass
Residue on ignition (Ash)	≤ 0.03 %	0.01 %
Assay	≥ 99.0 %	100.2 %
Recommended Retest Period 2 years	----------	----------

Michael Grady, Manager
Quality Control
Milwaukee, WI US

Version Number: 1

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SIGMA-ALDRICH®

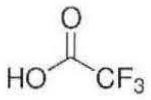
sigma-aldrich.com

3050 Spruce Street, Saint Louis, MO 63103, USA
Website: www.sigmaaldrich.com
Email USA: techserv@sial.com
Outside USA: eurtechserv@sial.com

Certificate of Analysis

Product Name:
Trifluoroacetic acid – ReagentPlus®, 99%

Product Number:	**T6508**
Batch Number:	**SHBJ7034**
Brand:	SIGALD
CAS Number:	76-05-1
MDL Number:	MFCD00004169
Formula:	C2HF3O2
Formula Weight:	114.02 g/mol
Quality Release Date:	30 NOV 2017
Recommended Retest Date:	NOV 2021



Test	Specification	Result
Appearance (Turbidity)	Clear	Clear
Appearance (Color)	Colorless to Very Faint Yellow	Colorless
Appearance (Form)	Liquid	Liquid
Infrared Spectrum	Conforms to Structure	Conforms
Titration with NaOH	98.5 - 101.5 %	100.5 %
GC (area %)	≥ 98.5 %	99.2 %
Water (by Karl Fischer)	≤ 0.05 %	0.01 %
Color Test	≤ 30 APHA	< 15 APHA
Recommended Retest Period 4 Years	----------	----------

Michael Grady, Manager
Quality Control
Sheboygan Falls, WI US

Sigma-Aldrich warrants, that at the time of the quality release or subsequent retest date this product conformed to the information contained in this publication. The current Specification sheet may be available at Sigma-Aldrich.com. For further inquiries, please contact Technical Service. Purchaser must determine the suitability of the product for its particular use. See reverse side of invoice or packing slip for additional terms and conditions of sale.

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APPENDIX 2

Laboratory Method

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Laboratory Method for the Analysis of Tricholoracetic Acid (TCA) in Lithium Heparin Rat Plasma by LC-MS/MS

Method Validation Study:
00459503

Prepared by:

Date: 02OCT2018

Shatha A. Matar, BS
Research Assistant I, Bioanalytical Chemistry

Approved by:

Date: 02OCT2018

Joelle M. Lucarell, BS
Research Scientist II, Bioanalytical Chemistry

Charles River Bioanalytical Chemistry Department

Laboratory Method No.: 459.503A.RP	Version No.: 2
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1. METHOD SUMMARY, VERSION HISTORY, AND REFERENCES

1.1. Summary

Analyte/Metabolite Name(s):	Tricholoracetic Acid (TCA)
Internal Standard Name(s):	Trifluoroacetic Acid (TFA)
Species/Matrix:	Rat Plasma
Anticoagulant (if applicable):	Lithium Heparin
Sample Volume:	0.050 mL
Curve Range(s):	150 to 2500 ng/mL
Regression Type:	Quadratic, $1/x^2$
Response: Peak Area Ratio:	TCA/TFA
Extraction Type:	Protein Precipitation
Instrumentation/Detection:	UHPLC-MS/MS (API 5500, ESI-)
Run Time:	2.00 minutes
Sample Preparation Temperature:	Wet Ice, Extract under Yellow Light
Sample Storage Temperature:	-70°C
Special Storage/Treatment Requirements:	Store protected from light
Method Developed/Validated by:	Seth Bell, PhD

1.2. Version History

Version No.	Effective Date	Revision Summary
2	See Signatures	Removal of validation test section, update to column product name, added chromatography
1	21 Sep 2018	Initial version

1.3. References

Lucarell, J. Validation of an UHPLC-MS/MS Assay for the Determination of Trichloroacetic Acid Concentrations in Rat Plasma (Study No. 00459503). Charles River, Ashland, OH, **Draft**.

2. PRINCIPLES OF THE METHOD

2.1. Purpose

The purpose of this LM is to describe procedures to be employed for the analysis of TCA in rat plasma using a protein precipitation procedure and analysis by UHPLC-MS/MS.

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2.2. Scope

The procedures provided in this LM are applicable for the quantitation of TCA in rat plasma (lithium heparin) containing levels from 150 to 2500 ng/mL using 0.050-mL sample volumes.

3. MATERIALS

3.1. Equipment and Supplies

96-well plates, 2-mL square top with appropriate caps
Air displacement pipette, Rainin, Biohit, Eppendorf, or Finnpipette
Applied Biosystems/MDS Sciex API 5500™ triple quadrupole mass spectrometer
Assorted sizes of polypropylene vials and appropriate caps (PPV)
Cerex® SPE System 96
Eppendorf® MixMate®
Eppendorf® Repeater pipette
Evaporex™ EVX-96 Plate Evaporator
Graduated cylinders
MaxiMix™ II
Mettler AE 240 Balance
Mettler XS205 Balance
Multichannel Pipette, Rainin
Shimadzu Nexera equipped with an autosampler
Solvent storage bottles
Sorvall™ RC-4 centrifuge, Kendro Laboratory Products
Tomtec Quadra 4™
VWR® Aquasonic Model 250T Ultrasonic Cleaner
Phenomenex Luna 3 µm NH2 100 Å, 50 × 2 mm (Part No. 00B-4377-B0)

Note: Equipment can be substituted provided that equivalent assay performance is obtained.

