west virginia department of environmental protection

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Evaluation Memo

Application Number:	PD15-047
Facility ID Number:	061-00061
Name of Applicant:	Addivant USA, LLC
Name of Facility:	Morgantown North Plant
Location of Facility:	Morgantown, Monongalia County
Latitude/Longitude:	39.609619°/-79.975421°
Application Type:	Permit Determination
Submission Date:	June 4, 2015
Complete Date:	June 4, 2015
Due Date:	**July 16, 2015**
Engineer:	Joe Kessler

Background Information

On June 4, 2015 Addivant USA, LLC (Addivant), submitted a Permit Determination Form (PDF) for proposed changes at their Morgantown North Plant located at the Morgantown Industrial Park in Morgantown, Monongalia County, WV. According to Addivant, the facility was constructed in the 1960's (Addivant acquired the facility in May 2013) and the majority of the facility is considered grandfathered under 45CSR13. The facility, however, was the subject of several permits in the 1970's and early 1980's that are no longer active and operates under Permit Number R13-1220C to produce Ultranox 626 and for the use of a boiler. Many previous permit determinations have also been submitted for the facility (the last in 2013). There is no Title V permit for the facility.

Statutory Authority of the DAQ

The statutory authority of the of the DAQ is given under the Air Pollution Control Act (APCA) - West Virginia Code §22-5-1, et. seq. Based on the language under §22-5-1, et. seq., the DAQ, in making "stationary source" determinations under 45CSR13, does not take into

consideration non-air quality issues such as nuisance potential (noise, sight line obstruction, traffic) or non-air quality environmental impacts.

Description of Process

Addivant is proposing to modify an existing chemical manufacturing unit at its North Plant. This change will utilize an existing Weston® 705 (W705) production line (with significant modifications) to increase the production of the material from 10,000 tons/year to 10,500 tons/year. The previous owner of the facility (Chemtura Corporation) received a no permit needed determination (PD10-053) from the DAQ in 2013 for a production run of this product of 10,000 tons/year.

Addivant is now requesting the use of an additional reactor, storage tanks, and truck loadouts, and other equipment to effect this increase in production and to make other quality control improvements in the production of W705 - a plastic additive. A 13.0 mmBtu/hr natural gas-fired boiler will be added to supply additional steam for this project. It will replace an existing 6.0 mm Btu/hr boiler currently used. A complete and detailed process description was included with the PDF.

Air Emissions and Calculation Methodologies

Addivant submitted extensive, complex, and detailed emissions calculations of the emissions increase associated with the proposed change discussed above. They based the calculations on the following basic parameters: W705 production occurs in a 10-hour batch process and produces a maximum of 10,400 pounds/batch. According to Addivant, this batch time is chemistry-based and is otherwise not limited by artificial constraints. The amount produced per batch is the maximum based on the size of the reactor vessels. The annual production of W705 is based on 85% the maximum number of 10-hour batches that can be made in 8,760 hours in the three (3) reactors (the 15% reduction represents a reasonable downtime for maintenance, cleaning, etc.). The amount of raw materials used in the production process was based on the chemistry of the W705 production process. Addivant zeroed out all control device efficiencies (not inherent in the production process) pursuant to DAQ policies in calculating maximum potential emissions in a permit determination process. Fugitive emissions, storage tank, and truck loadout emissions were also based on the reasonable maximum thorughputs of the materials used to produce the batches as noted above.

Emissions from the new natural gas-fired boiler (Section 1.4), storage tanks (TANKS 4.09d program as provided under Section 7), and truck loadouts (Section 7) were based on the emission factors as given in AP-42 (AP-42 is a database of emission factors maintained by USEPA). Fugitive emissions leak calculations were based on emission factors taken from the document EPA-453/R-95-017 - "Protocol for Equipment Leak Emission Estimates," Table 2-1 and the applicable component counts.

Based on the submitted calculations, the maximum emissions increase with the proposed changes were estimated by Addivant to be a maximum of 7.39 lb-VOC/hr (0.83 lbs-HAPs/hr) and 9.00 tons-VOCs/year (1.98 tons-HAPs/year). The maximum daily emissions of VOCs were calculated at 55.49 lbs/day. Small amounts of combustion exhaust are produced by the new boiler, the highest being NO_x at 1.27 lbs/hr, 30.48 lbs/day, and 5.58 tons/year.

Regulatory Applicability

The proposed changes above are subject to applicable requirements in the following state and federal air quality rules and regulations: 45CSR2, 45CSR10, and 40 CFR 60 Subpart Dc. Each applicable rule will be discussed in detail below.

