North Carolina Department of Environment and Natural Resources

Pat McCrory
Governor

John E. Skvarla, III
Secretary

November 26, 2014

Mr. David H. Groves
Plant Manager
CPI USA North Carolina – Southport Plant
1281 Powerhouse Drive SE
Southport, NC 28461

SUBJECT: Applicability Determination No. 2512 – Secondary Material Determination
CPI USA North Carolina – Southport Plant
Facility ID No. 1000067
Southport, Brunswick County

Dear Mr. Groves:

The North Carolina Division of Air Quality (NC DAQ) received your letters dated October 15, 2014 and November 18, 2014 summarizing your analysis of creosote treated wood. CPI USA North Carolina (CPI) is proposing to burn creosote treated wood including railroad ties and utility poles as a fuel in six existing coal, tire-derived fuel (TDF) and wood-fired combustion units (boilers) rated at 223 million Btu per hour each at the existing 87 megawatt power plant. Note that the permitted fuels include coal, TDF, unadulterated biomass and wood, adulterated resinated wood, pelletized paper fuel/flyash briquette as well as natural gas and No. 2 and No. 4 fuel oil. Air emissions from these sources are each controlled by their respective bagfilter, rotating overfire air (ROFA) system, sorbent injection system, and selective non-catalytic reduction (SNCR) system (not installed to date). The boilers are used to generate steam which in turn operates the associated turbine/generator to produce electricity for sale to Duke Energy Progress in Southport, North Carolina.

Creosote treated wood is a non-hazardous secondary material (NHSM) within the meaning of Title 40, Part 241 of the Code of Federal Regulations (40 CFR Part 241). The creosote treated wood described in the letters referenced above is processed and meets the legitimacy criteria provided in 40 CFR 241.3(d)(1). The NC DAQ has determined, therefore, that the material is not a solid waste when used as fuel in a combustion unit. This determination relies on the language of the current Federal rule defining NHSM, discussions NC DAQ has had with representatives of the EPA, and on the proposed changes to the NHSM rule.

Processing of Discarded NHSM – 40 CFR 241.3(b)(4)

Pursuant to 40 CFR 241.2, "processing" means any operations that transform discarded NHSM into a non-waste fuel. "Processing" includes, but is not limited to, operations necessary to: remove or destroy contaminants; significantly improve fuel characteristics of the material, *e.g.* sizing or drying the material in combination with other operations; or chemically improve the as-fired energy content. Minimal operations that result only in modifying the size of the material by shredding do not constitute processing for purposes of this definition. "Secondary material" means any material that is not the primary product of a manufacturing or commercial process, and can include post-consumer material, off-specification commercial chemical products or manufacturing chemical intermediates, post-industrial material, and scrap.

The creosote treated wood that CPI proposes to burn is collected directly from the railroad and utility companies and transported to National Salvage & Service Corporation (National Salvage) for processing before delivery to CPI. The CTW is currently collected by National Salvage and directly transferred to CPI for further processing. CPI proposes to significantly improve the fuel combustion properties of the creosote treated wood in order to produce an engineered fuel prior to use in the boiler. CPI will improve the fuel characteristics of the material through visual inspection, sampling/testing, screening (removal of foreign materials), sizing, grinding, blending with traditional clean biomass, and drying and aging of wood. The creosote treated wood will be sampled and tested regularly for moisture content, ash content and approximate heat value. Large physical materials will be removed manually and by mechanical screening. Ferrous metal substances will be removed by passing the material through a magnetic separation system. Quality assurance testing on representative samples on a batch basis will ensure that contaminant levels are comparable to or less than those found in traditional fuels which the boiler is designed to burn. Then the creosote treated wood will be stored in an appropriate storage area until it is blended with the green wood on site and then placed in the associated wood chip bin. The stored creosote treated wood will normally be blended within 10 days of arrival with an existing wood pile to ensure adequate consistency in moisture and energy content, and limit emissions from combustion.