3.2. Reference Materials and Matrix

Trichloroacetic Acid (Sigma Aldrich, Product No. T6399)
Trifluoroacetic Acid (Thermo Fisher)
Lithium Heparin Rat Plasma (BioChemEd)
Lithium Heparin Rat Whole Blood (BioChemEd)

Note: Alternate sources may be substituted.

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3.3. Commercial Reagents

ACN - acetonitrile, Omnisolv, EMD
FA - formic acid, Omnisolv, EMD
MeOH - methanol, Omnisolv, EMD
MQ - Milli-Q purified water or deionized water
NH_4HCO_2 - ammonium formate, Sigma-Aldrich
NH_4OH - ammonium hydroxide, Fisher Scientific

Note: Equivalent reagents may be substituted.

4. PREPARATION OF REAGENTS

Volumes of the reagents prepared may be adjusted as long as proportionality is maintained and their preparation is documented.

4.1. 90:10 MQ:MeOH (v/v) [BAC-060]

Combine 900 mL MQ and 100 mL MeOH in a solvent bottle using graduated cylinders. Mix thoroughly. Store at room temperature for up to 1 month. This solution will be used for stock diluent.

4.2. 80:20 MQ:MeOH (v/v) [RECON]

Combine 40 mL MQ and 10 mL MeOH in a PPV using pipettes and single-use tips. Mix thoroughly. Prepare fresh on day of use in a polypropylene vial. Discard after use.

4.3. 40 mM Ammonium Formate in MQ, pH 9.1 [BAC-438]

Using a graduated cylinder, measure 1000 mL MQ. Weigh out approximately 2.522 g of ammonium formate into a tared weigh boat. Transfer the ammonium formate to a solvent bottle with rinses of MQ. Transfer remaining MQ to the bottle. Adjust pH to 9.1 with NH_4OH while mixing. Mix thoroughly. Store at room temperature for up to 1 month. This solution will be used for mobile phase A (MPA).

4.4. 1% NH_4OH in MQ [BAC-439]

Add 990 mL MQ to a solvent bottle. Add 10 mL NH_4OH using a pipette. Mix thoroughly. Store at room temperature for up to 1 month. This solution will be used for R0 solution.

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4.5. 2.5% FA in ACN [BAC-440]

Using a graduated cylinder, add 975 mL of ACN to a solvent bottle. Add 25 mL of FA to the bottle using a pipette. Mix thoroughly. Store at room temperature for up to one month. This solution will be used as protein precipitation solution.

4.6. 0.1% NH_4OH in ACN [BAC-441]

Using a graduated cylinder, transfer 1000 mL of ACN to an appropriately sized storage bottle. Using a pipette, transfer 1.00 mL of NH_4OH to the bottle. Mix thoroughly. Store at room temperature for up to one month. This solution will be used for R3.

5. PREPARATION OF STOCK SOLUTIONS

Stock solutions are prepared in duplicate and compared prior to use. Stock solutions will be divided into aliquots and stored for later use. Quantities prepared may be altered provided proportionality and final concentration are maintained and documented.

5.1. TCA Stock Solution (1.00 mg/mL) [S01]

Weigh an amount of TCA equivalent to 5 mg after applying the correction factor, if applicable, to an amber glass vial. Dissolve with [BAC-060] and dilute to 1.00 mg/mL. Mix thoroughly. Divide the solution into 0.150-mL aliquots and store the solution in polypropylene micronic vials at approximately -70°C and protected from light. Prior to use, stocks will be thawed at room temperature.

6. PREPARATION OF INTERNAL STANDARD (IS) SOLUTIONS

IS stock solution(s) will be divided into aliquots and stored for later use. Quantities prepared may be altered provided proportionality and final concentration are maintained and documented.

6.1. TFA Internal Standard Stock Solution (1.00 mg/mL) [I01]

Add 10 uL of TFA reference standard to an amber glass vial. Dissolve with 14.79 mL MQ to dilute to 1.00 mg/mL. Note: A density of 1.489 g/cm^3 is used to calculate the amount of TFA to use. Mix thoroughly. Divide the solution into 0.100-mL aliquots and store the solution in PPV at approximately -70°C. Prior to use, stocks will be thawed at room temperature.

6.2. IS Working Solution (1000 ng/mL) [I02]

Combine 0.025 mL [I01] and 24.975 mL [BAC-440] in a PPV using a pipette. Mix thoroughly. Prepare the solution at room temperature. Discard solution after use.

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7. PREPARATION OF STOCK COMPARISON SOLUTIONS

Prepare comparison solutions in PPV at room temperature using a pipette as shown in the table below. Mix thoroughly. Store refrigerated. Stock comparison solutions used to establish stability should be assessed within the established processed sample stability window. Quantities prepared may be altered provided proportionality and final concentration are maintained and documented.

Preparation of Stock Comparison Solutions							
Solution ID	**Source Solution ID**	**Source Solution Concentration (ng/mL)**	**Source Solution Volume (mL)**	**Diluent Solution Used**	**Diluent Volume (mL)**	**Final Volume (mL)**	**Final Concentration (ng/mL)**
DS1	I01	1,000,000	0.010	[RECON]	16.492	16.502	606
SC1	S01	1,000,000	0.010	DS1	32.994	33.004	303
DS2	S01	1,000,000	0.010	[RECON]	32.994	33.004	303
SC2	I01	1,000,000	0.010	DS2	16.492	16.502	606

SC1 is used to compare analyte stock solutions, SC2 is used to compare IS stock solutions.

8. CALIBRATION SAMPLES

Note: During validation, small pools of calibration samples are prepared fresh daily. Quantities prepared may be altered provided proportionality and final concentration are maintained.

