DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: On-site Inspection

N133661739

FACILITY: BASF CORPORATION		**SRN / ID:** N1336
LOCATION: 26701 Telegraph Road, SOUTHFIELD		**DISTRICT:** Warren
CITY: SOUTHFIELD		**COUNTY:** OAKLAND
CONTACT: Mariana Runho , EHS Specialist		**ACTIVITY DATE:** 10/19/2021
STAFF: Iranna Konanahalli	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MAJOR
SUBJECT: ROP CMS FY 2022 scheduled (on-site) inspection of BASF Corporation ("BASF"), an OEM automotive paint and paint application research center, located at 26701 Telegraph Road, Southfield, Michigan 48034-2442.		
RESOLVED COMPLAINTS:		

BASF Corporation (N1336)
26701 Telegraph Road
Southfield, Michigan 48034-2442

ROP issued: MI-ROP-N1336-2020 dated November 24, 2020 (Corresponding ROP Application No. 2020000006), expiring November 24, 2025, and Administratively Complete ROP Renewal Application Due Between **May 24, 2024, and May 24, 2025.**

ROP No.: MI-ROP-N1336-2020 All equipment such as paint spray booths and paint bake ovens are used for R&D and testing purposes only for development of principally OEM automotive paints and coatings: e-coat, basecoat, clearcoat. All combustion equipment burn only pipeline quality sweet natural gas to generate steam or hot water for principally space heating. Solvent cold-cleaners use proprietary solvents to clean R&D painting equipment and tools. ≈ 1 million BTU per hour Cleaver Brooks Boiler Model CFH-25 (EU-PACE-CBBOILER3, installed in 2018), is subject to new small-boiler MACT 5D.

Emission units:

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date/ Modification Date	Flexible Group ID
EU-PIGMENT	The emission unit consists of pigment staging and storage room that houses various pigments (powders) in bulk quantities prior to their use in paint formulations. The pigment powders are then transferred into smaller containers for use in the laboratories. This is an intermittent, batch (non-continuous), non-production, laboratory operation; the pigment transfer typically occurs a couple times a week .Particulate emissions from transfer area are controlled using a HEPA filter particulate control system.	02/03/1993	NA
EU-BOILER1	25.1 million BTU per hour heat input (600 HP, max 150 psi steam) natural gas fired Cleaver Brooks CB Packaged Boiler Model CS-700-600	1990	FG-BOILERS FG- NG-BOILER-MACT5D

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date/ Modification Date	Flexible Group ID
	70-gallon power-assisted Safety-Kleen parts washer. Used for spray booth air dampers cleaning (Dimensions: 45 ft X 31 ft X 27 ft)		
EU-CLD-CLNR18-thru19-PACE	Any cold cleaner that is grandfathered or exempt from Rule 201 pursuant to Rule 278, Rule 278a and Rule 281(2)(h) or Rule 285(2)(r)(iv). Existing cold cleaners were placed into operation prior to July 1, 1979. New cold cleaners were placed into operation on or after July 1, 1979. 3.5-gallon cold-cleaners 2-in-series-counter-current-stage used for small lab equipment cleaning (e.g., tools, spinner blades, etc.)	2015	FG-COLD-CLEANER

Flexible groups:

Flexible Group ID	Flexible Group Description	Associated Emission Unit IDs
FG-BOILERS	Two (2) identical natural gas fired, fire-tube boilers (Cleaver Brooks CB Packaged Boilers Model CS-700-600) each with a design capacity of 25.1 million BTU per hour heat input (600 HP). The boilers supply hot water and heat (steam) to the buildings. Since the boilers were installed in CY 1990 (after June 9, 1989), the boilers are subject to the New Source Performance Standards (NSPS), promulgated in 40 CFR Part 60, Subparts A Dc and Dc. The boilers are also subject to Gas 1 (natural gas only) Fuel Subcategory requirements for Existing Boilers and Process Heaters at Major Sources of HAP, promulgated in 40 CFR Part 63, Subparts A & DDDDD (5D)(FG-NG-BOILER-MACT5D).	EU-BOILER1 EU-BOILER2
FG- NG-BOILER-MACT5D	Requirements for two existing (installed before June 4, 2010) boilers that are designed to burn gas 1 subcategory fuel with a heat input capacity of 10 MMBTU/hr or greater at major sources of HAP emissions per 40 CFR Part 63, Subpart DDDDD (Boiler MACT). Units designed to burn gas 1 subcategory fuels include boilers or process heaters that burn only natural gas, refinery gas, and/or Other Gas 1 fuels; however, these boilers are required to burn only natural gas. Units that burn liquid fuel for testing or maintenance purposes for less than a total of 48 hours per year, or that burn liquid fuel during periods of curtailment or supply interruptions are included in this	EU-BOILER1 EU-BOILER2

Rules and Regulations / Final rule; notice of final action on reconsideration. This summary of the final rule reflects the changes to 40 CFR, Part 63, subpart DDDDD (March 21, 2011, final rule) in regards to those provisions identified for reconsideration and on other discrete matters identified in response to comments or data received during the comment period. Neither boiler (2) is equipped with Oxygen Trim System. An Oxygen Trim System is system of monitors that is used to maintain excess air (EA) at the desired level in a combustion device. A typical system consists of a flue gas analyzer for oxygen (O2) and / or carbon monoxide (CO) and a feedback signal to the combustion controller. In other words, an Oxygen Trim System is designed to continuously measure and maintain optimum air-to-fuel ratio in the combustion zone. If such system exists, annual tune-up is not required; however, pentennial tune-up is required. BASF does not follow ISO 50001, Energy Management System for continuous improvement of energy performance, energy efficiency, energy consumption and for reduction of energy use, energy costs, greenhouse gas emissions (GHG), etc. If ISO 50001 is followed properly, one-time energy assessment (EA) is not required. BASF Energy Optimization/MSS, in conjunction with site personnel, conducted an energy assessment on April 30, 2014.

≈ 1 million BTU per hour Cleaver Brooks Boiler Model CFH-25 (EU-PACE-CBBOILER3) is subject new small boiler MACT 5D; the small boiler was installed in 2018. The boiler is incorporated into the ROP renewal of 2020.

Subject to: Major Source NESHAP / RICE MACT 4Z, 40 CFR Parts 60 and 63, Subpart ZZZZ, National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines; New Source Performance Standards for Stationary Internal Combustion Engines (ICE); Page 6674 Federal Register / Vol. 78, No. 20 / Wednesday, January 30, 2013 / Rules and Regulations / Final Rule. This final rule is effective on April 1, 2013.

BASF's emergency generator (Onan 275 kW Genset) is NOT subject to: NSPS IIII or 4I, New Source Standards of Performance for Stationary Compression Ignition (CI) Internal Combustion (IC) Engines, 39154 Federal Register / Vol. 71, No. 132 / Tuesday, July 11, 2006 / Rules and Regulations / Final Rule. The generator is not subject to NSPS 4I based upon manufacture date (1989 manufactured well before April 1, 2006).

Not Subject to: NESHAP/ MACT T, area source National Emission Standards for Hazardous Air Pollutants: Halogenated Solvent Cleaning (40 CFR, Part 63, Subpart T; NESHAP/ MACT T); Correction; 29484 Federal Register / Vol. 60, No. 107 / Monday, June 5, 1995 / Rules and Regulations; amended National Air Emission Standards for Hazardous Air Pollutants: Halogenated Solvent Cleaning (40 CFR, Part 63, Subpart T); Final Rule; Page 25138 Federal Register / Vol. 72, No. 85 / Thursday, May 3, 2007 / Rules and Regulations. BASF R & D Center does NOT use the MACT T listed halogenated HAP solvents (>5%w: methylene chloride (CAS No. 75-09-2), perchloroethylene (CAS No. 127-18-4), trichloroethylene (CAS No. 79-01-6), 1,1,1-trichloroethane (CAS No. 71-55-6), carbon tetrachloride (CAS No. 56-23-5), and chloroform (CAS No. 67-66-3)) in the cold-cleaners; it uses BASF proprietary degreasing solvents.