NC DAQ has determined that the processing steps described above meet the regulatory definition of "processing" in 40 CFR 241.2 with further support from a recent EPA determination of proposed NHSM fuels.[1]

Managed as a Valuable Commodity – 40 CFR 241.3(d)(1)(i)

CPI will store the creosote treated wood in a concrete lined receiving area prior to using it as a fuel to prevent moisture uptake in the material. Use of the concrete lined storage areas, particularly to limit moisture intake, is consistent with typical management of wood chips and other biomass fuels. In addition, CPI has indicated that it will normally blend and store the creosote treated wood for less than 10 days prior to burning the material as a fuel. The NC DAQ concludes that these management practices satisfy the requirement that the NHSM be managed as a valuable commodity, and if so managed, the creosote treated wood meets the legitimacy criterion pursuant to 40 CFR 241.3(d)(1)(i).

Meaningful Heating Value – 40 CFR 241.3(d)(1)(ii)

In the preamble to the final NHSM definitional rule, US EPA indicated that materials with a heat content of at least 5,000 Btu/lb presumptively satisfy this criterion.[2] CPI analyzed composite samples of creosote treated wood collected. The average as-received lower heating value (LHV) of the creosote treated wood is 5,083 Btu/lb as noted in the data attached to your request.

Since the processed creosote treated wood has an average heat content greater than 5,000 Btu/hr (approximately 5,083 Btu/lb LHV), the proposed fuel from the processed material satisfies this legitimacy criterion. The NC DAQ has determined that the material has meaningful heating value and meets the legitimacy criterion under 40 CFR 241.3(d)(1)(ii).

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[1] See Letter dated April 3, 2012 from Becky Weber, Director, Air and Waste Management Division , US EPA Region 7, to Mr. Gregory Haug, PE of Resource Enterprises, LLC. http://www.epa.gov/osw//nonhaz/define/pdfs/Lhoist-engineered-fuels.pdf

[2] 78 Fed. Reg. 9172 (Feb. 7, 2013).

Comparable Contaminant Concentrations – 40 CFR 241.3(d)(1)(iii)

In order for a NHSM to be classified as a non-solid waste fuel, it must "contain contaminants or groups of contaminants *at levels comparable in concentration to or lower than* those in traditional fuels which the combustion unit is designed to burn."[3]

Contaminants

Contaminants are defined as "all pollutants identified in the Clean Air Act sections 112(b) or 129(a)(4) *including the elements chlorine, fluorine, nitrogen, and sulfur in cases where non-hazardous secondary material are burned as fuel and combustion will result in the formation of hydrogen chloride, hydrogen fluoride, and nitrogen oxides or sulfur dioxide.*"[4] In addition to a specific list of pollutants and precursors that fall within the definition of "contaminants," the listing also excludes pollutants that are unlikely to be found in non-hazardous secondary materials as well as individual cresol and xylene isomers.[5]

The NC DAQ reviewed the concentrations of the following contaminants in the creosote treated wood:

- **Metals:** Antimony, Arsenic, Beryllium, Cadmium, Chromium, Cobalt, Lead, Manganese, Mercury, Nickel, and Selenium
- **Halogens:** Chlorine, Fluorine
- **Additional Precursors:** Nitrogen, Sulfur

Designed, not Permitted to Burn

To determine whether a NHSM satisfies the legitimacy criteria, the current rule requires that the contaminant levels in the NHSM be compared against the levels in "traditional fuels which the combustion unit is designed to burn."[6]

Further, the US EPA issued a Guidance Concept Paper indicating its intent to "address questions raised by industry, assist them in making determinations under the rule, and ensure their use of the flexibility embodied in the rule."[7] The Agency forecasted that the guidance would include a compilation of data it had collected on contaminant levels in traditional fuels which could be used by industry and other interested parties in the contaminant level comparison.

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[3] 40 CFR 241.3(d)(1)(iii) (February 7, 2013) (*emphasis added*). Note effective April 8, 2013; however, this rule revision does not affect the outcome of this determination.

[4] 40 CFR 241.2 (February 7, 2013) (*emphasis added*).