8.1. Preparation of Calibration Samples

Prepare calibration samples on wet ice according to the table below in a PPV using a pipette. Mix thoroughly. After stability has been established, calibration samples can be divided into aliquots and stored in PPV at approximately -70°C, protected from light. Recommend minimum 0.400-mL aliquot volume.

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Preparation of Calibration Samples						
Sample ID	**Source Solution ID**	**Source Solution Concentration (ng/mL)**	**Source Solution Volume (mL)**	**Matrix Volume (mL)**	**Final Volume (mL)**	**Final Concentration (ng/mL)**
CFS	S01	1,000,000	0.050	1.950	2.000	25,000
CAL.8	CFS	25,000	0.150	1.350	1.500	2500
CAL.7	CFS	25,000	0.135	1.365	1.500	2250
CAL.6	CAL.8	2500	0.300	0.200	0.500	1500
CAL.5	CAL.8	2500	0.200	0.300	0.500	1000
CAL.4	CAL.8	2500	0.300	0.700	1.000	750
CAL.3	CAL.8	2500	0.200	0.800	1.000	500
CAL.2	CAL.4	750	0.200	0.300	0.500	300
CAL.1	CAL.4	750	0.200	0.800	1.000	150

9. QC SAMPLES

Quantities prepared may be altered provided proportionality and final concentration are maintained and documented.

9.1. Preparation of QC Samples

Prepare QC samples on wet ice according to the table below in a PPV using a pipette. Mix thoroughly. Bulk QC samples will be divided into aliquots and stored in a PPV, protected from light at approximately -70°C. Recommend minimum 0.400 mL aliquot volume.

Preparation of Quality Control Samples						
Sample ID	**Source Solution ID**	**Source Solution Concentration (ng/mL)**	**Source Solution Volume (mL)**	**Matrix Volume (mL)**	**Final Volume (mL)**	**Final Concentration (ng/mL)**
QC.5	S01	1,000,000	0.050	3.950	4.000	12,500
QC.4	QC.5	12,500	0.800	4.200	5.000	2000
QC.3	QC.5	12,500	0.240	3.760	4.000	750
QC.2	QC.5	12,500	0.180	4.820	5.000	450
QC.1	QC.5	12,500	0.060	4.940	5.000	150

Note: QC.1 will only be used for core validation sets.

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10. PREPARATION OF SOLUTION FOR SYSTEM SUITABILITY TEST (SST)

Prepare SST sample at room temperature according to the table below in a PPV using a pipette. Mix thoroughly. SST samples will be divided into aliquots and stored in PPV or 96-well plate refrigerated up to 1 month. Recommend minimum 0.275-mL aliquot volume.

Preparation of System Suitability Test Solution						
Sample ID	**Source Solution ID**	**Source Solution Concentration (ng/mL)**	**Source Solution Volume (mL)**	**[RECON] Volume (mL)**	**Final Volume (mL)**	**Final Concentration (ng/mL)**
DS8	I01	1,000,000	0.040	32.964	33.004	1212
DS9	S01	1,000,000	0.020	3.980	4.000	5000
DS10	DS9	5000	0.070	9.546	9.616	36.4
SS	DS10 DS8	36.4 1212	5.000 5.000	NA	10.00	18.2 606

11. SAMPLE PREPARATION AND EXTRACTION

11.1. Notes and Cautions

- All matrix samples are prepared on wet ice under yellow light.
- Use BioChemEd Plasma if available. Plasma from BioReclamation shows TCA levels > 20% of the LLOQ.
- Store calibrations, QCs, study samples, and stocks protected from light.
- Prepare [RECON] right before use.
- Use fresh Milli-Q water when preparing solutions.
- Prepare and store all solutions in polypropylene, using pipettes rather than graduated cylinders when possible. Avoid shared glassware.
- If background is high, flush the instrument with Milli-Q water used as MPA and MeOH used as MPB, while injected 50:50 (v/v) MeOH:Water.
- Solvents used during extraction should be tested for TCA and TFA, to avoid contamination from solvents to the extraction.
- Isolate an instrument from assays using TCA or TFA as much as possible.

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11.2. Handling for Frozen Samples

Remove any frozen samples from storage and allow them to equilibrate on wet ice under yellow light. Thoroughly mix each vial. Carefully arrange samples according to the Watson worklist. Any samples prepared for daily use (including aliquots for single use only) will be discarded after use unless otherwise documented.

11.3. Sample Extraction

1. Preparation is conducted under yellow light.

2. Transfer 0.050 mL of each calibration, QC, blank, and experimental sample into a 96-well plate on wet ice. Diluted samples must be diluted with the appropriate dilution factor prior to sample processing.

3. Add 0.250 mL [BAC-440] to each matrix blank sample.

4. Add 0.250 mL [I02] to each calibration, QC, blank with IS, and experimental sample.

5. Vortex-mix 3.00 minutes at 1200 rpm.

6. Centrifuge 5.00 minutes at 3500 rcf.

7. Using a Tomtec, transfer 0.200 mL to a clean 96-well plate.

8. Evaporate samples under a stream of nitrogen for 15-20 minutes (or until dry) at 35°C (upper manifold) and 40°C (lower manifold). NOTE: Do not let plate sit and dry for more than recommended time. Once plate is dry, remove as soon as possible from nitrogen stream.

9. Prepare [RECON] solution for Extraction Step 9.

10. Reconstitute with 0.275 mL [RECON].

11. Vortex-mix 3.00 minutes at 1200 rpm.

12. Store processed samples at approximately 4°C in the sample compartment of the LC instrument or in the refrigerator until analysis.

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12. SAMPLE ANALYSIS

Equipment can be substituted provided that equivalent assay performance is obtained.

