2020-2022 Surface Water Triennial Review Amendments
To Select Rules in 15A NCAC 02B .0200 and .0300

Environmental Management Commission
March 2021
Chris Ventaloro, DWR
Action Item Request

Request Approval to Proceed to Public Notice and Hearing with Proposed Surface Water Triennial Review Amendments to Select Rules in 15A NCAC 02B .0200 and .0300 and Regulatory Impact Analysis
Triennial Review Process

Development
- Staff review existing standards, stakeholder feedback from previous Tri. Rev., new guidance & literature.
- Develop rule package, present to WQC and EMC.

State Approval
- Publish in *NC Register*, hold hearings, EMC adopts
- RRC approval
- NC Attorney General sign off

Federal Approval
- EPA Clean Water Act review
- Endangered Species Act consultation
- NC notified of approval/disapproval of TR changes to standards
Estimated Timeline

WQC
Nov. 2020

→

EMC March 2021

→

Last day to file for NC Register
April 26, 2021

→

Notice of Text/Comment period begins
May 17, 2021

Public Hearings --
(earliest) July 1, 2021
(CWA)

→

End of public comment period
(earliest) July 16, 2021

→

EMC adoption process
Nov. 2021

→

RRC approval process
Dec. 16, 2021

Earliest effective date
Jan. 1, 2022

→

Submit for AGO signoff
Jan. 2022

→

Submit to EPA by
Feb. 2022
<table>
<thead>
<tr>
<th>Topic</th>
<th>Proposed for Adoption?</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPA 2012 Recreational Criteria (human health)</td>
<td>Yes, Asheville Region</td>
</tr>
<tr>
<td>EPA 2013 Ammonia Criteria (freshwater aquatic life)</td>
<td>No</td>
</tr>
<tr>
<td>EPA 2015 Updated Human Health Criteria and Exposure Factors</td>
<td>No</td>
</tr>
<tr>
<td>EPA 2016 Cadmium Criteria (freshwater &amp; saltwater aquatic life)</td>
<td>Yes</td>
</tr>
<tr>
<td>EPA 2016 Selenium Criteria (freshwater aquatic life)</td>
<td>Yes</td>
</tr>
<tr>
<td>EPA Recreational Criteria Cyanotoxin Criteria (human health)</td>
<td>No</td>
</tr>
<tr>
<td>EPA 2019 Aluminum Criteria (freshwater aquatic life)</td>
<td>No</td>
</tr>
<tr>
<td>1,4-Dioxane (human health)</td>
<td>Yes</td>
</tr>
<tr>
<td>PFAS (human health)</td>
<td>No</td>
</tr>
<tr>
<td>Nutrient Criteria</td>
<td>Site-specific (under development)</td>
</tr>
</tbody>
</table>
Topics for this Rulemaking

1,4-Dioxane

Cadmium

Selenium

Recreational bacteria (E. coli)

Eastern Band of Cherokee Indians

Definitions

Technical corrections
1,4-Dioxane

- Contaminant of Concern in NC
- Codification of standards for fish consumption & water supply
- Carcinogen
- Calculated per 02B .0208 and implemented as standards
- Toxicity data from EPA IRIS, exposure factors in rule 02B .0208

Link: Additional info: DEQ Cape Fear River 1,4-Dioxane study
1,4-Dioxane

- Standard to codify = 80 ug/L
- All surface waters for fish consumption
- 15A NCAC 02B .0208

\[ WQS = \frac{RL \times BW}{CPF \times (FCR \times BCF)} \]

CPF (Cancer Potency Factor) = 0.1 mg/kg/day
RL (Risk Level) = 1.00 x 10^{-6}
BW (Body Weight) = 70 kg
FCR (Fish Consumption Rate) = 17.5 g/person-day
BCF (Bioconcentration factor) = 0.5 L/kg
1,4-Dioxane

- Standard to codify = 0.35 ug/L
- Class WS waters (water supply)
- 15A NCAC 02B .0212 - .0218

\[
WQS = \frac{RL \times BW}{CPF \times (DWI + [FCR \times BCF])}
\]

- CPF (Cancer Potency Factor) = 0.1 mg/kg/day
- RL (Risk Level) = 1.00 x 10^{-6}
- BW (Body Weight) = 70 kg
- DWI (Drinking Water Intake) = 2.0 L/day
- FCR (Fish Consumption Rate) = 17.5 g/person-day
- BCF (Bioconcentration factor) = 0.5 L/kg
Cadmium

- Replace existing freshwater dissolved, hardness-dependent & saltwater dissolved Cadmium standards
- EPA’s Aquatic Life Ambient Water Quality Criteria for Cadmium – 2016
- 15A NCAC 02B .0211
- Sources: manufacturing (batteries, pigments, plastic stabilizers, metal coatings, alloys, electronics), naturally occurring*
## Cadmium

<table>
<thead>
<tr>
<th>Exposure</th>
<th>Current Standard (ug/L)</th>
<th>Proposed Standard (ug/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute, freshwater*</td>
<td>0.82</td>
<td>0.83</td>
</tr>
<tr>
<td>Acute, trout, freshwater*</td>
<td>0.51</td>
<td>0.49</td>
</tr>
<tr>
<td>Chronic, freshwater *</td>
<td>0.15</td>
<td>0.25</td>
</tr>
<tr>
<td>Acute, saltwater</td>
<td>33</td>
<td>40</td>
</tr>
<tr>
<td>Chronic, saltwater</td>
<td>8.8</td>
<td>7.9</td>
</tr>
</tbody>
</table>

