

Air Permit Review

Permit Issue Date: PROPOSED

Region: Washington Regional Office
County: Hertford
NC Facility ID: 4600024
Inspector's Name: Arni Hopkins
Date of Last Inspection: 06/23/2006
Compliance Code: C/In Compliance With
 Procedural Reqr

Facility Data			Permit Applicability (this application only) SIP: NSPS: NESHAP: DDDDD PSD: PSD Avoidance: NC Toxics: 112(r): Other: MACT Health Based Compliance Alternative for manganese
Applicant (Facility's Name): Georgia -Pacific - Ahoskie Chip-N-Saw Plant Facility Address: Georgia -Pacific - Ahoskie Chip-N-Saw Plant 561 East Harrelsville Road Ahoskie, NC 27910 SIC: 2421 / Sawmills & Planing Mills General NAICS: 321113 / Sawmills Facility Classification: Before: Title V After: Title V Fee Classification: Before: Title V After: Title V			
Contact Data			Application Data Application Number: 4600024.06A Date Received: 09/05/2006 Application Type: Modification Application Schedule: TV-Significant Existing Permit Data Existing Permit Number: 1837/T14 Existing Permit Issue Date: 02/16/2007 Existing Permit Expiration Date: 08/31/2011
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Review Engineer: Michael Brandon, P.E. Review Engineer's Signature: _____ Date: _____		Comments / Recommendations: Issue 01837/T15 Permit Issue Date: PROPOSED Permit Expiration Date: 08/31/2011	

1. Purpose of Application:

The purpose of this application is to incorporate enforceable conditions pertaining to the emissions and health related impact of manganese from a wood-fired boiler. The application is being processed as a significant modification because of the addition of an emission limit for manganese, and monitoring, recordkeeping, and reporting requirements.

Changes to the Title V permit are as follows:

PAGE	CONDITION	CHANGE
6	2.1 B.4.b.	Added a requirement to submit a permit application for incorporation of MACT boiler compliance provisions (testing, monitoring, recordkeeping, and reporting) at the time that the Notification of Compliance is submitted to the DAQ.
6	2.1 B.4.c.	Added HBAC eligibility statement and general monitoring recordkeeping and reporting caveat.
13	Section 3 General Condition O.	The rule citations were corrected for the Retention of Records Condition. The general conditions are now current with Title V shell version 2.19.

2. Background

The applicant has requested to comply with the total selected metals (TSM) standard in lieu of the particulate standard contained in the boiler MACT pursuant to 40 CFR 63.7507(b) for their wood-fired boiler (ID No. ES-B1; 91.8 million Btu per hour heat input). The National Emission Standard for Hazardous Air Pollutants (NESHAP), Subpart DDDDD, allows a facility to demonstrate compliance with the TSM emission limit (arsenic, beryllium, cadmium, chromium, lead, nickel, selenium, and manganese) by excluding manganese emissions provided that the facility demonstrates that the impact due to manganese emissions will not adversely affect public health through risk assessment in accordance with Appendix A. The provision requires that the demonstration be made by September 13, 2006.

The Division of Air Quality (DAQ) is required to review the Health Based Compliance Alternative (HBAC) in accordance with the provisions of Appendix A of NESHAP Subpart DDDDD and incorporate enforceable conditions into the facility's operating permit to ensure that conditions under which the HBCA demonstration was conducted remain valid.

a. Source Testing

The facility conducted source testing (June 22, 2006) to determine particulate and TSM (arsenic, beryllium, cadmium, chromium, lead, manganese, nickel, and selenium) at 76.9, 80.5, and 84.1 million Btu per hour heat input (33,000 pounds per hour steam). The average heat input was 80.5 million Btu per hour. Particulate emissions were 13.1 lb/hr (0.163 lb/million Btu) and manganese emissions were 0.101 lb/hr (0.00126 lb/million Btu). The source test report cited that there were no controls on this unit although the unit is equipped with a multiclone. The testing was reviewed and approved by the Stationary Source Compliance Branch in a memorandum dated April 17, 2007.

b. Fuel Sampling

Fuel sampling was conducted during source testing and the average Mn content of the wood was determined to be 49.5 ppmw. Fuel was also determined to have average moisture content of 41.6% by weight, which is the maximum assumed moisture content for the purposes of this analysis. The Stationary Source Compliance Branch approved fuel sampling on April 18, 2007.

Other fuels combusted in small quantities at this facility include No. 2 fuel oil for start up, used hydraulic fluid, and spill clean up spill. These fuels were not evaluated because they do not constitute a significant portion of fuel burned on an annual basis. No. 2 fuel oil analysis at other facilities has not detected manganese.

c. Modeling

AERMOD was used to predict the worst-case manganese (Mn) impact of 0.034 micrograms/m³ (HQ=0.68) based on an emission rate of 0.3 lb/hr. Modeling was reviewed and approved by AQAB March 7, 2007.