12.1. UHPLC Setup

UHPLC:	Shimadzu Nexera®
Column:	Phenomenex Luna 3 µm NH2 100 Å, 50 × 2 mm (Part No. 00B-4377-B0)
In-Line Filter:	Phenomenex KrudKatcher ULTRA HPLC In-Line Filter, 0.5-µm Depth Filter × 0.004 in ID (Part No. AF0-8497)
Column Temperature:	50°C
Run Time:	2.00 minutes
Autosampler Temperature:	4°C
Recommended Injection Volume:	1-10 µL
Mobile Phase:	A: 40 mM Ammonium Formate in MQ, (pH 9.1) [BAC-438] B: ACN
R0 Rinse Solution:	1% NH_4OH in MQ [BAC-439]
R3 Rinse Solution:	0.1% NH_4OH in ACN [BAC-441]

12.2. Gradient Program

Time (minutes)	Flow Rate (mL/minute)	Mobile Phase A (%)	Mobile Phase B (%)
Initial	0.750	40	60
2.00	0.750	40	60

12.3. Mass Spectrometer Parameters

Parameters, except for Mass Spectrometer, Interface, and Scan Mode may be modified to obtain optimum performance. Exact mass transitions may vary slightly from instrument to instrument because of unit resolution of quadrupole mass spectrometers.

Mass Spectrometer:	Applied Biosystems/MDS Sciex API 5500™
Interface:	Turbo Spray, negative-ion mode
Scan Mode:	Multiple reaction monitoring (MRM)
Curtain Gas (CUR):	25 psi
Gas Setting (GS1):	50 psi

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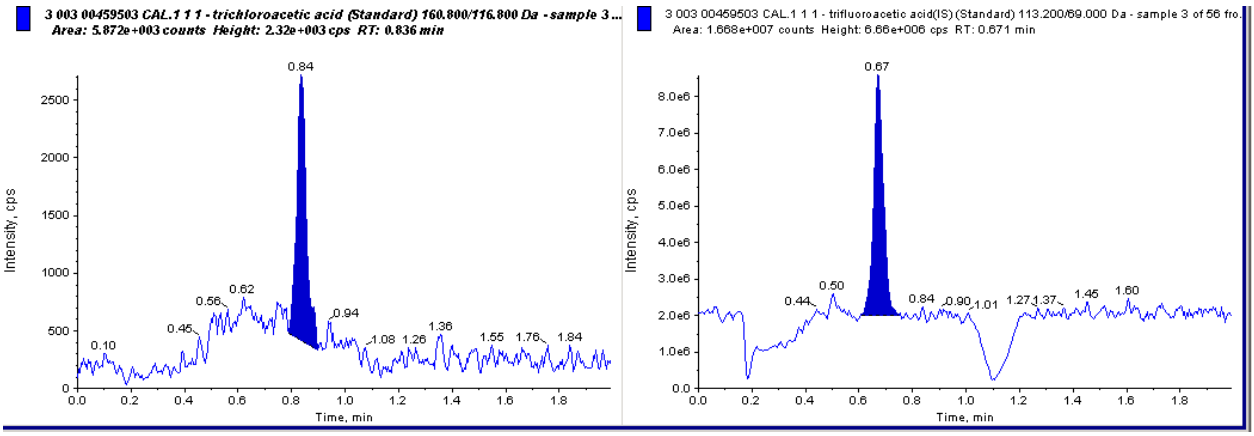
Gas Setting (GS2):	40 psi
Ionization Voltage (IS):	-4500 v
Temperature (TEM):	550°C
Collision Gas Setting (CAD):	medium
Entrance Potential (EP):	-10 v
Exit Potential (CXP):	-10 v

Analyte	Parent Ion	Daughter Ion	Dwell Time (msec)	Collision Energy (CE) (v)	Declustering Potential (DP) (v)
TCA	160.8	116.8	50	-11	-50
TCA (monitor only)	162.9	118.9	50	-13	-50
TFA	113.2	69.0	50	-15	-45

12.4. Sample Chromatography

CAL.1 TCA Chromatogram



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12.5. System Suitability Test (SST)

At a minimum inject SS three times consecutively and the following criteria must be met.

1. ≤ 5% variability in retention time of each system suitability injection as compared to the mean retention time of the system suitability injections.

2. Mean analyte peak S/N ratio ≥ 3.

3. A relative standard deviation (RSD) ≤ 10% in the response of the analyte peak area count or peak area ratio.

12.6. Injection Volume

The injection volume may be increased or decreased to change sensitivity if needed. There was no significant matrix suppression noted during development.

12.7. Carryover

There was no significant carryover noted during development. There is no need for any special sample order.

APPENDIX 3

Stability Addendum

Laboratory Method No.: 459.503A.RP	Stability Version No.: 1
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Stability Addendum

Laboratory Method for the Analysis of Trichloroacetic Acid (TCA) in Lithium Heparin Rat Plasma by LC-MS/MS

Approved by:

Joelle M. Lucarell Date: 02OCT2018

Joelle M. Lucarell, BS
Research Scientist II, Bioanalytical Chemistry

Charles River Bioanalytical Chemistry Department

1. VERSION HISTORY

Version No.	Effective Date	Revision Summary
1	See Signature	Initial version

Laboratory Method No.: 459.503A.RP	Stability Version No.: 1
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2. STABILITY INFORMATION