*Hardness-dependent, calculated @ 25 mg/L hardness
Selenium

- Replace existing standard = 5 ug/L (total Se)
- EPA’s Aquatic Life Ambient Water Quality Criteria for Selenium (Freshwater) – 2016
- Updated toxicology information results in new chronic numeric criteria - bioaccumulation
- Sources: mining, coal-fired power plants, irrigated agriculture, naturally occurring
## Selenium

<table>
<thead>
<tr>
<th>Priority</th>
<th>Component</th>
<th>Magnitude</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fish egg/ovary</td>
<td>15.1 mg/kg</td>
<td>Instantaneous</td>
</tr>
<tr>
<td>2</td>
<td>Fish whole body</td>
<td>8.5 mg/kg</td>
<td>Instantaneous</td>
</tr>
<tr>
<td></td>
<td>Fish muscle tissue</td>
<td>11.3 mg/kg</td>
<td>Instantaneous</td>
</tr>
<tr>
<td>3</td>
<td>Water (lentic)</td>
<td>1.5 ug/L</td>
<td>30-day average</td>
</tr>
<tr>
<td></td>
<td>Water (lotic)</td>
<td>3.1 ug/L</td>
<td>30-day average</td>
</tr>
</tbody>
</table>

- Fish tissue given priority over water column data (*when available*)
- Class C waters
- 15A NCAC 02B .0211
Cyanide

- Existing 15A NCAC 02B .0211 standard:
  - Cyanide, total = 5 ug/L

- Based on EPA 1985 NRWQC for free cyanide – but no method published for free cyanide!

- Proposed standard:
  - Cyanide, free or total = 5 ug/L

- Adding free cyanide method as an alternative to total cyanide
Site-Specific Recreational (E. coli)

- Site-specific for **Class B waters** in 19 Counties (Asheville Region)
- EPA's 2012 Recreational Water Quality Criteria
- *E. coli* indicator replaces existing fecal coliform indicator
- 15A NCAC 02B .0219
- Sources: improperly functioning wastewater treatment plants, leaking septic systems, stormwater runoff, animal carcasses, and runoff from animal manure and manure storage areas.
## Site-Specific Recreational (E. coli)

<table>
<thead>
<tr>
<th>Standard Component</th>
<th>NC Proposed E. coli Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnitude</td>
<td>100 cfu or MPN per 100 mLs</td>
</tr>
<tr>
<td>Duration</td>
<td>Geometric mean of at least five samples collected over a 30-day period</td>
</tr>
<tr>
<td>Threshold Excursion Frequency</td>
<td>Not to exceed 320 cfu or MPN per 100 mLs in more than 20 percent* of samples in the 30-day period. (Comments on alternatives to this excursion frequency will be sought)</td>
</tr>
</tbody>
</table>
Eastern Band of Cherokee Indians

- Eastern Band of Cherokee Indians granted Treatment as a State by EPA
- EBCI now required to establish a Water Quality Standards Program to satisfy CWA requirements
- EBCI has jurisdiction over waters within boundaries

15A NCAC 02B .0301 language change:

“(f)(2) In addition to Subparagraph (f)(1) (1) of this Rule, Paragraph, for unnamed streams entering other states, tribes approved for treatment as a state and administering an United States Environmental Protection Agency approved water quality standards program, or for specific areas of a river basin, the following Rules shall apply:”
Definitions

15A NCAC 02B .0202

• "Lentic"
• "Lotic"
• "Industrial discharge" (clarification only)
Technical Corrections

Approved Jan. 2020 WQC & Mar. 2020 EMC, but not codified

15A NCAC 02B .0215
.0215(2)(f) Correct “WS-II classification” to “more protective classification, such as WS-III”

15A NCAC 02B .0216
.0216(2)(f) Correct “WS-IV classification” to “more protective classification, such as WS-II or WS-III”
Technical Corrections

15A NCAC 02B .0311(o)(4)

“(o) The Cape Fear River Basin Classification Schedule was amended effective November 1, 2007 with the reclassifications listed below, and the North Carolina Division of Water Resources maintains a Geographic Information Systems data layer of these UWLs. ... (4) Weymouth Woods Sandhill Seep near Mill Creek [18-23-11-(1)] was reclassified to Class WL UWL.”
Regulatory Impact Analysis

• Approved by OSBM Feb 11, 2021
• **Net benefit** $3.96 M over 10 years
  ✓ Local Gov’t ≥ Private >>> State Gov’t
  ✓ Higher freshwater Cd standard
  ✓ Addition of free Cn method
  ✓ Change from FC to *E. coli*

• Potential but unlikely costs from lower Se standard
Unquantified potential indirect long-term benefits to aquatic life, fisheries, and human health

- More accurate assessment of impairment
- Potential avoided increases in Se concentration
- Ongoing human health benefits from 1,4-dioxane ITVs
Additional Specific Topics for Public Feedback

- Human Health Criteria & updated exposure factors
- Ammonia Criteria (aquatic life)
- Recreational (E. Coli) Criteria – freshwater
- Shellfish leasing areas/mariculture designated use
- Recreational Cyanotoxin Criteria
- Methyl Mercury
- Aluminum Criteria (aquatic life)
- Contaminants of Emerging Concern
- Others?
- Variances
Action Item Request

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Chris Ventaloro  
Water Quality Standards Co-Coordinator  
Classifications, Standards and Rules Review Branch  
Division of Water Resources  

Christopher.Ventaloro@ncdenr.gov  
919-707-9016