



west virginia department of environmental protection

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ENGINEERING EVALUATION/FACT SHEET

B ACKGROUND INFORMATION

Application No.:	R13-2572E
Plant ID No.:	107-00010
Applicant:	SABIC Innovative Plastics US, LLC
Facility Name:	Washington Plant
Location:	Washington
NAICS Code:	325211
Application Type:	Modification
Received Date:	May 24, 2013
Engineer Assigned:	Edward S. Andrews, P.E.
Fee Amount:	\$35000.00
Date Received:	June 12, 2013
Complete Date:	July 30, 2013
Due Date:	October 28, 2013
Applicant Ad Date:	May 30, 2013
Newspaper:	<i>The Parkersburg News and Sentinel</i>
UTM's:	Easting: 441.6 km Northing: 4,345.3 km Zone: 17
Description:	The application is for the replacement of Boiler #4 with Boiler #7, which is a 60 MM Btu/hr boiler fired with natural gas.

DESCRIPTION OF PROCESS

SABIC Innovative Plastics US LLC (SABIC) owns and operates this manufacturing facility. The facility produces elastomers and thermoplastic resin to be used in the automotive, electronic and pipe industries. To support this manufacturing operation, the Washington Plant has three boilers at the facility to provide process heat energy required by these manufacturing operations.

Boiler #4 has suffered serious damage that has left the unit nonoperational in 2012. SABIC has determined that it is not feasible to repair Boiler #4. Thus, SABIC has proposed to permanently replace Boiler #4 with a 60 MMBtu/hr, natural gas fired boiler, which will be identified as Boiler #7.

Promoting a healthy environment.

The proposed replacement unit is a Cleaver-Brooks boiler manufactured in 1985. This particular unit was designed to produce 40,000 pounds of steam at 200 psig. The steam circuit at the Washington Plant allows steam produced by the boilers to be routed to several of the manufacturing units on an as needed basis. Thus, this new boiler will not be dedicated to a specific process unit.

SITE INSPECTION

On July 28 and August 1, 2011, Mr. Douglass Hammell, an inspector assigned to the Compliance and Enforcement Section, inspected the facility as part of a targeted inspection. In conclusion, Mr. Hammell determined that the facility has been operating in compliance of the applicable rules & regulations and permits. The writer concluded that a site visit was not necessary for this permitting action.

ESTIMATE OF EMISSION BY REVIEWING ENGINEER

The applicant used pollutant emissions factors from Chapter 1.4 of AP-42 to estimate emissions from this new natural gas fired boiler, which is identified as Boiler #7. The writer reproduces the estimated emissions from this boiler, which are presented in the following table:

Table #1 – Emissions from Boiler #7			
Pollutant	Emission Factor	Hourly Rate (lb/hr)	Annual Rate (TPY)
Particulate Matter (PM)/PM less than 10 microns (PM ₁₀)/PM less than 2.5 microns (PM _{2.5}) Filterable	1.9 lb/MMcf	0.11	0.48
PM Condensable Fraction	5.7 lb/MMcf	0.33	1.45
Total PM		0.44	1.93
Sulfur Dioxide (SO ₂)	0.6 lb/MMcf	0.03	0.13
Oxides of Nitrogen (NO _x)	100 lb/MMcf	5.71	25.01
Carbon Monoxide (CO)	84 lb/MMcf	4.80	21.02
Volatile Organic Compounds (VOCs)	5.5 lb/MMcf	0.31	1.36
Carbon Dioxide Equivalent (CO ₂ e)	120,000 lb/MMcf	6,857.14	30,034.27

SABIC will permanently remove Boiler #4 to make room to install Boiler #7. The writer presented potential emission from Boiler #4 in the following table. The writer determined the net change of potential emission due to this project, which is presented in the following table.

Table #2 – Net Change in Potential Emissions				
Pollutant	Potential Emissions from Boiler#4 (tpy)	Potential from Boilers #6 &#7(tpy)	PSD Significant Level (tpy)	Net Change in Potential Emissions (TPY)
PM/PM ₁₀ /PM _{2.5} Filterable	1.1	0.96	25/15/10*	-0.1
PM Condensable Fraction	3.24	2.9		-0.3
Total PM	4.34	3.86		-0.5
SO ₂	0.35	0.26	40	-0.09
NO _x	158.73	50.02	40	-108.7
CO	47.61	42.04	100	-5.57
VOCs	3.11	2.8	40	-0.3
CO ₂ e	68,018.82	60,951.00	75,000	-7,067.82

* Included both portions, filterable and condensable portions.

Boiler #4 had the ability to consume fuel oil which is covered under Permit R13-0009. This permit allowed Boiler #4 to emit up to 304 tpy of SO₂. Boiler #7 will be natural gas fired unit, only. Once Boiler #4 is removed, this SO₂ potential in Permit R13-0009 becomes moot.