Analyte/Metabolite Name(s):	Trichloroacetic Acid (TCA)
Internal Standard (IS) Name(s):	Trifluoroacetic Acid (TFA)
Matrix:	Lithium Heparin Rat Plasma
Curve Range(s):	150 to 2500 ng/mL
Stock Solution Short-Term Stability: (Room Temperature, Protected from Light)	22 hours (00459503)
Stock Solution Long-Term Stability: (Approximately -70°C, Protected from Light)	44 days (00459503)
IS Stock Solution Short-Term Stability: (Room Temperature)	21 hours (00459503)
IS Stock Solution Long-Term Stability: (Approximately -70°C)	53 days (00459503)
IS Working Solution Short-Term Stability: (Room Temperature)	21 hours (00459503)
Matrix Short-Term Stability: (Wet Ice, Protected from Light)	6 hours (00459503)
Matrix Long-Term Stability: (Approximately -70°C, Protected from Light)	23 days at high level (00459503) 30 days at the low level (00459503)
Matrix Freeze-Thaw Stability: (Thawed from Approximately -70°C, Protected from Light)	4 cycles (00459503)
Re-injection Reproducibility: (Approximately 4°C)	2 days, 5 hours (00459503)
Whole Blood Stability: (Wet Ice, Protected from Light)	2 hours (00459503)
Validated Dilution Factor:	20-fold
Run Length:	192 injections (00459503)

3. REFERENCES

Lucarell, J.M. Validation of an UHPLC-MS/MS Assay for the Determination of Trichloroacetic Acid Concentrations in Rat Plasma(Study No. 00459503). Charles River, Ashland, OH, **Draft**.

APPENDIX 8

Charles River Ashland Developmental Historical Control Data

Embryo-Fetal Developmental Historical Control Data

Notes regarding this dataset:

Due to calculation and database constraints, the study count may differ for each data type. This also means that animal count may differ for each data type. All the data that is presented is acceptable for use.

In the Reproductive Data, the total number of viable fetuses may not match the sum of the male and female fetuses. Sometimes, the sex of a fetus is not able to be determined.

Study Date Range: 19 Aug 2003 - 08 Jan 2016

Mean of Study Means

Endpoint	Total	Mean	S.D.	SEM	Median	Min	Max	25th Quartile	75th Quartile
NO. OF DATASETS	**35**								
Total No. of Animals in the Control Group	833								
No. of Animals That Died	3								
No. of Animals That Aborted	0								
No. of Animals That Delivered	1								
Percent Pregnant		97.05	3.864	0.653	100.00	86.36	100.00	95.45	100.00
No. Gravid	809								
No. With Only Resorptions	5								
No. of Dams With Live Fetuses	800								
No. Nongravid	24								
No. Nongravid That Died	0								
No. of Animals Examined at Laparohysterectomy	829								
Mean Gravid Uterine Weight (g)		109.34	6.170	1.043	110.58	92.48	118.50	104.91	113.77
Mean No. Viable Fetuses/Dam		14.89	0.900	0.152	15.08	11.85	16.41	14.49	15.41
Total No. Viable Fetuses	11996								
Viable Fetuses (%/Litter)		94.89	3.183	0.538	95.60	83.49	97.78	94.93	96.31
Mean No. Postimplantation Loss/Dam		0.76	0.393	0.066	0.69	0.36	2.20	0.58	0.86
Total No. of Postimplantation Losses	603								
Postimplantation Loss (%/Litter)		5.11	3.183	0.538	4.40	2.22	16.51	3.69	5.07
Early Resorptions (%/Litter)		5.03	3.169	0.536	4.35	2.22	16.12	3.61	4.97
Late Resorptions (%/Litter)		0.08	0.158	0.027	0.00	0.00	0.52	0.00	0.05
Dead Fetuses (%/Litter)		0.01	0.040	0.007	0.00	0.00	0.24	0.00	0.00
Mean No. Implantations/Dam		15.65	0.714	0.121	15.76	14.05	17.04	15.37	16.11
Mean No. Corpora Lutea/Dam		16.82	0.742	0.125	16.81	14.60	18.19	16.52	17.21
Mean No. Preimplantation Loss/Dam		1.17	0.426	0.072	1.04	0.54	2.57	0.90	1.30
Total No. Preimplantation Losses	934								
Preimplantation Loss (%/Litter)		6.56	2.314	0.391	5.85	3.05	12.26	5.15	7.60
Total No. Male Fetuses	6133								
Total No. Female Fetuses	5863								
% Males/Litter		51.28	2.944	0.498	51.89	42.06	55.29	49.58	52.83
% Females/Litter		48.72	2.944	0.498	48.11	44.71	57.94	47.17	50.42
Mean Fetal Body Weight (g)		5.493	0.1394	0.0236	5.477	5.210	5.787	5.388	5.589
Mean Male Body Weight (g)		5.641	0.1449	0.0245	5.622	5.365	5.966	5.537	5.721
Mean Female Body Weight (g)		5.336	0.1394	0.0236	5.339	5.045	5.629	5.248	5.434

Mean of Study Means

NO. OF DATASETS: 35	Fetuses	Litters
Total No. Examined Externally	11996	800
Total No. Examined Viscerally	11996	800
Total No. Examined Skeletally	11996	800

