



west virginia department of environmental protection

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ENGINEERING EVALUATION/FACT SHEET

B BACKGROUND INFORMATION

Application No.:	R13-2050G
Plant ID No.:	039-00011
Applicant:	Clearon Corporation
Facility Name:	Chlorinated Dry Bleach Plant
Location:	South Charleston
NAICS Code:	325180
Application Type:	Modification
Received Date:	October 19, 2015
Engineer Assigned:	Edward S. Andrews, P.E.
Fee Amount:	\$1000.00
Date Received:	October 21, 2015
Complete Date:	November 12, 2015
Due Date:	February 10, 2015
Applicant Ad Date:	October 24, 2015
Newspaper:	<i>Charleston Daily Mail</i>
UTM's:	Easting: 438.4 km Northing: 4,246.6 km Zone: 17
Description:	This action is for the replacement of Tank T-1003 at the facility.

DESCRIPTION OF PROCESS

Clearon Corporation's (Clearon) primary products are purified cyanuric acid and chlorinated isocyanurates also known as CDB. The facility operates on a year-round basis, 24-hours per day, and 365 days per year.

Cyanuric acid is produced from the pyrolysis of urea. The cyanuric acid is used as the feed stock to produce various types of CDBs at the South Charleston Plant. CDBs are produced by chlorinating the cyanuric acid. Cyanuric acid is also sold to other manufacturers for the production of their chlorinated dry bleaches or as CDB stabilizers.

Cyanuric acid and chlorinated dry bleaches are used in the production of swimming pool treatment chemicals, cleansers, dishwashing detergents and various other products whose primary functions are cleaning, disinfecting, and sanitizing.

The sulfuric acid tank (T-1003) serves as a backup tank to the primary sulfuric acid tank (T-1007). Sulfuric acid is utilized in the production process to remove excess moisture that remains entrained with the chlorine gas. The existing T-1003 tank has a capacity of 3,200 gallons. Clearon proposes to replace T-1003 with a 3,000 gallon tank.

SITE INSPECTION

On September 21, 2015, Ms. Rebecca Johnson, an inspector assigned to the Compliance and Enforcement Section of the DAQ, conducted a routine compliance inspection of the South Charleston Plant. As a result of this inspection Ms. Johnson determined that the facility has been operating within compliance of their current permits and applicable rules. This writer determined that a site visit of the facility was not necessary for the review of this modification permit.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

The main pollutant released from this storage tank is sulfuric acid. The applicant used U.S. EPA's TANKs computer program. This approach yielded an estimate of 0.02 pounds of sulfuric acid losses on an annual basis.

The TANKs program does not specifically have sulfuric acid in the database. The writer used the tank loses property stencil and the chemical database in ProMax™, ProMax™ is a continuous process simulator with a chemical database of 2,080 chemical components. The tank loses property stencil in ProMax™ calculates working and breathing losses from vessels using the equations from Chapter AP-42. With this available database, the writer was able to create a solution of sulfuric acid at 97% concentration. The writer predicted the maximum potential of sulfuric acid to be 8.47E-7 tons per year (0.002 pounds per year). This was based on one turnaround every hour.

REGULATORY APPLICABILITY

The facility is an existing major source of HAPs. This proposed modification will not change this status. This proposed vessel will be supporting the urea pyrolysis kiln.

The new sulfuric acid tank is subject to the mineral acid standard of 45CSR7 because the vessel emits sulfuric acid. According to 45 CSR §7-4.2 and Table 45-7B, no vent is allowed to release sulfuric acid mist in concentrations greater than 35 mg/m³ (8.6 ppmv).

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Assuming the filling operation would take 60 minutes to fill the vessel with 3,000 gallons, the sulfuric acid concentration was predicted to be 23.97 mg per cubic meter by the applicant and 0.008 mg per cubic meter. The applicant based this concentration of the working losses of one turnaround of the vessel during the month of August, which was 0.0006 pounds of sulfuric acid mist. Using the Tank Losses property stencil in ProMax™, the writer is able to account for the water and sulfuric acid in the working losses, which was 1.89E-7 pounds of sulfuric acid per hour with a turnaround rate of one turnaround per hour. Regardless of the prediction method used, the vessel would be in compliance without the use of an add-on control device.

This vessel is not a manufacturing process; it is simply supporting a manufacturing process. Thus, the vessel is not subject to the visual emission standard of 45 CSR §7.3.1.

No other rules or regulations are applicable to this modification. This modification is not a major modification because the project increases of the New Source Review (NSR) pollutants are below the significance level as prescribed in Rule 14 (i.e. CO less than 100 tpy, NO_x less than 40 tpy). The permittee filed a complete application, paid the appropriate fees, and published a Class I legal ad to satisfy the modification permit requirements under Rule 13. Clearon has filed with this modification an Administrative Amendment request for these change to be incorporated into the facility Title V Operating Permit. The facility will remain a major source subject to Title V as a “5A Source”.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

Even with the new tank, the facility would not be either emitting a new HAP or toxic air pollutant other than what is currently being emitted. Thus, no information about the toxicity of the hazardous air pollutants (HAPs) is presented in this evaluation.

AIR QUALITY IMPACT ANALYSIS

The writer deemed that an air dispersion modeling study or analysis was not necessary, because the proposed modification does not meet the definition of a major modification of a major source as defined in 45CSR14.

MONITORING OF OPERATIONS

The potential emissions of sulfuric acid from the tank is only 68% of the allowable under Rule 7 without controls during filling operations, which is the activity that has the greatest potential of emissions. Thus, the writer recommends tracking the actual concentration of acid delivered to the facility.

CHANGES TO PERMIT R13-2050F

Permit R13-2050F currently covers the urea pyrolysis kiln and associated support equipment at the facility. This permit is written in the old permit format with an appendix that has emission limits for the kiln and support equipment. The writer recommends converting Permit R13-2050G into the new format and adding the emission limits from Appendix A of Permit R13-2050F in Conditions 4.1.1., 4.1.10., and 4.1.12. The permit had established a mass sulfuric acid emission limit and Rule 7 sulfuric acid concentration limit for Tank T-1007. The mass emission limit for Tank T-1007 was 5.0 E-7 tons per year. The Director has already determined that this low of an emission limit for a storage vessel is unreasonable. The writer recommends omitting it and retaining only the Rule 7 sulfuric acid mist allowable in the permit.

The Rule 6 visible emission standard was added to Condition 4.1.1. because the Ammonia Incinerator (F-1804) is subject to this rule and was not included in Permit R13-2050F.

RECOMMENDATION TO DIRECTOR

The information provided in the permit application indicates the proposed modification of the facility will meet all the requirements of the application rules and regulations when operated in accordance to the permit application. Therefore, the writer recommends granting Clearon Corporation a Rule 13 modification permit for their replacement Tank T-1003 located at the South Charleston Chlorinated Dry Bleach Plant in South Charleston, WV.

Edward S. Andrews, P.E.
Engineer

December 28, 2015
Date

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