On October 19, 2021, I conducted a level-2 annual **ROP CMS FY 2022 scheduled (on-site) inspection** of BASF Corporation ("BASF"), an OEM automotive paint and paint

business.

3. CATALYST building, 24700 West 11 Mile Road. BASF's Catalyst building includes 16,000 square feet (gross) of office space supporting sales and applications engineering.

4. EDN (inks and resins, etc.) building, 24710 West 11 Mile Road. EDN includes 24,000 square feet (gross) of office space supporting the business.

Only activities controlled by BASF are considered part of the BASF Automotive R & D Campus. BASF does not control activities and operations performed by Tenants. A **tenant** is not part of a BASF Major Stationary Source based upon the tripartite test: (1) located on one or more contiguous or adjacent properties; (2) are under common control of the same person (or persons under common control); and (3) belong to a single major industrial grouping or are supporting the major industrial group (as determined by the Major Group codes in the Standard Industrial Classification Manual).

At the site, there is no manufacturing activity. Hence, the R&D Center accounts for low actual emissions: approximately, 1 ton of Carbon Monoxide (CO) per year, 3 tons of Nitrogen Oxides (NOx) per year, 4 tons of Particulate Matter (PM) per year, 6 tons of Volatile Organic Compounds (VOCs) per year, etc.

As each emission unit pre-control emissions are below the threshold (100 tons per year), no process is subject to Compliance Assurance Monitoring rule pursuant to 40 CFR Part 64. In addition, no control equipment such as thermal oxidizer exists except one sparingly used (a couple of times per month) dust collector (HEPA filters) for paint pigments.

Custom software for spray logs is used for tracking paint & solvent usage and VOC emissions. Although exempt from Part 6 and 7 Rules, VOC emissions from R&D coating operations are reported via MAERS. The booth filters are replaced on as needed basis.

EU-PIGMENT

The pigment staging and storage room houses various pigments (powders) in five-gallon pails prior to their use in paint formulations. Particulate emissions are controlled using a HEPA filter particulate control system. This Farr Dust Collector (Farr Company, Los Angles, 800-333-7320-ext 333) uses pulse-jet air for cleaning HEPA filters. The process was not operating during the inspection; this is an intermittent operation; a couple of hours per month. Production and emission records are kept. The emissions from this source are less than one-tenth of a pound of particulate matter per year due to HEPA control. Photohelic pressure drop readings are taken and recorded to ensure proper operation of HEPA filter system. SAP software keeps track of maintenance. A notice has been posted on the pigment room to advise employees to log pressure drop readings each time; ROP requires at least once per week.

The HEPA filter pressure drop (ΔP) logs are kept each time pigment transfer occurs. Upon startup and every 30 second, the filters are cleaned using pulse-jet air. The pigment transfer rates have come down due to bad economy and outsourcing. During the previous inspection, I asked Mr. Howard to start the fan and I checked the air flow

Two identical natural gas fired (fired tube: flame inside tubes) boilers (Cleaver Brooks CB Package Boilers, Model CS-700-600) of design capacity 25 million BTU per hour (5.8 MW) each. The boilers were installed in CY 1990 (after June 9, 1989). Therefore, the boilers are subject to New Source Performance Standards (NSPS), 40 CFR, Part 60, Subparts Dc and A. The boilers supply hot water and heat to the buildings. Natural gas usage, hours of operation, records are available. The following is natural gas usage:

CY 2017: **52.777** million scf of natural gas was used in CRC building and **46.052** million scf of natural gas was used in the two boilers. (FG-BOIILERS, SC VI).

CY 2018: **55** million scf of natural gas was used in CRC building and **47** million scf of natural gas was used in the two boilers. (FG-BOIILERS, SC VI).