MALFORMATIONS (% Per Litter)	Mean	S.D.	N	SEM	Median	Min	Max	25th Quartile	75th Quartile
TOTAL EXTERNAL MALFORMATIONS	0.16	0.243	35	0.041	0.00	0.00	0.83	0.00	0.32
TOTAL VISCERAL MALFORMATIONS	0.10	0.202	35	0.034	0.00	0.00	0.71	0.00	0.00
TOTAL SKELETAL MALFORMATIONS	0.27	0.400	35	0.068	0.12	0.00	1.61	0.00	0.34
TOTAL MALFORMATIONS	0.46	0.506	35	0.086	0.30	0.00	1.61	0.00	0.73
EXTERNAL									
Aglossia	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Anal Atresia	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Apodia	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Astomia	0.01	0.051	35	0.009	0.00	0.00	0.30	0.00	0.00
Brachydactyly	0.01	0.050	35	0.009	0.00	0.00	0.30	0.00	0.00
Carpal and/or Tarsal Flexure	0.02	0.066	35	0.011	0.00	0.00	0.28	0.00	0.00
Cebocephaly	0.01	0.047	35	0.008	0.00	0.00	0.28	0.00	0.00
Cleft Face	0.01	0.067	35	0.011	0.00	0.00	0.40	0.00	0.00
Cleft Palate	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Conjoined Twins	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Cyclopia	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Ectrodactyly	0.01	0.050	35	0.009	0.00	0.00	0.30	0.00	0.00
Exencephaly with or without Open Eyelid(s)	0.01	0.045	35	0.008	0.00	0.00	0.27	0.00	0.00
Facial Papilla(e)- Malpositioned or Absent	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Fetal Anasarca	0.01	0.042	35	0.007	0.00	0.00	0.25	0.00	0.00
Gastroschisis	0.01	0.047	35	0.008	0.00	0.00	0.28	0.00	0.00
Hydrocephaly with or without Dome Head	0.01	0.061	35	0.010	0.00	0.00	0.36	0.00	0.00
Intestine- Umbilical Herniation	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Localized Fetal Edema	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Macroglossia	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Mandibular Agnathia	0.01	0.056	35	0.010	0.00	0.00	0.33	0.00	0.00
Mandibular Micrognathia	0.01	0.051	35	0.009	0.00	0.00	0.30	0.00	0.00
Meningocele	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Meningoencephalocele	0.02	0.080	35	0.013	0.00	0.00	0.36	0.00	0.00

Mean of Study Means

NO. OF DATASETS: 35	Fetuses	Litters
Total No. Examined Externally	11996	800
Total No. Examined Viscerally	11996	800
Total No. Examined Skeletally	11996	800

MALFORMATIONS (% Per Litter)	Mean	S.D.	N	SEM	Median	Min	Max	25th Quartile	75th Quartile
EXTERNAL									
Micromelia	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Microphthalmia and/or Anophthalmia	0.08	0.182	35	0.031	0.00	0.00	0.73	0.00	0.00
Omphalocele	0.01	0.042	35	0.007	0.00	0.00	0.25	0.00	0.00
Otocephaly	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Paw(s)- Malrotated	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Pinna(e)- Malpositioned, Small or Absent	0.01	0.056	35	0.010	0.00	0.00	0.33	0.00	0.00
Polydactyly	0.01	0.050	35	0.009	0.00	0.00	0.30	0.00	0.00
Spina Bifida	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Tail- Bent	0.02	0.072	35	0.012	0.00	0.00	0.36	0.00	0.00
Tail- Curly	0.01	0.054	35	0.009	0.00	0.00	0.32	0.00	0.00
Tail- Short	0.01	0.061	35	0.010	0.00	0.00	0.36	0.00	0.00
Vertebral Agenesis	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
VISCERAL									
Aortic Arch- Coarctation	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Aortic Arch- Interrupted	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Aortic Arch- Retroesophageal	0.01	0.040	35	0.007	0.00	0.00	0.24	0.00	0.00
Aortic Arch- Right-Sided	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Cerebellum- Small	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Cerebrum- Small	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Diaphragmatic Hernia	0.01	0.050	35	0.009	0.00	0.00	0.30	0.00	0.00
Eye(s)- Malpositioned	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Gonads- Absent	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Great Vessel(s)- Malpositioned	0.01	0.051	35	0.009	0.00	0.00	0.30	0.00	0.00
Heart and/or Great Vessel Anomaly	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Heart- Misshapen	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Heart- Misshapen Ventricle	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Hydrocephaly	0.03	0.099	35	0.017	0.00	0.00	0.34	0.00	0.00
Interventricular Septal Defect	0.01	0.045	35	0.008	0.00	0.00	0.26	0.00	0.00
Kidney(s) and/or Ureter(s) Absent	0.01	0.053	35	0.009	0.00	0.00	0.31	0.00	0.00

Mean of Study Means

NO. OF DATASETS: 35	Fetuses	Litters
Total No. Examined Externally	11996	800
Total No. Examined Viscerally	11996	800
Total No. Examined Skeletally	11996	800

MALFORMATIONS (% Per Litter)	Mean	S.D.	N	SEM	Median	Min	Max	25th Quartile	75th Quartile
VISCERAL									
Lung(s)- Lobular Dysgenesis	0.01	0.067	35	0.011	0.00	0.00	0.40	0.00	0.00
Nasal Cavity- Enlarged	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Nasal Cavity- Small	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Ovary(ies) and/or Oviduct(s)- Absent	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Persistent Truncus Arteriosus	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Pulmonary Trunk- Stenotic	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Situs Inversus	0.04	0.140	35	0.024	0.00	0.00	0.71	0.00	0.00
Spleen- Absent	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Uterus- Absent Horn	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
SKELETAL									
Costal Cartilage Anomaly	0.02	0.098	35	0.017	0.00	0.00	0.53	0.00	0.00
Limb Bone(s)- Bent	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Limb Bone(s)- Misshapen	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Rib Anomaly	0.05	0.241	35	0.041	0.00	0.00	1.32	0.00	0.00
Rib(s)- 12 Pairs	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Skull Anomaly	0.02	0.106	35	0.018	0.00	0.00	0.56	0.00	0.00
Sternebra(e)- Fused	0.02	0.082	35	0.014	0.00	0.00	0.36	0.00	0.00
Sternebra(e)- Malaligned (Severe)	0.02	0.067	35	0.011	0.00	0.00	0.30	0.00	0.00
Sternoschisis	0.03	0.092	35	0.016	0.00	0.00	0.34	0.00	0.00
Vertebral Anomaly with or without Associated Rib Anomaly	0.11	0.274	35	0.046	0.00	0.00	1.39	0.00	0.00
Vertebral Centra Anomaly	0.01	0.045	35	0.008	0.00	0.00	0.27	0.00	0.00

