



Missouri Department of dnr.mo.gov

NATURAL RESOURCES

Michael L. Parson, Governor

Carol S. Comer, Director

DEC 31 2019

Mr. Scott Munk
Sr. Regulatory Affairs Consultant
Bayer Cropscience
8400 Hawthorn Road
Kansas City, MO 64120

RE: New Source Review Temporary Permit Request - Project Number: 2019-12-028

Installation ID Number: 095-0011

Expiration Date: 4/2/2020

Temporary Permit Number: **122019-011**

Dear Mr. Munk:

The Missouri Department of Natural Resources' Air Pollution Control Program has completed a review of your request to operate a temporary trailer mounted boiler while maintenance is being conducted on an existing boiler at Bayer Cropscience, located in Kansas City, Missouri. The Air Pollution Control Program is hereby granting your request to conduct this temporary operation at this location in accordance with Missouri State Rule 10 CSR 10-6.060(3).

Bayer Cropscience operates an industrial chemical manufacturing plant in Jackson County. The main products are crop protection chemicals. The facility is composed of chemical manufacturing, chemical formulation, and auxiliary operations. The auxiliary operations include a wastewater treatment plant, a hazardous waste combustor, utilities, laboratories, and maintenance. The installation is a minor source for NSR purposes and a Part 70 for Operating Permit purposes.

According to the application submitted, Bayer Cropscience is servicing the currently installed 99.3 MMBTU/hr boiler unit; in order to maintain operation, the installation is temporarily operating a 99.0 MMBTU/hr Nebraska 350 psig D.P. Trailer-Mounted Package Watertube Boiler, Model NOS-2A-67.



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The installation is to limit potential emissions of PM, PM₁₀, PM_{2.5}, SO_x, NO_x, VOC, CO, and HAPs below New Source Review major source thresholds, per Special Condition 2 of Permit No. 102017-016. While operating the temporary Nebraska Trailer-Mounted Boiler, tracking natural gas usage to calculate actual emissions is still required to demonstrate compliance with the installation-wide limitations.

Potential emissions from the use of a 99.0 MMBTU/hr natural gas fired boiler were calculated using the emission factors found in EPA document AP-42 Section 1.4 *Natural Gas Combustion* (July 1998). Table 1, below, provides a potential emissions summary for the project.

Table 1: Emissions Summary

Pollutant	Regulatory <i>De Minimis</i> Levels (TPY)	Emission Factor (lb/MMBT U)	90-Day Potential Emissions (TPY)	Annual Potential Emissions (TPY)
PM	25.0	1.9	0.20	0.81
PM ₁₀	15.0	7.6	0.74	3.23
PM _{2.5}	10.0	7.6	0.74	3.23
SO _x	40.0	0.6	0.06	0.26
NO _x	40.0	100.0	10.48	42.51
VOC	40.0	5.5	0.58	2.34
CO	100.0	84.0	8.81	35.71
Total HAPs	10.0/25.0	1.89	0.20	0.80

N/A = Not Applicable

The Missouri Code of State Regulations sets forth requirements for a temporary permit, 10 CSR 10-6.060(10); the duration of the project is less than 2 years, the potential emissions from the source are less than 100 tons per year, and the permitting authority receives the application for authority to construct prior to start of construction. The applicant has met all three of the temporary permit requirements.

You are still obligated to meet all applicable air pollution control rules, Department of Natural Resources' rules, or any other applicable federal, state, or local agency regulations. Specifically, you should avoid violating 10 CSR 10-6.045 *Open Burning Requirements*, 10 CSR 10-6.220, *Restriction of Emission of Visible Air Contaminants*, 10 CSR 10-6.165 *Restriction of Emission of Odors*, 10 CSR 10-6.170 *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*, and 10 CSR 10-6.400 *Restriction of Emission of Particulate Matter From Industrial Processes*. In

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addition, *National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources*, 40 CFR 63 Subpart JJJJJ, applies to the boiler, per §63.11193.

A copy of this letter should be kept with the unit and be made available to Department of Natural Resources' personnel upon verbal request. If you have any questions regarding this determination, please do not hesitate to contact Russell Osborne at the departments' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102 or by telephone at (573) 75 1-4817. Thank you for your time and attention to this matter.

