

M4777
manilaDEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: On-site Inspection

M47772570

FACILITY: BASF Corporation - Plastic Plants		SRN / ID: M4777
LOCATION: 1609 BIDDLE AVE., WYANDOTTE		DISTRICT: Detroit
CITY: WYANDOTTE		COUNTY: WAYNE
CONTACT: Bryan Hughes , EHS Team Leader		ACTIVITY DATE: 07/10/2024
STAFF: Samuel Liveson	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Scheduled inspection of a Title V major source.		
RESOLVED COMPLAINTS:		

Introduction

On Wednesday July 10, 2024, AQD staff Diana Serban and I (Sam Liveson) conducted an announced, scheduled inspection of BASF Corporation – Plastics Plants (BASF Plastics), located at 1609 Biddle Avenue in Wyandotte, Michigan.

The purpose of this inspection was to determine the facility's compliance with the federal Clean Air Act; Part 55, Air Pollution Control, of the Michigan Natural Resources and Environmental Protection Act, 1994 PA 451, as amended; the Michigan Air Pollution Control Rules (Rules); and Renewable Operating Permit (ROP) No. MI-ROP-M4777-2015b.

Pre-Inspection Meeting and Facility Overview**Arrival**

The inspection was announced. Diana and I arrived at the facility around 9:00 AM. At the facility, we met with Bryan Hughes, EHS Team Leader; Tom Wharton, Senior EHS Specialist; and Evan Rinke, EHS Specialist. We provided our state-issued identification and stated the purpose of the visit. We had a pre-inspection meeting prior to walking through the facility.

General Facility Overview

BASF Plastics comprises two plants known as Engineering Plastics Compounding (EPC) and Cellasto Operations. EPC manufactures plastic pellets via plastic extrusion. These pellets are sold and further processed into engine manifolds and other products. Cellasto manufactures jounce bumpers for the automotive industry via reaction injection molding (RIM).

BASF Plastics is one of three separate stationary sources that make up BASF's Wyandotte operations. The other two sources are BASF Corporation – Chemical Plants (State Registration Number B4359) and BASF Corporation – Labs and Applications Centers (SRN M4808), because each source has a different 2-digit major group Standard Industrial Classification (SIC) code.

There are no longer any cold cleaners at BASF Plastics, so flexible groups FGEPCCOLDCLEANERS and FGELACOLDCLEANERS are no longer applicable. Staff explained there are no boilers. No emergency generators are associated with BASF Plastics; any emergency generators are considered part of the separate Chemical Plants (B4359) source.

Records Review

As part of a full compliance evaluation, I requested facility records on July 2, 2024, and received records timely on September 6, 2024.

Compliance Background

There are no outstanding violations or recent complaints received for this facility. Consent Order AQD No. 47-2014 (effective date October 2, 2014) is still active. It was for failure to submit the ROP renewal application for MI-ROP-M4777-2009 by the June 10, 2014 deadline. The facility has complied with requirements in Paragraph 9 of the consent order. The facility plans to request to void this consent order per Paragraph 18.

Engineering Plastics Compounding (EPC): Walkthrough and Compliance Status

We visited EPC. EPC operates a plastic extrusion process. The plant consists of seven extruder lines. The extruding process starts with seven silos of raw material such as resin, fiberglass, powder minerals,

ultraviolet powder, stabilizers (waxes), and pigment (carbon). Silos are controlled via filter houses on top of the silos. Raw materials are conveyed to each extruder line via pneumatic piping, mix bowls, and gravity. Staff explained that raw materials are extruded under pressure and heat into thin lines; cooled in water; and chopped into pellets prior to packaging. Finally, the pellets are conveyed pneumatically to be packaged as the finished product. Staff explained there are four final product silos, which do not require baghouses.

EPC Extruding – Rule 286(2)(a)

Plastic extrusion and storage silos appear to be exempt from obtaining a Permit to Install per Rule 286(2)(a) for plastic extrusion equipment and associated plastic resin handling, storage, and drying equipment.

EPC is divided into two sub-plants, EPC II and EPC III, each operating with its own extruders, dust collectors, and water scrubber. EPC II consists of three small extruders 4, 5, and 6 installed in 1994; EPC III consists of four large extruders 7, 8, 9, and 10 installed in 1999. These comprise the seven extruder lines at EPC. EPC I equipment was removed at the time of the EPC III expansion in 1999.

We observed extruder line 10 in EPC III, which was operating. I observed a hood above the line which appeared to capture fumes via negative pressure and vent the fumes to a water scrubber, which exhausts to ambient air.

EPC II and EPC III each have a water scrubber which collects and controls fumes and calcium stearate coming off the extrusion lines. The fumes are collected as sludge. The extrusion lines and associated control are exempt under Rule 286(2)(a) for plastic extrusion equipment. Scrubber solution is water and some biocide which is similar to chloride, to prevent bacteria buildup in the scrubber water. Scrubbers exhaust to ambient air.