[5] The definition is as follows: "*Contaminants* means all pollutants listed in Clean Air Act sections 112(b) and 129(a)(4), with the following three modification. This definition includes the elements chlorine, fluorine, nitrogen, and sulfur in cases where non-hazardous secondary materials are burned as a fuel and combustion will result in the formation of hydrogen chloride (HCl), hydrogen fluoride (HF), nitrogen oxides (NO_x), or sulfur dioxide (SO_2). The definition does not include the following pollutants that are either unlikely to be found in non-hazardous secondary materials and products made from such materials or are adequately measured by other parts of this definition: hydrogen chloride (HCl), chlorine gas (Cl_2), hydrogen fluoride (HF), nitrogen oxides (NO_x), sulfur dioxide (SO_2), fine mineral fibers, particulate matter, coke oven emissions, diazomethane, white phosphorus, and titanium tetrachloride. The definition does not include m-cresol, o-cresol, p-cresol, m-xylene, o-xylene, and p-xylene as individual contaminants distinct from the grouped pollutants total cresols and total xylenes." See 78 Fed. Reg. 9212 (Feb. 7, 2013).

[6] 40 CFR 241.3(d)(1)(iii) (February 7, 2013).

[7] US EPA, "Non-Hazardous Secondary Materials (NHSM) Rule: Comparable Contaminant Guidance Concept Paper" (July 11, 2011. http://www.epa.gov/osw/nonhaz/define/pdfs/nhsm-concept.pdf

The guidance was provided by US EPA on November 29, 2011. It consists of three tables that provide a range of compiled contaminant concentrations for coal, untreated wood and biomass materials, and fuel oils.[8] The table does not distinguish between concentration levels of different coal ranks (i.e., anthracite, bituminous, sub-bituminous, and lignite) or different types of biomass (i.e., wood, bark, biogas, hogged fuel, and agricultural plant residues).[9] This approach is consistent with the NHSM rule revisions that US EPA finalized on February 7, 2013.

The US EPA codified the meaning of "designed to burn" to include "a traditional fuel that can be or is burned in the particular type of boiler, whether or not the combustion unit is permitted to burn that traditional fuel."[10] Also, in the preamble of final rule US EPA clarified the language regarding potential fuel category groups that any grade/rank (e.g. anthracite, lignite, bituminous and sub-bituminous coal) could be used in the traditional fuel contaminant levels of "designed to burn" fuel for comparison purposes.[11]

CPI is proposing to burn the processed creosote treated wood in their existing boiler systems. CPI has indicated that their boiler systems are designed and permitted to burn solid fuels, including coal and wood but primarily burns wood/biomass. CPI is also permitted to burn natural gas and No. 2 and No. 4 fuel oil. In accordance with US EPA's interpretation of "designed to burn," the NC DAQ compared the concentrations of contaminants in the creosote treated wood to the contaminant levels in coal and wood/biomass materials as provided in the November 29, 2011 guidance document and literature values.

Results of the Contaminant Comparison

The US EPA has indicated that a variety of comparisons could be made. For example, the highest contaminant levels in the NHSM could be compared against the highest contaminant levels in the relevant traditional fuels. Alternatively, the average values of the NHSM could be compared with the average values of the traditional fuels. "Anything less could result in 'traditional fuel' samples being considered solid waste if burned in the very combustion units designed to burn them – not the Agency's intent in either the 2011 NHSM final rule or February 7, 2013 NHSM final rule."[12] However, using different bases for comparison could lead to different results. The US EPA warned that "[i]t would not be appropriate to compare an average NHSM contaminant value to the high end of a traditional fuel range, as the existence of an average implies multiple data points from which a more suitable statistic (*e.g.,* range or standard deviation) could have been calculated." Finally, the US EPA warned that "in the context of an inspection or enforcement action, the Agency will evaluate the appropriateness of alternative methodologies and data sources on a case-by-case basis when determining whether the legitimacy criteria have been met."[13] The NC DAQ chose to use both maximum values and averages in this comparison.

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[8] US EPA, "Contaminant concentrations in Traditional Fuels: Tables for Comparison" (November 29, 2011). http://www.epa.gov/osw/nonhaz/define/pdfs/nhsm_cont_tf.pdf

[9] This, despite the fact that a coal fired boiler is designed differently based on the rank of coal it will burn.

