



west virginia department of environmental protection

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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.: R13-0435A *After-the-Fact*
Plant ID No.: 009-00008
Applicant: Eagle Manufacturing
Facility Name: Wellsburg
Location: Wellsburg, Brooke County, West Virginia
NAICS Code: 332431
Application Type: Class II Administrative Update
Received Date: September 16, 2015
Engineer Assigned: Thornton E. Martin Jr.
Fee Amount: \$1,000.00
Date Received: September 17, 2015
Complete Date: October 21, 2015
Applicant Ad Date: September 28, 2015
Newspaper: *Intelligencer*
UTM's: Easting:533.09889 km Northing:4,496.5707 km Zone: 17
Description: The applicant proposes the addition of a 1980's vintage boiler (12.5 MMBtu/hr) for heat generation only for the plant. In addition, the High Density Polyethylene (HPDE) Extruder and the Powder Coat Dryer are included in the application as existing emission sources. Finally, the format of the permit has been converted to the NSR Permit, Revision 2-1-13, boilerplate language.

DESCRIPTION OF PROCESS

The following process description was compiled from the application received (R13-0435A), the original permit application (R13-0435) and archived facility inspection reports. The original permit (R13-0435) was issued on October 03, 1978 to construct a metal drum cleaning bath (acid solution: 88% H₂O, 10% HNO₃ and 2% HF) to remove metal filings and oil residues prior to storage. A water scrubber (Nichaus Model B Scrubber) constructed of polyvinyl chloride (impervious to acid vapor) is used to prevent acid emissions using water as the scrubbing liquor.

The cleaning tank (with a water scrubber as a control device) was removed around 1980 according to the Division of Air Quality's SBAP representative. Eagle Manufacturing owns and operates a variety of stamping machines, dryer, five (5) blow and one (1) injection molding units. Both metal and plastic safety cans and butt cans are produced at the plant. For economic reasons the production of plastic gasoline cans were discontinued in the early 2000's. Both injection molding and blow molding are used to produce the various plastic components. Metal can production was reduced to about two

days/week as of 2007. The plastic product lines continue to make up the bulk of the production at the plant. Products include but are not limited to spill containment trays, platforms, loading/unloading ramps, salvage drums, guards and protectors, speed bumps, cable protectors, plastic drum protectors, etc..

Approximately 12,000,000 lbs. of resin are used each year in the production of the various plastic products. Resin is received by railcar. The cars are unloaded by vacuum into one of four storage silos. Each silo holds one railroad car of resin. The plastics department melts the plastic and injects either into a mold or compressed air is used to blow the plastic up like a balloon until the plastic assumes the shape of the mold. A separate water chiller is used for each blow molding machine. The largest of the chillers is 60 tons. In addition, there is a 125 hp compressor. Flashing and/or scrap from any of the plastics operation are immediately recycled. The material is shredded and added to the resin feed hopper.

Powder coating systems are used exclusively for all metal parts throughout Eagle Manufacturing. Therefore, there are no VOC emissions. There is a collection system to capture excess coating powder for reuse. Metal parts or assemblies run through a cleaning, rinsing and drying operation. The dried parts then enter the paint booth where a powdered coating is applied. This is followed by passing through an oven maintained at temperatures just below 400 °F to fuse the powder to the surface of the component.

Chemical cleaning of the hooks used to move cans and other parts through the coating operation have been replaced by heating the hooks in a furnace to burn off the paint. In addition, scrap cardboard is no longer incinerated at the plant. Instead it is compacted and sold to one or more recycle operations.

There are two existing low pressure steam boilers at this facility. The existing boilers are natural gas fired. Some steam is used for the manufacturing process, however, the majority of the steam is used for heating the facility. Typically, only boiler No. 1, a 350 hp Cleaver-Brooks boiler is in operation. There is also a 250 hp boiler as backup.

This modification is for the addition of a Cleaver-Brooks Model CB655-300 boiler (12.5 MMBtu/hr) to be used as the primary boiler for heat during the winter months. The new boiler will be in rotation with two existing boilers that run one at a time to generate steam for heating of the facility. In addition, the High Density Polyethylene (HDPE) Extruder and the Powder Coat Dryer are included in the application as existing emission sources. Finally, the format of the permit has been converted to the NSR Permit, Revision 2-1-13, boilerplate language.