We visited both scrubbers. Since the last inspection of August 2022, the facility has installed a new water scrubber at EPC II which replaces the previous scrubber. Both scrubbers at EPC II and EPC III were operating.

Filler Handling Equipment (MI-ROP-M4777-2015b, EUEPCFILLERHNDLG, FGEPCCRULE290)

Particulate emissions from activities associated with the extrusion process, but not exempted under Rule 286(2)(a), are considered exempt from obtaining a PTI per Rule 290. In the facility, these activities are identified as emission unit EUEPCFILLERHNDLG. These activities include mineral unloading and receiving, additive scales, and additive feed hoppers. These activities have particulate emissions which are controlled via fabric filters.

At EPC II, we observed the EPC2 Manual Weigh Area, which was operating. I observed additive material in bags, which is weighed and mixed by hand in mix bowls. Baghouses on the roof control exhaust from the EPC2 Manual Weigh Area. We also observed three mixing bowls, one for each EPC II extruder, and various supersacs. We observed raw material mineral supersacs 2 and 3. The material is conveyed pneumatically. This system exhausts to stacks on the roof.

At EPC III, we visited two mineral stations for adding minerals to lines 8 and 9, which have a small filter for particulate control. We visited the EPC3 Manual Weigh Area which appears to have two main stations. This room has larger mixers and bowls. Mixing was not occurring during the inspection. In this weigh area, there is a new baghouse dust collector outside of the plant, with a tall stack, which replaces the previous baghouse which had been located inside the EPC3 Manual Weigh Area. I observed that the new outdoor baghouse had a blue sealed bin underneath to collect particulate. Staff explained there are gauges on the baghouse, but I did not observe the values due to heavy rains.

EUEPCFILLERHNDLG, FGEPCCRULE290 Special Conditions and Compliance Status

Regarding particulate emissions, FGEPCCRULE290 requires compliance with either (1) the pounds per month emission limit in FGEPCCRULE290 SC I.2 or (2) particulate exhaust concentration and opacity requirements (no pounds/month emission limit) in SC I.3. BASF records indicate that the facility complies with both of these compliance methods; however only one of these compliance methods is required for particulate emissions under Rule 290.

Below is a summary of applicable special conditions from Flexible Group FGEP.Rule290 from ROP MI -ROP-M4777-2015b, and an explanation of EUEPCFILLERHNDLG's compliance status.

SC I.2, VI.1: Noncarcinogenic air contaminants limited to 500 pounds per month controlled. (PM may fall into this category.) Keep sufficient emissions calculations.

COMPLIANCE. EUEPCFILLERHNDLG PM emissions are controlled by dust collectors. Monthly emissions records were provided from August 2022 through June 2024. The highest monthly PM emissions from EUEPCFILLERHNDLG were 16.8 pounds in March 2024. This is below the limit of 500 pounds noncarcinogenic air contaminants per month.

SC I.3, VI.2.b, VI.3: If complying with Rule 290 particulate requirements via SC I.3, particulate emissions are controlled via fabric filter or equivalent control system. Visible emissions less than 5% opacity. Maintain a written description of the control device including designed control efficiency and the designed exhaust gas flow rate. Perform monthly visible emission observations for emission units that emit particulate.

COMPLIANCE. EUEPCFILLERHNDLG operations are controlled by fabric filter dust collectors. We did not observe the fabric filters from the roof due to heavy rains during the inspection. Following the inspection, staff provided images of the fabric filters and collection containers. I did not request the control device designed control efficiency and designed exhaust gas flow rate. BASF provided monthly records of visible emission observations for August 2022 through June of 2024 as requested by AQD. Records indicate that no visible emissions have been observed for EUEPCFILLERHNDLG.

SC VI.2.a: Maintain an inventory of each emission unit including a written description of each emission unit as it is maintained and operated.

COMPLIANCE. In records provided on 9/6/24, BASF provided EUEPCFILLERHNDLG equipment names, descriptions, and controls.

EPC Burn Off Oven (MI-ROP-M4777-2015b, EUEPCOVEN, FGEP.Rule290)

EPC has a natural gas-fired burn-off oven which exhausts to ambient air. It burns off cured plastic material from extruder parts. It services both EPC II and EPC III. According to staff, it runs about 6 hours and operates about three days a week. I observed the oven during the inspection, and it happened to be operating and ramping up to temperature. It has an afterburner to control VOC and PM emissions. BASF considers the oven exempt from obtaining a Permit to Install per Rule 290.