45CSR2: To Prevent and Control Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers.

The new 13.0 mmBtu/hr natural gas-fired boiler has been determined to meet the definition of a "fuel burning unit" under 45CSR2 and is, therefore, subject to the applicable requirements therein. Each 45CSR2 requirement is discussed below.

45CSR2 Opacity Standard - Section 3.1

Pursuant to 45CSR2, Section 3.1, the boiler is subject to an opacity limit of 10%. Proper maintenance and operation of the boilers (and the use of natural gas as fuel) should keep the opacity of the units well below 10% during normal operations.

45CSR2 Weight Emission Standard - Section 4.1.b

The allowable particulate matter (non-condensable total PM) emission rate for the boiler, identified as a Type "b" fuel burning unit, per 45CSR2, Section 4.1.a, is the product of 0.09 and the total design heat input of the boiler in million Btu per hour. The maximum aggregate design heat input (short-term) of the boiler is 13.0 mmBtu/hr. Using the above equation, the 45CSR2 PM emission limit of the boiler is 1.17 lb/hr. The maximum potential hourly PM emissions (including condensables) from the boiler is estimated to be 0.10 lb/hr. This emission rate is 8.28% of the 45CSR2 limit.

45CSR2 Control of Fugitive Particulate Matter- Section 5

Section 5 of 45CSR2 requires a fugitive particulate matter control system for any source of fugitive particulate matter associated with the fuel burning units. Using natural gas as the fuel of the boilers will result in no potential for substantive fugitive emissions from the boilers.

45CSR10: To Prevent and Control Air Pollution from the Emission of Sulfur Oxides

45CSR10 has requirements limiting SO_2 emissions from "fuel burning units," limiting in-stack SO_2 concentrations of "manufacturing processes," and limiting H_2S concentrations in process gas streams. The proposed new 13.00 mmBtu natural gas-fired boiler is defined as a "fuel burning unit" and subject to the applicable requirements discussed below.

45CSR10 Fuel Burning Units - Section 3

The allowable SO_2 emission rate for the boiler, identified as Type "b" fuel burning units, per 45CSR10, Section 3.2(c), is the product of 1.6 and the total design heat input of the boiler in million

Btu per hour. The maximum aggregate design heat input (short-term) of the boiler is 13.00 mmBtu/hr. Using the above equation, the 45CSR10 SO_2 emission limit of the boiler will be 20.80 lb/hr. The maximum potential hourly SO_2 emissions from the boiler is estimated to be 0.01 lb/hr. This emission rate is only a trace of the 45CSR10 limit.

40 CFR 60, Subpart Dc: Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units

The proposed boiler is subject to 40 CFR 60, Subpart Dc under the applicability requirements of §60.40c(a). Subpart Dc does not have any emission standards for combusting only natural gas. However, the boiler is subject to the record-keeping and reporting requirements given under §60.48c.

Determination of Permit Applicability

Pursuant to §45-13-5.1, "[n]o person shall cause, suffer, allow or permit the . . . modification . . . and operation of any stationary source to be commenced without . . . obtaining a permit to . . . modify." The definition of "modify" is given under Section 2.17 of 45CSR13 and primarily defines various emission levels that would define any proposed changes as a modification and require Addivant to get a permit prior to construction. Based on the emission estimate submitted by Addivant as discussed above, the proposed changes do not exceed any of the modification thresholds under §45-13-2.17.

Additionally, the definition of "stationary source" under Section 2.24 of 45CSR13 includes in the definition any facility that "is subject to any substantive requirement of an emission control rule promulgated by the Secretary." Based on long-standing DAQ policy and the "dual-definition" of a source, this test is also applied to proposed changes to determine if they meet the definition of modification. In the case above the only substantive requirement of a rule applicable to the proposed changes is under 45CSR2 and 45CSR10 (see discussion above). However, previously, the DAQ has stated that natural gas boilers that do not exceed the modification thresholds under §45-13-2.17 do not trigger the substantive requirement test as mentioned above. This was done because particulate matter and SO_2 emissions from these boilers (those generally less than 60 mmBtu) are nominal and far below the applicable limits under 45CSR2 and 45CSR10. Further, the applicability to 40 CFR 60, Subpart Dc only includes a notification and record-keeping requirement that is not considered substantive.

Summary and Recommendation

Based on the information provided by Addivant, I recommend the issuance of a "no permit needed" letter to Addivant USA, LLC for the proposed changes at their Morgantown North Plant.

Joe Kessler, PE
Engineer

6/24/15
Date