[10] 78 Fed. Reg. 9213 (Feb. 7, 2013).

[11] 78 Fed. Reg. 9148 (Feb. 7, 2013).

[12] 78 Fed. Reg. 9151 (Feb. 7, 2013).

[13] 78 Fed. Reg. 9151 (Feb. 7, 2013).

CPI analyzed the contaminant levels in composite samples of creosote treated wood supplied by National Salvage. A summary of the measured contaminant levels and the contaminant levels in coal and wood/biomass materials is provided as attachment to this letter. All contaminants show that the measured contaminant levels in the creosote treated wood are within the range of contaminant concentrations in the traditional fuel (wood/biomass and coal) that the existing boiler systems actually burn or is capable of burning (both using maximum values and averages).

Given the comparability of all relevant contaminants between biomass and creosote treated wood as characterized by your submittal, the NC DAQ has determined that the creosote treated wood does meet the legitimacy criteria under 40 CFR 241.3(d)(1)(iii).

Conclusion

As described in the letters received from CPI on October 17, 2014 and November 19, 2014, the creosote treated wood is processed and does meet the legitimacy criteria provided in 40 CFR 241.3(d)(1). Therefore, the NC DAQ has determined that it is not a solid waste when used as fuel in a combustion unit. As a result of this determination, the existing boilers would not be subject to the combustion source emission standards for biomass fuel promulgated pursuant to Section 129 of the Clean Air Act. If you have any questions regarding this NHSM determination, please contact Mr. Jeff Twisdale at (919) 707-8472.

Sincerely,

for William D. Willets, P.E., Chief, Permitting Section
Division of Air Quality, NCDENR

Attachment

c: Wilmington Regional Office
Central Files

of two representative types of creosote treated wood, CTRT and CTUP, fuel concentrations. The results are contained in Table 2-1.

Table 2-1 presents a summary of analytically measured contaminant concentration ranges based on data collected by U.S. EPA for coal and biomass compared to the analytical data from one CTRT sample and one CTUP sample from potential suppliers in the vicinity of the Southport facility. The CTRT and CTUP data clearly fall below the typical ranges expected for coal and the types of wood listed in the permit for combustion. It is anticipated that the contaminant concentrations of all creosote treated wood received at the Southport facility will have compositions within the range of traditional fuels that the boilers are capable of accommodating, and therefore no change in emissions from the boilers is anticipated.

Table 2-1, Fuel concentration comparisons to CTRT and CTUP

	Range (ppmw)			
Metals	**Coal[1]**	**Biomass[1]**	**CTRT[2]**	**CTUP[3]**
Antimony	ND - 6.9	ND - 6.0	<1.3	<1.1
Arsenic	ND - 174	ND - 298	2.5	0.64
Beryllium	ND - 206	ND -10	<0.32	<0.28
Cadmium	ND - 19	ND - 178	<0.25	<0.23
Chromium	ND - 168	ND - 240	9.6	0.88
Cobalt	ND - 25.2	ND - 213	<3.2	<2.8
Lead	ND - 148	ND - 229	6.1	2.1
Manganese	ND - 512	ND - 15,8000	94.5	71.9
Mercury	MD - 3.1	ND - 1.1	0.065	<0.042
Nickel	ND - 730	ND - 175	5.1	<2.3
Selenium	ND - 74.3	ND - 9.0	<1.3	<1.1
Halogens				
Chlorine	ND - 9,080	ND - 5,200	NA	NA
Fluorine	ND - 178	ND - 128		
Precursors				
Nitrogen	13,600 - 54,000	2,200 - 4,600	1,200	1,300
Sulfur	740 - 61,300	ND - 6,100	700	900

1) US EPA's Contaminant Concentrations in Traditional Fuels: Table for Comparison (Nov. 29, 2011). http://www.epa.gov/osw/nonhaz/define/pdfs/nhsm_cont_tf.pdf
2) Coastal Carolina Clean Power (CCCP) fuel analysis results for CTRT
3) CCCP fuel analysis results for CTUP