3. Application Chronology:

The application was received on September 5, 2006, and deemed complete on April 18, 2007.

4. HBAC Analysis

Worst-case manganese emissions of 0.3 pounds per hour were determined by "factoring up" the source test results for particulate and manganese emissions with the allowable PM emission rate of 0.43 pounds per million Btu heat input.

$$\text{Tested Mn/Tested PM} \times \text{Allowable PM} = \text{Worst Case Mn emission rate} \\ 0.00126 \text{ lb Mn}/10^6 \text{ Btu}/0.163 \text{ lb PM}/10^6 \text{ Btu} \times 0.43 \text{ lb PM}/10^6 \text{ Btu} = 0.305 \text{ lb/hr Mn}$$

The single source model rate of 0.3 lb/hr Mn predicted a maximum concentration of 0.034 micrograms/m³ that was compared to the Chronic Dose-Response Value for Screening Risk Assessments, or reference concentration (RfC) contained in EPA's "Air Toxics Risk Assessment Reference Library, Volume 2, Site Specific Risk Assessment Technical Resource Document". The RfC for Mn is 0.05 micrograms/m³, evaluated on an annual average basis. The comparison, or ratio, yields a Hazard Quotient (HQ) for Mn that must be less than one. The HQ for manganese at the modeled rate was determined to be 0.68. Therefore, the facility has demonstrated its eligibility to use the HBCA for Mn.

5. Required Permit Action

The applicant requests a manganese emission rate of 0.3 lb/hr and stack height of 15.24 meters, and maximum stack surface area of 1.76 square meters. However, the compliance buffer was determined from the emission rate used in the single source modeling that will meet a HQ=1 to determine the necessity for an emissions limitation.

HQ allowable/HQ predicted x modeled emission rate:

$$1.0/0.68 \times 0.3 \text{ lb Mn/hr} = 0.44 \text{ lb Mn/hr allowable } (0.44 \text{ lb/hr}/91.8 \times 10^6 \text{ Btu/hr} = 0.0048 \text{ lb Mn}/10^6 \text{ Btu})$$

Since the PM standard would be exceeded at this emission rate at the tested manganese concentration (50.4 ppmw), the manganese concentration in the wood was increased by a proportional amount to show the maximum manganese concentration at the allowable PM rate from a hazard quotient of 1.

$$50.4 \times 0.44/0.3 = 73.9 \text{ ppmw.}$$

This is higher than the highest fuel sample manganese concentration of 54.8 ppmw. Therefore, it can safely be assumed that the variability of manganese in the wood is not likely to be great enough to cause an adverse health impact and no monitoring of the 0.44 lb Mn /hr limitation is considered necessary for the facility to remain eligible to use the HBCA for manganese. The NESHAP Subpart DDDDD will require that fuel sampling be conducted simultaneously with source testing every year for at least the first three years. The multiclone must also meet a visible emission limit of 10 percent opacity. DAQ has decided that no monitoring or recordkeeping above the MACT requirements pertaining to the particulate/TSM limitation for other control devices and dry electrostatic precipitators will be required. This was determined during a meeting with URS on March 15, 2007 regarding HBCA for Camp Lejeune as recorded by Donald van der Vaart. Monitoring and recordkeeping requirements will be effectively enforceable via the MACT compliance provisions as of the compliance date and will be included in the permit at the time that the Notification of Compliance (NOC) is received by the DAQ for permit revision. However, the manganese emission limit and a general caveat will be added that requires the Permittee to report any changes in emissions parameters, fuel, or the addition/discovery of other emissions units that may render the risk analysis invalid state that the Permittee has adequately demonstrated their eligibility to use the HBAC for Mn in conjunction with the TSM limitation. The condition reads as follows:

"The Permittee has adequately demonstrated their eligibility to use the health based compliance alternative for manganese (Mn) in conjunction with the boiler MACT total selected metals (TSM) emission limitation pursuant to Appendix A of 40 CFR 63, Subpart DDDDD. Manganese emissions shall not exceed 0.44 pounds per hour. The Permittee shall report changes in emissions parameters, fuel, or the addition/discovery of other emissions units that may render the risk analysis submitted in application 4600024.06A invalid. Failure to monitor and report the changes will constitute a violation of 15A NCAC 2D .1111."

6. Conclusions, Comments, and Recommendations:

The RCO recommends issuance of permit revision 1837T15.

The WARO recommends issuance of permit revision 1837T15.

A thirty-day public comment period and EPA review are required. This comment period runs concurrently and commenced on ??? and ended on ???. ??? comments were received.