CY 2019: **50** million scf of natural gas was used in CRC building and **43** million scf of natural gas was used in the two boilers. (FG-BOIILERS, SC VI).

CY 2020: **43.798** million scf of natural gas was used in CRC building and **38.031** (86% of NG in CRC) million scf of natural gas was used in the two boilers. (FG-BOIILERS, SC VI). Total natural gas usage for the entire Southfield facility is **52.563** million scf of natural gas.

Fuel oil capability does not exist and, therefore, has not been used; the fuel oil related conditions have been removed in the 2015 ROP renewal onwards. Natural gas usage records are kept based upon hours of operation. Steam production metering device (Venturi meter) is present but not working. A data acquisition system (DAS) has steam temperature and pressure. The boiler produces 70 psi (high pressure) saturated steam. The steam pressure is reduced to 13 psi and delivered.

86 (downgraded from 87) percent of the building total natural gas usage is expected to go through the boiler. 86% may be an updated fudge factor or boiler utilization factor used by BASF; it is based upon a historical data using boiler steam production. Kitchen and roof-top natural gas heaters account for the rest of natural gas usage. Hours of on/off are tracked and natural gas is prorated. This is not an accurate method but may be accepted at this time.

Neither boiler is equipped with Oxygen Trim System. Only pipeline quality natural gas is used in the boilers (FG-BOIILERS, SC III.1)

Natural gas is used in several buildings, MM SCF (CY 2017-20):

1. Coating Research Center (CRC) building = **52.777** (CY 2017) **55.250** (CY 2018), **50.979** (CY 2019), **43.798** (CY 2020)
2. Pigments and Coatings Excellence (PACE) Group building = **7.280** (CY 2017), **8.350** (CY 2018), **9.491** (CY 2019), **7.534** (CY 2020)
3. CATALYST building = **0. 926** (CY 2017), **1.172** (CY 2018), **1.179** (CY 2019) **0.686** (CY 2020)

BASF must submit an Initial **Compliance Status Report** on or before January 31, 2016 (§ 63.9(h)). During FY 2016 inspection, I reminded BASF to submit this CSR before January 16, 2016. See below for ICSR.

BASF burns only pipeline quality natural gas (FG-NG-BOILER-MACT-5D-MJRSOURCE-EXISTING, SC III.1); the boilers are NOT equipped to burn fuel oil. I reminded BASF officials initial tune-up must be performed by January 31, 2016 (FG-NG-BOILER-MACT-5D-MJRSOURCE-EXISTING, SC III.1). Also, one-time energy assessment (EA) must be performed by January 31, 2016 (FG-NG-BOILER-MACT-5D-MJRSOURCE-EXISTING, SC III.4); BASF does not operate under **ISO 50001** Energy Management System for continuous improvement of energy performance, energy efficiency, energy consumption and for reduction of energy use, energy costs, greenhouse gas emissions (GHG), etc.

Neither boiler is equipped with oxygen trim system (FG-NG-BOILER-MACT-5D-MJRSOURCE-EXISTING, SC III.1: annual tune-up).

Oxygen trim system means a system of monitors that is used to maintain excess air at the desired level in a combustion device over its operating load range. A typical system consists of a flue gas oxygen and/or CO monitor that automatically provides a feedback signal to the combustion air controller or draft controller.

Notice of Compliance Status - 40CFR63 Subpart DDDDD Industrial, Commercial and Institutional Boilers and Process Heaters.

On January 28, 2016 (tune up due January 31, 2016) AQD received Notice of Compliance Status Report dated January 25, 2016.

Existing & Major Source Boiler MACT 5D Two identical natural gas fired (fired tube: flame inside tubes) boilers (Cleaver Brooks CB Package Boilers, Model CS-700-600) of design capacity 25 million BTU per hour (5.8 MW) each (FG-BOILERS). The boilers were installed in CY 1990 (after June 9, 1989). The boilers generate steam for space heating.