Sincerely,
AIR POLLUTION CONTROL PROGRAM



Darcy A. Bybee
Director

DAB:roa

c: PAMS File: 2019-12-028
Kansas City Regional Office

Emission Unit	Emission Point	Description, burner model	MHDR (MMBtu/hr input)	Combined MHDR (MMBtu/hr input)	MHDR (MMcf/hr)	Pollutant	Emission Factor (lb/MMcf)	Emission Factor Source	Available Pollutant (lb/hr)	Control Device	Capture Efficiency	Control Efficiency	PTE (lb/hr)	PTE (tpy)
		Nebraska 350 psig D.P.	99.00	99.00	0.0971	PM filt	1.9		0.1844118	none	100%	0%	0.1844118	0.81
highlight equals user must input/confirm						PM10	7.6		0.7376471	n/a for combined filt+cond	n/a	n/a	0.7376471	3.23
			lb/MMcf	capture %	control %	PM2.5	7.6		0.7376471	n/a for combined filt+cond	n/a	n/a	0.7376471	3.23
						SO2	0.6		0.0582353	none	100%	0%	0.0582353	0.26
						NOX	100		9.7058824	none	100%	0%	9.7058824	42.51
						VOC	5.5		0.5338235	none	100%	0%	0.5338235	2.34
						CO	84		8.1529412	none	100%	0%	8.1529412	35.71
						Hydrogen Sulfide			0	none	100%	0%	0	0.00
						Total Reduced Sulfur			0	none	100%	0%	0	0.00
						Reduced Sulfur Compounds			0	none	100%	0%	0	0.00
						Lead, as NSR pollutant	5.00E-04		4.853E-05	none	100%	0%	4.853E-05	2.13E-04
						Fluorides excluding HF			0	none	100%	0%	0	0.00
						SAM			0	none	100%	0%	0	0.00
						CO2	120,000		11647.059	some controls increase CO2	100%	0%	11647.059	51014.12
						CH4	2.3		2.23E-01	none	100%	0%	0.2232353	0.98
						N2O	2.2		2.14E-01	none	100%	0%	0.2135294	0.94
						GHG (mass)								51016.03
						GHG (CO2e)								51317.27
						Combined HAPs	1.8884582		0.1832915	none	100%	0%	1.83E-01	0.803
						POM aggregate group	0.0006982		6.78E-05	none	100%	0%	6.78E-05	2.97E-04
						POM Acenaphthene	1.80E-06		1.75E-07	none	100%	0%	1.75E-07	7.65E-07
						POM Acenaphthylene	1.80E-06		1.75E-07	none	100%	0%	1.75E-07	7.65E-07
						POM Anthracene	2.40E-06		2.33E-07	none	100%	0%	2.33E-07	1.02E-06
						POM Benzo(a)Anthracene	1.80E-06		1.75E-07	none	100%	0%	1.75E-07	7.65E-07
						POM Benzo(a)Pyrene	1.20E-06	SCC 1-02-006-02 industrial boiler, natural gas, 10-100MMBtu and SCC 1-02-006-03 < 10MMBtu	1.16E-07	none	100%	0%	1.16E-07	5.10E-07
						POM Benzo(b)Fluoranthene	1.80E-06		1.75E-07	none	100%	0%	1.75E-07	7.65E-07
						POM Benzo(g,h,i)Perylene	1.20E-06		1.75E-07	none	100%	0%	1.75E-07	7.65E-07
						POM Benzo(k)Fluoranthene	1.80E-06		1.75E-07	none	100%	0%	1.75E-07	7.65E-07
						POM Chrysene	1.80E-06		1.75E-07	none	100%	0%	1.75E-07	7.65E-07
						POM Dibenz(a,h)Anthracene	1.20E-06		1.16E-07	none	100%	0%	1.16E-07	5.10E-07
						POM 7,12-Dimethylbenz[a]Anthracene	1.60E-05		1.55E-06	none	100%	0%	1.55E-06	6.80E-06
						POM Fluoranthene	3.00E-06		2.91E-07	none	100%	0%	2.91E-07	1.28E-06
						POM Fluorene	2.80E-06		2.72E-07	none	100%	0%	2.72E-07	1.19E-06
						POM Indeno(1,2,3-c,d)Pyrene	1.80E-06		1.75E-07	none	100%	0%	1.75E-07	7.65E-07
						POM 2-Methylnaphthalene	2.40E-05		2.33E-06	none	100%	0%	2.33E-06	1.02E-05
						POM 3-Methylcholanthrene	1.80E-06		1.75E-07	none	100%	0%	1.75E-07	7.65E-07
						POM Naphthalene	6.10E-04		5.92E-05	none	100%	0%	5.92E-05	2.59E-04
						POM Phenanthrene	1.70E-05		1.65E-06	none	100%	0%	1.65E-06	7.23E-06
						POM Pyrene	5.00E-06		4.85E-07	none	100%	0%	4.85E-07	2.13E-06
						Arsenic compounds	2.00E-04		1.94E-05	none	100%	0%	1.94E-05	8.50E-05
						Benzene	2.10E-03		2.04E-04	none	100%	0%	2.04E-04	8.93E-04
						Beryllium compounds	1.20E-05		1.16E-06	none	100%	0%	1.16E-06	5.10E-06
						Cadmium compounds	1.10E-03		1.07E-04	none	100%	0%	1.07E-04	4.68E-04
						Chromium compounds	1.40E-03		1.36E-04	none	100%	0%	1.36E-04	5.95E-04
						Cobalt compounds	8.40E-05		8.15E-06	none	100%	0%	8.15E-06	3.57E-05
						1,4-Dichlorobenzene(p) CAS 106-46-7	1.20E-03		1.16E-04	none	100%	0%	1.16E-04	5.10E-04
						Formaldehyde	7.50E-02		7.28E-03	none	100%	0%	7.28E-03	3.19E-02
						Hexane	1.80E+00		0.17471	none	100%	0%	0.1747059	0.77
						Lead compounds	5.00E-04		4.85E-05	none	100%	0%	4.853E-05	2.13E-04
						Manganese compounds	3.80E-04		3.69E-05	none	100%	0%	3.69E-05	1.62E-04
						Mercury compounds	2.60E-04		2.52E-05	none	100%	0%	2.52E-05	1.11E-04
						Nickel compounds	2.10E-03		2.04E-04	none	100%	0%	2.04E-04	8.93E-04
						Selenium compounds	2.40E-05		2.33E-06	none	100%	0%	2.33E-06	1.02E-05
						Toluene	3.40E-03		3.30E-04	none	100%	0%	3.30E-04	1.45E-03
						copper, not a hap	8.50E-04		8.25E-05	none	100%	0%	8.25E-05	3.61E-04
						vanadium, not a hap	2.30E-03		2.23E-04	none	100%	0%	2.23E-04	9.78E-04
						zinc, not a hap	2.90E-02		2.81E-03	none	100%	0%	2.81E-03	1.23E-02

