UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, ILLINOIS 60604

SUBJECT:	CLEAN AIR ACT INSPECTION REPORT BASF Corporation, Wyandotte, MI
FROM:	Valeria Apolinario AECAB (MN/OH)
THRU:	Brian Dickens, Section Supervisor AECAB (MN/OH)
TO:	File

BASIC INFORMATION

Facility Name: BASF Corporation

Facility Location: 1609 Biddle Avenue, Wyandotte, MI

Date of Inspection: June 14, 2022

EPA Inspectors:
1. Valeria Apolinario, Environmental Engineer
2. Patrick Miller, Environmental Engineer

Other Attendees:
1. Bryan J. Hughes, EHS Team Leader
2. Jordan Thompson, Senior EHS Specialist
3. Tom Wharton, EHS Specialist

Contact Email Address: bryan.hughes@basf.com

Purpose of Inspection: to determine compliance with the facility's Renewable Operating Permits (ROPs) for its Plastics Plant and Chemical Plant, Permits-to-Install 113-07B and 70-21 for resins and polyol production in its Chemical Plant, and the facility's obligations under the National Emissions Standards for Polyether Polyols Production (NESHAP PPP).

Facility Type: All Other Basic Organic Chemical Manufacturing

Regulations Central to Inspection: BASF's ROP for its Plastics Plant obligates the operation of carbon adsorbers to control for VOC emissions from pre-polymer reactors. At BASF's Chemical Plant, the polyol operations in the facility's ROP and PTI 70-21 are subject to regulations under NESHAP PPP, of which the inspection focused on the operations of a scrubber and thermal oxidizer to control for VOC emissions. PTI 113-07B for resins production also obligates the operation of a thermal oxidizer to control for VOC emissions. Continuous monitoring and recording of scrubber parameters (pH of effluent and liquid flow rate) and thermal oxidizer temperatures are required.

Arrival Time: 9:35 am
Departure Time: 1:30 pm

Inspection Type:
☒ Unannounced Inspection
☐ Announced Inspection

OPENING CONFERENCE

☒ Presented Credentials
☒ Stated authority and purpose of inspection
☒ Small Business Resource Information Sheet not provided. Reason: Not a Small Business
☒ Provided CBI warning to facility

The following information was obtained verbally from Bryan Hughes, Jordan Thompson, and Tom Wharton unless otherwise noted.

Process Description:
BASF Corporation (BASF) operates three stationary sources at the facility: its Chemical Plant, Plastics Plant, and Labs and Applications Center. This inspection focused on specific operations at the Plastics Plant and the Chemical Plant.

Beginning with the Plastics Plant, BASF operates three main sections: its engineering plastic compounding (EPC) plant, expanded thermoplastic polyurethane (ETPU) plant, and Cellasto plant. At the EPC plant, plastic resin pellets are blended with additives, heated, extruded into strands, and then cut into pellet-form. At the ETPU plant, thermoplastic urethane pellets are expanded with butane to a specific required density. The inspection, however, focused on the Cellasto plant.

At the Cellasto plant, BASF produces and molds polyurethane to serve as jounce bumpers. Polyol and isocyanate are heated in a reactor that forms a prepolymer. This prepolymer is then injected into heated molds to form a specific shape. The plastics are cured in one of twelve ovens and sent into a deflasher where imperfections are broken up. The plastic part may be adhered to a metal, cut, or left alone dependent on customer demand. Mist eliminators control emissions from curing ovens and carbon adsorbers control VOC emissions from pre-polymer reactors.

At its Chemical Plant, BASF has five main operations including the production of resins, polyol, and thermoplastic polyurethane. The focus of this inspection was on the production of resins and polyols. The main reaction that takes place at both production lines is the formation of polymers from monomers. For resins production, one operation is the formation of an acrylic polymer from acrylate. Styrene is also utilized as a monomer. The polymer can then be dispersed in water or solvent based product or as an emulsion. VOC emissions from reacting raw materials, scale tanks, blending tanks, and monomer storage tanks are controlled by a regenerative thermal oxidizer (RTO).

At polyol production, monomers such as ethylene oxide and propylene oxide form polymers in reactor trains that are further processed into conventional and graft polyether polyols. The formation of graft polyether polyols includes the addition of acrylonitrile and styrene groups to the polyol chain. Emissions from the production of conventional and graft polyols are routed to an RTO. For two reactors, emissions are routed to a scrubber before the RTO.