PROPOSED EQUIPMENT LIST

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device
1S	1E	HDPE Extruder	1987	20 MMlb/yr	None
2S	2E	Powder Coat Dryer	1971	7.84 MMBtu/hr	None
3S	3E	Natural Gas Boiler	2014	12.5 MMBtu/hr	None

SITE INSPECTION

The last targeted, partial, on-site inspection was conducted by Al Carducci of the Northern Panhandle Regional Office, Compliance and Enforcement Section on January 30, 2015. The facility was given a status code of 10 - Out of Compliance. Notes indicate that equipment was installed and operated without a permit. This application was submitted to rectify the issue. Based on the scope of the modification proposed and since the facility is regularly inspected, the writer deemed that a site visit would be unnecessary at this time.

Directions: Travel North on Route 2 into Wellsburg, WV; turn left at 22nd Street and then turn right at next stop onto Charles Street; drive 2 blocks to 2400 Charles Street; Eagle Manufacturing facility is on the right corner.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Eagle Manufacturing will have three emission sources. Emissions from the HDPE Extruder (1S) are derived from a published study by INEOS Olefins and Polymers USA. The study applies to HDPE extruded at temperature ranges typical of the blow molding process (380 - 500°F) providing formulas to calculate particulate matter and volatile organic compounds (VOC) emissions. Emissions were estimated by the Division of Air Quality's SBAP and based on 20,000,000 lbs of HDPE extrusion at 500°F, to allow for growth. The amount of HDPE purchased by Eagle in 2014 was 11,349,940 lbs.

Emissions from the Powder Coating Dryer (2S) are calculated using U.S. EPA's AP-42, a "Compilation of Air Pollutant Emission Factors", 5th Edition and an estimated natural gas usage volume of 16,302,000 scf (2014 total). The Dryer was operated approximately 2080 hours giving the Dryer a heat input rate of 7.84 MMBtu/hr.

Emissions for the NG-fired boiler (3S) were estimated by the Division of Air Quality's SBAP and based on a heat input rating of 11 MMBtu/hr. Eagle submitted information on their new boiler and specified a heat input rating of 12.554 MMBtu/hr. Emission estimates for the new boiler were calculated by the writer using a heat input rating of 12.554 MMBtu/hr.

The proposed estimated emissions are as follows:

Air Emissions from HDPE Extruder (1S) 20 MMlb/year - 7,488 hrs/yr				
Pollutant	INEOS O&P USA	Maximum Estimated Emissions		
	(lbs Pollutant/MM lb processed)	(lb/hr)	(lb/year)	(tons/yr)
PM	(0.14 X T) - 34	0.1	720	0.36
PM ₁₀	PM/2.1	0.05	342.86	0.17
VOC	(0.19 X T) - 52	0.11	860	0.43

Air Emissions from Natural Gas Fired Powder Coating Dryer (2S) 7.84 MMBtu/hr Heat Input - 2,080 hrs/yr			
Pollutant	AP-42 Emission Factor	Maximum Estimated Emissions	
	(lb/10 ⁶ ft ³)	(lb/hr)	(tons/yr)
CO	84	0.7	0.73
NO _x	100	0.8	0.83
PM	7.6	0.06	0.06
PM ₁₀	PM/2.1	0.03	0.03

Air Emissions from Natural Gas Fired Boiler (3S) 12.554 MMBtu/hr Heat Input - 8,760 hrs/yr			
Pollutant	AP-42 Emission Factor	Maximum Estimated Emissions	
	(lb/10 ⁶ ft ³)	(lb/hr)	(tons/yr)
CO	84	1.05	4.6
NO _x	100	1.3	5.69
SO ₂	0.6	0.01	0.04
PM	7.6	0.1	0.44
PM ₁₀	PM/2.1	0.05	0.22

Air Emissions Summary from Proposed Sources (1S, 2S and 3S)		
Pollutant	Maximum Estimated Emissions	
	(lb/hr)	(tons/yr)
CO	1.75	5.33
NO _x	2.1	6.52
SO ₂	0.01	0.04
PM	0.26	0.86
PM ₁₀	0.13	0.42
VOC	0.11	0.43

REGULATORY APPLICABILITY

The following state and federal regulations apply to the Wellsburg facility:

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

The boiler and dryer have been determined to meet the definition of a “fuel burning unit” under 45CSR2 and are, therefore, subject to the applicable requirements therein. 45CSR2 states that any fuel burning unit that has a heat input under ten (10) million B.T.U.'s per hour is exempt from sections 4 (weight emission standard), 5 (control of fugitive particulate matter), 6 (registration), 8 (testing, monitoring, recordkeeping, reporting) and 9 (startups, shutdowns, malfunctions). However, failure to attain acceptable air quality in parts of some urban areas may require the mandatory control of these sources at a later date.