Natural gas HHV of 1,020 Btu/cf cited from AP-42 Section 1.4, July 1998.

Dichlorobenzene group CAS 25321-22-6 conservatively assumed as 100% 1,4-dichlorobenzene CAS 106-46-7.

Natural Gas HHV (Btu/cf)
1,020

SO2 (lb/MMcf)	grains sulfur per	scf	grs/cf
AP-42	0.6	2000	1,000,000
40 CFR 72.2	1.5	0.5	100
site specific	#VALUE!	fill in	fill in

Turbine natural gas emission factor obtained from AP-42 Table 3.1-2a (0.94*S lb/MMBtu), 40 CFR 72.2 "pipeline natural gas" definition of 0.5 grains or less of total sulfur per 100 SCF (S = 1.62E-03), natural gas density of 0.044 lb/CF, and HHV of 1,020 Btu/CF. The result is 1.56 lb/MMCF. However all natural gas combustion types should have the same emission factor regardless of the type as long as there is good combustion. SO2 is based upon fuel sulfur content. AP-42 Table 1.4-2 says based on 2,000 grains per MMCF, and to convert based upon ratio of concentrations (0.005 gr/cf / 0.002 gr/cf). The 0.6 factor becomes 1.5. So, 1.5 lb/MMCF was selected.

100yr GWP 40 CFR 98 Table A-1, Jan 1 2014	
CO2	1
CH4	25
N2O	298

potential operation (hr/yr)
8,760