REGULATORY APPLICABILITY

SABIC's Washington Plant is a major source under Title V (45CSR30) and currently possesses a valid Title V Operating Permit. Under this program, owners/operators of new emission units have up to 12 months after start-up to submit a request to revise the facility's operating permit. SABIC has included this request as part of the Rule 13 Modification Permit Application.

According to the DAQ's policy on Rule 13 Guidance for Natural Gas Combustion Sources, Boiler #7 would not need to obtain a Rule 13 Permit. The estimated emissions confirm that none of the hourly emissions are above 6 pounds per hour. However, the Washington Plant is a major source of hazardous air pollutants (HAPs). Boiler #7 was originally constructed in 1985 and has never been modified. Thus, the proposed Boiler #7 is an affected source subject to Subpart DDDDD of Part 63 as an existing Gas I unit.

Under Subpart DDDDD, existing Gas I units will be required to tune-up annually and the facility would be required to conduct a one-time energy assessment of the site. These

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requirements are currently in stated in Permit R13-2572D for Boilers #5 and #6, which would be added for Boiler #7.

This unit is only capable of consuming natural gas. It is understood that sources burning this fuel are significantly below the applicable allowable limitations in Rule 2 and Rule 10, which are the State of West Virginia's rules addressing particulate matter (PM) and sulfur dioxide (SO₂) from boilers, regardless of the size of the unit. This understanding is confirmed with the provisions in Rules 2A and 10A, which exempts such sources for conducting periodic testing and monitoring for the purpose of demonstrating compliance with the limitations under these rules.

Wood County is currently classified as attainment for all criteria pollutants. The pollutant of concern for possibly triggering major modification under Rule 14 (Prevention of Significant Deterioration) is NO_x. SABIC determine that the timing of installing Boiler #6 (2012) and Boiler #7 (2013) are close enough to be viewed as one project under Rule 14 (PSD). Going back to Table 2 of this evaluation, only the summed potential for NO_x from Boilers #6 & #7 exceed the significance level (40 tpy) under the PSD rule. As a result of being significant for NO_x, then it must be determined if the project poses a "significant net increase" of emissions.

The only physical changes that has been made at the Washington Plant that would effect NO_x emissions in the past 5 years (contemporaneous period) was the installation of Boiler #6 (2012) and the shutdown of Boiler #4 on May 2012. To determine the past actual emissions from Boiler #4, SABIC selected the baseline period (24- consecutive months) for Boiler #4 of May 2010 through May 2012. The annual average NO_x rate from Boiler #4 during the baseline period was 36.8 tpy. Counting the potential increase from Boilers #6 & #7 and subtracting the past actuals (reduction) from Boiler #4, the net difference of this project is an increase of 13.1 tons of NO_x. Since the net difference is less than the significance level of (40 tpy for NO_x), the project is not consider a "significant net increase" and no further review under Rule 14 and 19 is required.

The writer is only recommending establishing limits for NO_x, which is in line with the DAQ's Rule 13 Guidance for Natural Gas Combustion Sources. The restriction of type of fuel and annual usage on this unit limits the annual NO_x emission rate, which is based on maximum annual heat input that is possible.

SABIC prepared and submitted a complete application, paid the filing fee, and published a Class I Legal ad in *The Parkersburg News and Sentinel* on May 30, 2013. This action does not trigger any new or additional rules or regulations for Boiler #7 that has not been stated in Permit R13-2572D. Boiler #7 was constructed in 1985 and has never been modified or changed since being constructed. Thus, Boiler #7 is not subject to Part 60 as an affected unit under Subpart Dc. The existing boilers at the facility are subject to the Boiler MACT and this proposed change does not affect the applicability status or the facility's ability to comply with it.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

Boiler #7 will not emit any pollutants that aren't already being emitted by another emission source (i.e. Boiler #6) at the facility. Therefore, 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

Rules 2 and 10 only require keeping records of the amount of natural gas consumed each month for natural gas fired boilers, which was current requirement for Boiler #6 in Permit R13-2572D. The Boiler MACT requires annual tune-ups for natural gas fired boilers. This requirement is currently in Permit R13-2572D for Boilers #5 and #6. The permit will be updated to account for Boiler #7 in these two applicable requirements. No other monitoring is warranted for Boiler #7.

CHANGES TO PERMIT R13-2572D

Permit R13-2572D covers Boilers #5 and #6. The specific conditions for Boiler #6 will be mirrored for Boiler #7. There are minor changes to reporting requirements which are required by the applicable rules (i.e. reporting dates under the Boiler MACT for sources only subject to work practice requirements).

RECOMMENDATION TO DIRECTOR

The information provided in the permit application indicates the proposed modification of the facility will meet all the requirements of the applicable rules and regulations when operated in accordance to the permit application. Therefore, the writer recommends granting SABIC Innovation Plastics US LLC a Rule 13 modification permit for the installation of Boiler #7 at their Washington Plant located near Washington, WV.

Edward S. Andrews, P.E.
Engineer

September 18, 2013
Date

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