The individual heat input of the dryer (2S) is below 10 MMBTU/hr. Therefore, this unit is exempt from the aforementioned sections of 45CSR2. The dryer is subject to the opacity requirements in 45CSR2, which is 10% opacity based on a six minute block average.

45CSR2 Opacity Standard - Section 3.1

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

Each substantive 45CSR2 requirement for the boiler is discussed below.

45CSR2 Weight Emission Standard - Section 4.1.b

The allowable particulate matter (PM) emission rate for the boiler, identified as 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 design heat input of the boiler will be 12.554 mmBtu/Hr. Using the above equation, the 45CSR2 facility-wide PM emission limit of the boiler will be 1.13 lb/hr. The maximum potential hourly PM emissions during normal operations (firing natural gas) from the boiler is estimated to be 0.10 lb/hr. This emission rate is 8.85% 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 primary fuel of the boiler will result in no potential for fugitive emissions from the boiler.

45CSR2 Testing, Monitoring, Record-keeping, & Reporting (TMR&R) - Section 8

Section 8 of Rule 2 requires testing for initial compliance with the limits therein, monitoring for continued compliance, and keeping records of that compliance. Pursuant to §45-2-8.4.b., fuel burning unit(s) which combusts only natural gas shall be exempt from the periodic testing requirements of subdivision 8.1.a and the monitoring requirements of subsection 8.2. The TMR&R requirements are clarified under 45CSR2A and discussed below.

45CSR2A Applicability - Section 3

Pursuant to §45-2A-3, as individual applicable “fuel burning units” which combusts only natural gas shall be exempt from periodic testing requirements of section 5 and the monitoring requirements of section 6. The Director reserves the right to require testing pursuant to subdivisions 8.1.b and 8.1.c. of 45CSR2. Pursuant to §45-2A-7.1.a.1., for fuel burning unit(s) which burn only pipeline quality natural gas, such records shall include, but not be limited to, the date and time of start-up and shutdown, and the quantity of fuel consumed on a monthly basis.

45CSR7

To Prevent and Control Particulate Air Pollution from Manufacturing Process Operations

The particulate matter (PM) generated from the extruder is subject to the particulate standards under 45CSR7, Table 45-7A, and the 20% opacity limit set forth in section 3.1. The maximum controlled emission rate for emission point (1S) is 0.1 lb/hr. The maximum allowable is 3.14 lb/hr (linear interpolation) based on a process weight rate of 2,671 lb/hr.

45CSR10

To Prevent and Control Air Pollution from the Emissions of Sulfur Oxides

45CSR10 has requirements limiting SO₂ emissions from “fuel burning units,” limiting in-stack SO₂ concentrations of “manufacturing processes,” and limiting H₂S concentrations in process gas streams. The proposed boiler and dryer are defined as “fuel burning units”.

Pursuant to §45-10-10.1., the dryer having a design heat input under ten (10) million BTU's per hour will be exempt from section 3 and sections 6 through 8. However, failure to attain acceptable air quality in parts of some urban areas may require the mandatory control of these sources at a later date. subject to the applicable requirements discussed below.

The boiler will be subject to the applicable requirements discussed below.

45CSR10 Fuel Burning Units - Section 3

The allowable SO₂ emission rate for the boiler, identified as Type “b” fuel burning units, per 45CSR10, Section 3.1(e), is the product of 3.1 and the total design heat input

of the boiler in million Btu per hour. The maximum design heat input (short-term) of the boiler will be 12.554 mmBtu/Hr. Using the above equation, the 45CSR10 facility-wide SO₂ emission limit of the boiler will be 38.92 lb/hr. The maximum potential hourly SO₂ emissions during normal operations (firing natural gas) from the boiler is estimated to be 0.01 lb/hr. This emission rate is 0.03% of the 45CSR10 limit.

45CSR10 Testing, Monitoring, Record-keeping, & Reporting (TMR&R) - Section 8

Section 8 of Rule 10 requires to test for initial compliance with the limits therein, monitor for continued compliance, and keep records of that compliance. The TMR&R requirements are clarified under 45CSR10A and discussed below.

45CSR10A Applicability - Section 3

Pursuant to §45-10A-3.1(b), as the boiler will “combust natural gas, wood or distillate oil, alone or in combination,” the boiler is not subject to the Testing and MRR Requirements under 45CSR10A.