Mean of Study Means

NO. OF DATASETS: 35	Fetuses	Litters
Total No. Examined Externally	11996	800
Total No. Examined Viscerally	11996	800
Total No. Examined Skeletally	11996	800

VARIATIONS (% Per Litter)	Mean	S.D.	N	SEM	Median	Min	Max	25th Quartile	75th Quartile
TOTAL EXTERNAL VARIATIONS	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
TOTAL VISCERAL VARIATIONS	1.80	1.463	35	0.247	1.54	0.00	5.76	0.66	2.37
TOTAL SKELETAL VARIATIONS	13.44	4.583	35	0.775	12.64	5.90	27.07	10.15	14.98
TOTAL VARIATIONS	14.88	4.726	35	0.799	13.59	8.62	27.92	11.48	17.29
VISCERAL									
Blood Vessel(s), Major- Variation	0.13	0.202	35	0.034	0.00	0.00	0.86	0.00	0.27
Heart- Misshapen	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Heart- Small	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Hemorrhagic Iris	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Hemorrhagic Ring Around the Iris	0.02	0.083	35	0.014	0.00	0.00	0.30	0.00	0.00
Kidney(s)- Pale	0.01	0.048	35	0.008	0.00	0.00	0.29	0.00	0.00
Kidney(s)- Small	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Liver- Accessory Lobule(s)	0.16	0.510	35	0.086	0.00	0.00	2.52	0.00	0.00
Liver- Misshapen	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Liver- Pale	0.06	0.172	35	0.029	0.00	0.00	0.66	0.00	0.00
Localized Depression of the Interventricular Septum	0.01	0.050	35	0.009	0.00	0.00	0.30	0.00	0.00
Lung(s)- Extra Lobule(s)	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Lung(s)- Small	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Pulmonary Trunk- Cyst(s)	0.01	0.050	35	0.009	0.00	0.00	0.30	0.00	0.00
Renal Papilla(e) not Developed and/or Distended Ureter(s)	1.41	1.218	35	0.206	1.17	0.00	4.64	0.31	2.04
Spleen- Accessory	0.01	0.040	35	0.007	0.00	0.00	0.24	0.00	0.00
Spleen- Pale	0.01	0.043	35	0.007	0.00	0.00	0.25	0.00	0.00
Spleen- Small	0.01	0.046	35	0.008	0.00	0.00	0.27	0.00	0.00
Testis(es)- Small	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Urinary Bladder- Distended	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
SKELETAL									
Extra Site of Ossification- Sternebra(e)	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Hyoid- Unossified	0.04	0.142	35	0.024	0.00	0.00	0.72	0.00	0.00

Mean of Study Means

NO. OF DATASETS: 35	Fetuses	Litters
Total No. Examined Externally	11996	800
Total No. Examined Viscerally	11996	800
Total No. Examined Skeletally	11996	800

VARIATIONS (% Per Litter)	Mean	S.D.	N	SEM	Median	Min	Max	25th Quartile	75th Quartile
SKELETAL									
Reduced Ossification- 13th Rib(s)	0.54	0.575	35	0.097	0.33	0.00	2.32	0.24	0.54
Reduced Ossification- Rib(s)	0.06	0.230	35	0.039	0.00	0.00	1.30	0.00	0.00
Reduced Ossification- Skull	0.04	0.137	35	0.023	0.00	0.00	0.59	0.00	0.00
Reduced Ossification- Vertebral Arch(es)	0.10	0.323	35	0.055	0.00	0.00	1.40	0.00	0.00
Rib(s)- 14th Full	0.16	0.301	35	0.051	0.00	0.00	1.39	0.00	0.27
Rib(s)- 14th Rudimentary	9.94	4.180	35	0.707	9.03	2.81	23.60	7.53	11.91
Rib(s)- 7th Cervical	1.11	0.748	35	0.126	1.09	0.00	3.12	0.63	1.58
Rib(s)- Bent	0.16	0.308	35	0.052	0.00	0.00	1.51	0.00	0.21
Scapula(e)- Bent	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Skull Bone(s)- Accessory	0.09	0.218	35	0.037	0.00	0.00	1.02	0.00	0.00
Sternebra(e) #1, #2, #3 and/or #4- Unossified	0.01	0.057	35	0.010	0.00	0.00	0.34	0.00	0.00
Sternebra(e) #5 and/or #6- Unossified	0.47	0.610	35	0.103	0.31	0.00	2.43	0.00	0.60
Sternebra(e)- 7th	0.07	0.151	35	0.026	0.00	0.00	0.52	0.00	0.00
Sternebra(e)- Malaligned (Slight or Moderate)	0.44	0.530	35	0.090	0.26	0.00	2.13	0.00	0.58
Unco-Ossified Vertebral Centra	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00
Vertebra(e)- 25 Presacral	0.14	0.225	35	0.038	0.00	0.00	1.00	0.00	0.28
Vertebra(e)- 27 Presacral	0.15	0.303	35	0.051	0.00	0.00	1.29	0.00	0.06
Vertebral Centra Not Fully Ossified	0.75	1.031	35	0.174	0.42	0.00	5.13	0.00	1.18
Vertebral Centra Unossified	0.00	0.000	35	0.000	0.00	0.00	0.00	0.00	0.00