Staff Interview:

- There are approximately 1300-1500 employees at the facility.
- The facility is currently awaiting the renewal of the ROPs associated with the Chemical and Plastics plants. They have been issued a draft ROP for the Chemical Plant.
- BASF took a synthetic minor limit for HAPs across all three sources at the facility.
- Several emission units within the facility are subject to Michigan Rule 290 that allows for reduced monitoring for associated air pollution control devices. These are the case for dust collectors within the EPC operations, which the facility does not record differential pressure values for.
- Staff stated that the ETPU plant was not in operation at the time of inspection.
- The deflasher units for Cellasto operations (known as "deburring" within the Plastics Plant ROP) were replaced with deburrers that no longer need filter socks to control for particulate matter emissions.
- Mist eliminators within the Cellasto operations are interlocked to the curing ovens.
- For resins production, the temperature of the RTO is monitored on a 3-hour rolling average, baghouse pressure drop monitoring is done daily, and visible emission observations are conducted monthly.
- The facility is expanding and replacing reactor #10 associated with polyol production.

TOUR INFORMATION

EPA Tour of the Facility: Yes

Data Collected and Observations:

- US EPA toured the EPC and Cellasto operations associated with the Plastics Plant and resins and polyol operations associated with the Chemical Plant.
- Plastics Plant
    - Carbon adsorbers control for VOC emissions from the reactors in the Cellasto operations. The color of activated carbon pellets installed at the top of the adsorbers dictate when the adsorbers should be replaced, purple indicating proper

operation and brown indicating depletion. These devices are known as Tiggs at the facility.
    - When US EPA checked the Tiggs for the five reactors within the Cellasto plant, all Tiggs showed brown activated carbon pellets.
- Chemical Plant
    - Resin Production
        - The temperature of the RTO had two separate set points at 1550°F and 1675 °F. The present value temperature, taken during the time of the inspection, was 1544°F.
        - The differential pressure for dust collector F-1091 associated with polymer dicers and resin storage silos was recorded as 3.4 inches of water column. (in WC) Staff stated that the pressure should be between 2 and 6 in WC.
    - Polyol Production
        - There are two temperature monitors for the RTO for redundancy, one present value was at 1821 °F and the other at 1832 °F. This RTO controls for emissions from reactors 8, 9, and 10.
        - Scrubber parameters such as pH and flow are also monitored continuously. The scrubber pH at the time of the inspection was 12.7 and 12.9. Liquid flow rate was approximately 215 gallons per minute.

Photos and/or Videos: were not taken during the inspection.

CLOSING CONFERENCE

☒ Provided U.S. EPA point of contact to the facility

Requested documents:

- SOURCE-WIDE monthly and 12-month calculations for individual and total HAPs as well as the separate calculations for BASF Chemical Plants (B4359) and Plastics Plant (M4777)
- SDS sheets for each compound used to flush mixheads in the Cellasto process during startup or maintenance and each mold release agent
- Past 2 semi-annual source-wide deviation reports and MACT PPP reports
- Most recent performance tests for thermal oxidizers associated with Resins and Polyol manufacturing
- Documents regarding how FGELAREACTOR complies with its VOC emission rate
- Last inspections of baghouses for EUPOLCONV, thermal oxidizer for FGPOLEMCON, and water scrubber for FGTPURULE290
- 12-month rolling polylol production rate for reactors 7, 8, 9, and 10 from June 2021-May 2022
- For FGPOLRULE290, FGCHERULE290, FGTPURULE290, please provide records identifying each air contaminant that is emitted, whether the air contaminant is controlled or uncontrolled, and the quantity emitted of that contaminant from January 2022-May 2022

Compliance Assistance: EPA informed the facility that carbon adsorbers needed to be replaced for the reactors associated with the Cellasto operations. The facility stated that replacements were initiated when the issue was identified during the inspection.

Concerns: EPA shared concerns about the different temperature setpoints for the RTO that controls for VOC emissions at resin production and informed the facility that further information would be requested as a follow-up.

DIGITAL SIGNATURES

Report Author: VALERIA APOLINARIO Digitally signed by VALERIA APOLINARIO Date: 2022.07.27 08:32:17 -05'00'

Section Supervisor: Brian Dickens Digitally signed by Brian Dickens Date: 2022.07.27 13:22:14 -05'00'