45CSR13 Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits, and Procedures for Evaluation

The facility meets the definition of a Class II Administrative Update listed in 45CSR13 section 4.2.b.1. The changes in operating parameters, emission points, control equipment or any other aspect of a source which results in an increase or no change in the emission of any existing regulated air pollutant or any new regulated air pollutant.

45CSR21 To Prevent and Control Air Pollution from the Emission of Volatile Organic Compounds

This regulation does not apply to any equipment at a facility used exclusively for chemical or physical analysis or determination of product quality and commercial acceptance provided the operation of the equipment is not an integral part of the production process and the total actual VOC emissions from all such equipment at the facility do not exceed 204 kilograms (kg) (450 pounds [lb]) in any calendar month. VOC emissions from the HDPE Extruder based on 20,000,000 lbs of HDPE extrusion at 500°F are estimated to be 860 lbs/yr or 71.67 lb/month. Therefore, Eagle Manufacturing will be exempt from this regulation, however:

The owner or operator of any facility that claims exemption from the provisions of this regulation by reason of meeting the conditions in section 3.3 shall maintain the following records in a readily accessible location for at least 3 years and shall make those records available to the Director upon verbal or written request:

- a. Records to document the purpose of the equipment for which the exemption is claimed.

- b. Records to document the amount of each volatile organic compound (VOC)-containing material used in the equipment each calendar month and the VOC content of each material such that emissions can be determined.

45CSR22

Air Quality Management Fee Program

This rule establishes a program to collect fees for certificates to operate and for permits to construct, modify or relocate sources of air pollution. Funds collected from these fees will be used to supplement the Director's budget for the purpose of maintaining an effective air quality management program. An Application for a Certificate to Operate (CTO) will be enclosed with the permit at time of issuance as this will be a new construction.

Eagle Manufacturing is required to pay the appropriate annual fees and keep their Certificate to Operate current.

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), however, Subpart Dc does not have any emission standards for combusting natural gas and the boiler is not subject to any opacity standards as it is less than 30 MMBtu.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

Section 112(b) of the Clean Air Act (CAA) identifies 188 compounds as pollutants or groups of pollutants that EPA knows or suspects may cause cancer or other serious human health effects. The boiler will have the potential to emit trace amounts of various compounds designated as Hazardous Air Pollutants (HAPs) under Section 112(b). The compound with the potential for highest emission is formaldehyde. Using an emission factor provided by AP-42, Section 1.4 (7.35×10^{-6} lb/mmBtu), the boiler will have the potential to emit 0.81 pounds of formaldehyde per year - less than 0.002 pounds per day. The carcinogenic risk associated with formaldehyde (as based on analysis provided in the Integrated Risk Information System (IRIS)), is given as B1 - Probable Human Carcinogen.

All HAPs have other non-carcinogenic chronic and acute effects. These adverse health effects may be associated with a wide range of ambient concentrations and exposure times and are influenced by source-specific characteristics such as emission rates and local meteorological conditions. Health impacts are also dependent on multiple factors that affect variability in humans such as genetics, age, health status (e.g., the presence of pre-existing disease) and lifestyle. As stated previously, *there are no federal or state ambient air quality standards for these specific chemicals*. For a complete discussion of the known health effects refer to the IRIS database located at www.epa.gov/iris.

AIR QUALITY IMPACT ANALYSIS

The increase in emissions from the proposed Class II Administrative Update does not meet the

definition of a major modification in accordance to 45CSR14 or 45CSR19, and therefore, an air quality impact analysis was not required.

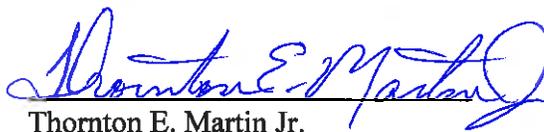
MONITORING OF OPERATIONS

The permit requires the following:

- Recording of the date and time of start-up and shutdown, and the quantity of fuel consumed on a monthly basis for the boiler and dryer.
- Daily and monthly recording of quantity (as a rolling total) for Resin used in the HDPE Extrusion process.

RECOMMENDATION TO DIRECTOR

Based on the information provided in the application, Eagle Manufacturing will meet all state and federal requirements by following the conditions of permit R13-0435A. It is therefore recommended that this Class II Administrative Update R13-0435A be granted to Eagle Manufacturing for the Wellsburg Facility located in Brooke County, WV.



Thornton E. Martin Jr.
Permit Engineer

October 21, 2015

Date