Modal Distribution of Fetal Body Weights

Number of Datasets in Historical Control	**35**
Range of Study Dates	19 Aug 2003 - 08 Jan 2016
Number of Dams with Fetal Body Weight Data	805
Dams with Fetal Body Weight Data with Live Fetuses	799
Mean Fetal Body Weight Range (g)	5.210 - 5.787

Mean Fetal Body Weight (g)	**5.2**	**5.3**	**5.4**	**5.5**	**5.6**	**5.7**	**5.8**
Total No. Datasets	2	5	7	8	9	3	1
Mean Litter Size	14.840	15.473	15.100	15.027	14.555	15.022	15.200
Litter Size Range	14.52 - 15.16	14.59 - 16.41	14.25 - 16.16	13.91 - 15.57	13.17 - 15.16	14.40 - 15.45	15.20 - 15.20

Summary Incidence Malformations and Variations
(Total Number Fetuses/Litters Affected)
Ranked Uppermost to Nethermost

NO. OF DATASETS: 35	Fetuses	Litters
Total No. Examined Externally	11996	800
Total No. Examined Viscerally	11996	800
Total No. Examined Skeletally	11996	800

	Number	
MALFORMATIONS	**Fetuses**	**Litters**
EXTERNAL		
Microphthalmia and/or Anophthalmia	9	8
Tail- Bent	2	2
Meningoencephalocele	2	2
Carpal and/or Tarsal Flexure	2	2
Pinna(e)- Malpositioned, Small or Absent	1	1
Astomia	1	1
Tail- Short	1	1
Tail- Curly	1	1
Brachydactyly	1	1
Omphalocele	1	1
Polydactyly	1	1
Cebocephaly	1	1
Mandibular Micrognathia	1	1
Mandibular Agnathia	1	1
Hydrocephaly with or without Dome Head	1	1
Gastroschisis	1	1
Fetal Anasarca	1	1
Exencephaly with or without Open Eyelid(s)	1	1
Ectrodactyly	1	1
Cleft Face	1	1
VISCERAL		
Situs Inversus	5	5
Hydrocephaly	4	4
Aortic Arch- Retroesophageal	1	1
Diaphragmatic Hernia	1	1
Interventricular Septal Defect	1	1

Summary Incidence Malformations and Variations
(Total Number Fetuses/Litters Affected)
Ranked Uppermost to Nethermost

NO. OF DATASETS: 35	Fetuses	Litters
Total No. Examined Externally	11996	800
Total No. Examined Viscerally	11996	800
Total No. Examined Skeletally	11996	800

	Number	
MALFORMATIONS	**Fetuses**	**Litters**
VISCERAL		
Kidney(s) and/or Ureter(s) Absent	1	1
Lung(s)- Lobular Dysgenesis	1	1
Great Vessel(s)- Malpositioned	1	1
SKELETAL		
Vertebral Anomaly with or without Associated Rib Anomaly	9	8
Rib Anomaly	6	3
Sternoschisis	4	4
Skull Anomaly	3	2
Costal Cartilage Anomaly	3	2
Sternebra(e)- Malaligned (Severe)	2	2
Sternebra(e)- Fused	2	2
Vertebral Centra Anomaly	1	1

Summary Incidence Malformations and Variations
(Total Number Fetuses/Litters Affected)
Ranked Uppermost to Nethermost

NO. OF DATASETS: 35	Fetuses	Litters
Total No. Examined Externally	11996	800
Total No. Examined Viscerally	11996	800
Total No. Examined Skeletally	11996	800

	Number	
VARIATIONS	**Fetuses**	**Litters**
VISCERAL		
Renal Papilla(e) not Developed and/or Distended Ureter(s)	164	78
Liver- Accessory Lobule(s)	20	12
Blood Vessel(s), Major- Variation	15	14
Liver- Pale	7	5
Hemorrhagic Ring Around the Iris	3	3
Kidney(s)- Pale	1	1
Localized Depression of the Interventricular Septum	1	1
Pulmonary Trunk- Cyst(s)	1	1
Spleen- Pale	1	1
Spleen- Accessory	1	1
Spleen- Small	1	1
SKELETAL		
Rib(s)- 14th Rudimentary	1163	439
Rib(s)- 7th Cervical	132	97
Vertebral Centra Not Fully Ossified	86	58
Reduced Ossification- 13th Rib(s)	66	51
Sternebra(e)- Malaligned (Slight or Moderate)	51	47
Sternebra(e) #5 and/or #6- Unossified	48	36
Rib(s)- Bent	19	15
Vertebra(e)- 25 Presacral	16	15
Rib(s)- 14th Full	16	13
Vertebra(e)- 27 Presacral	16	12
Reduced Ossification- Vertebral Arch(es)	11	5
Skull Bone(s)- Accessory	10	8
Sternebra(e)- 7th	7	7
Reduced Ossification- Rib(s)	7	4

Summary Incidence Malformations and Variations

(Total Number Fetuses/Litters Affected)

Ranked Uppermost to Nethermost

NO. OF DATASETS: 35	Fetuses	Litters
Total No. Examined Externally	11996	800
Total No. Examined Viscerally	11996	800
Total No. Examined Skeletally	11996	800

	Number	
VARIATIONS	**Fetuses**	**Litters**
SKELETAL		
Hyoid- Unossified	6	5
Reduced Ossification- Skull	4	4
Sternebra(e) #1, #2, #3 and/or #4- Unossified	1	1