1. Gas1 NG only.

2. Initial tune-up (required annually:12/09/2015 & 12/28/2016) and

3. Energy assessment (one-time only: 04/30/2014).

BASF is required to submit an **annual compliance report** for FG-BOILERS. The first one shall be submitted by **January 31, 2017** and then by **January 31, every year thereafter.** BASF is required to submit the annual compliance report per MI-ROP-N1336-2015FG-NG-BOILER-MACT5D-MJRSOURCE-EXISTING, SC VII.6 electronically using **Compliance and Emissions Data Reporting Interface (CEDRI)** that is accessed through the EPA's **Central Data Exchange** (www.epa.gov/cds).

hazardous waste laws and regulations. I observed the machine while the lid was operating, previously.

A cold-cleaner is exempt from Rule 336.1201 pursuant to Rule 281(2)(h) or Rule 285(2)(r)(iv). Existing cold cleaners were placed into operation prior to July 1, 1979. New cold cleaners were placed into operation on or after July 1, 1979. I asked BASF officials to ensure that a cold-cleaner is kept closed at all times when idled. I gave to Mr. Ozimek copies of DEQ's "cold-cleaner operating procedures". During FY 2017 inspection, the procedures were posted. During the previous inspection, I gave additional decals to Mr. Howard Stephan.

Power assisted lid cold-cleaner is located in Red Label Solvent Storage Room. Only BASF proprietary solvents are used. MSDS (see below) indicates NULL halogenated solvents. The power-assisted unit is mostly used for cleaning dampers.

50-75 gallons per month solvents are used. BASF keeps a list of cold-cleaners.

Solvent 6562 is blended by Ashland / Nexco (800-325-3751) Spray Booth Solvent 579343

100% VOC solvent:

Acetone (CAS 67-64-1) 50-60%; IPA (CAS 67-63-0) 20-30%; Ethylene Glycol Monobutyl (CAS 111-76-2) 15-20%

Acetone (CAS # 67-64-1, C3H6O = CH3-CO-CH3) is not VOC pursuant to 336.1122 (V-definitions) (f)(xiii). However, acetone has high potential for fire and explosion due to low boiling point (BP = 133 °F), low flash point (FP = - 4 (negative) °F) and wide flammability range (Flammability range = 2.5 %v (LEL) – 12.8%v (UEL)).

Flash Point (FP) = -4 °F TCC (Tag Closed Cup). Auto Ignition = NA °F. Boiling Point (BP) = 133 °F / 56 °C @ 1,013 hPa (hector-pascal). Vapor Pressure (VP) = 307.9 hPa at 77 °F / 25 °C. Specific Gravity (SG, Water = 1.0) = 0.806. Density (ρ) @ 68 °F = 0.806 kg /L. Flammability range = 2 %v (LEL) – 12%v (UEL).

1,013 hPa (hector-pascal) = 101,300 Pa (Pascal) = 101.3 kPa =1.013 bar =1 atm.

Emergency Generator: FG-CI-RICE-MACT4Z

One 275-kilowatt emergency diesel generator (Onan 275 Genset Model No. 275 DFM L33477N Onan Serial No. C890214181 and Engine Model No. NTA 855G1 & Serial No. 30314399) is present.

PTI Exemption - CI RICE Engine

Fuel usage for Caterpillar Generators is as follows:

1500 kW → 105 gallons per hour diesel (DMC)
1050 kW → 74 gallons per hour diesel
750 kW → 55 gallons per hour diesel

Hours meter readings = 775 (7/31/2017), 815.2 (12/03/2018), 838.2 (12/31/2019), 853.1 (07/17/2020)

Conclusion:

I did not find any compliance problem with permit conditions at the time of the inspection. This is a small source of VOC and HAP. Boiler MACT 5D and CI RICE MAC 4Z sources are present. BASF is in compliance with ROP. COVID-19 incident during the FY2022 inspection.

NAME J Kavanaugh DATE February 7, 2022 SUPERVISOR Joyce