EUEPCOVEN, FGEP.Rule290 Special Conditions and Compliance Status

This pyrolysis burn-off furnace is in the ROP MI-ROP-M4777-2015b as EUEPCOVEN under flexible group FGEP.Rule290. Regarding the controlled VOC and particulate emissions, Rule 290 requires compliance with either (1) PM and VOC meet the combined 500 pounds per month air contaminant emission limit in FGEP.Rule 290 SC I.2; or (2) VOC emissions may comply with the 500 pound limit in I.1, or the controlled air contaminant limit in I.2, while particulate complies with exhaust concentration and opacity requirements (no pounds/month emission limit) in SC I.3. BASF records indicate that the facility complies with both options.

Below is a summary of applicable special conditions from Flexible Group FGEP.Rule290, and an explanation of EUEPCOVEN's compliance status.

SC I.1, VI.1: Non-carcinogenic VOC emissions limited to 500 pounds per month. Keep sufficient emissions calculations.

COMPLIANCE. Considering VOC emissions under SC I.1, and PM under I.3, monthly emissions records provided from August 2022 through June 2024 indicate the highest VOC emissions were 1.81 pounds per month. This is below the limit of 500 pounds noncarcinogenic VOCs.

SC I.2, VI.1: Noncarcinogenic air contaminants limited to 500 pounds per month controlled. (PM may fall into this category.) Keep sufficient emissions calculations.

COMPLIANCE. EUEPCOVEN VOC and PM emissions are controlled by dust collectors. Monthly emissions records were provided from August 2022 through June 2024. Staff explained that emissions are based on hours of operation. The highest combined PM and VOC emissions from EUEPCOVEN were 3.19 pounds in March 2024. This is below the limit of 500 pounds combined noncarcinogenic air contaminants.

SC I.3, VI.2.b, VI.3: If complying with Rule 290 particulate requirements via Rule I.3, particulate emissions are controlled via fabric filter or equivalent control system. Visible emissions less than 5% opacity. Maintain a written description of the control device including designed control efficiency and the designed exhaust gas flow rate. Perform monthly visible emission observations for emission units that emit particulate.

COMPLIANCE. EUEPCOVEN operations are controlled by an afterburner. BASF provided monthly records of visible emission observations for August 2022 through June of 2024 as requested by AQD. Records indicate that no visible emissions have been observed for EUEPCOVEN. I did not request control efficiency and exhaust gas flow rate.

SC VI.2.a: Maintain an inventory of each emission unit including a written description of each emission unit as it is maintained and operated.

COMPLIANCE. In records provided on 9/6/24, BASF provided EUEPCOVEN equipment name, description, and control.

Cellasto Plant: Walkthrough and Compliance Status

We visited the Cellasto Plant. The Cellasto Plant manufactures automobile jounce bumpers by reacting part A, a mixture of polyol and diisocyanate, with part B, catalysts/inhibitors. Polyol and diisocyanate are initially reacted under heat into a prepolymer in one of five reactors. The prepolymer is dosed with an initiator into a heated mold via reaction injection molding, and a urethane plastic is produced. The plastics are cured in ovens and shaken ("deburred") to remove imperfections. Curing oven emissions are controlled by demisters (fabric filters). Deburring machines are controlled with knock out boxes.

Storage Tanks (Rule 284(2)(i))

We visited the nine storage tanks considered exempt from obtaining a permit to install per Rule 284(2)(i) for storage and transfer operations of noncarcinogenic liquids with a true vapor pressure less than 1.5 psia. N-methyl pyrrolidone (NMP) is used to clean reactors, and is stored outdoors in tanks EUELATK-111 and EUELATK-112, and is transferred indoors to tank EUELAD-202. EUELATK-111 and EUELATK-112 are controlled via carbon adsorption tanks equipped with saturation indicators that are initially purple and turn brown as carbon is exhausted.

EUELATK-101, EUELATK-102, and EUELATK-103 store polyol outdoors above ground. Tank EUELATK-210 stores diphenylmethane diisocyanate (MDI) inside. White oil is used for purging dosing machines and is stored in tank EUELAD-203 indoors.

Prepolymer Reactors (FGELAREACTOR, FGELAMACTS, FEGELARULE290)

We visited south reactors 210, 220, and 230; and north reactors 240, 250, and a knockout pot for condensibles. Reactors all appear to be a similar size except reactor 230 is smaller.

From the storage tanks, reactors are filled with polyol and diisocyanate to produce a prepolymer, which is piped into a transfer vessel. The vessel is wheeled over to the RIM lines.

FGELAREACTOR Special Conditions and Compliance Status

Below is a summary of FGELAREACTOR special conditions from ROP MI-ROP-M4777-2015b, and an explanation of the facility's compliance status.

SC I.1, III.1, VI.1: 0.5 lbs VOC per 1000 pounds resin produced; do not operate unless VOC emission limit is met; keep records demonstrating VOC limit is met.

COMPLIANCE. BASF provided records of the monthly VOC emissions per pounds of prepolymer product. The highest monthly VOC emission rate was 0.288 pounds VOC per 1000 pounds product in July 2023, which is below the emission limit of 0.5 pounds VOC per 1000 pounds product.

SC IV.1: Install, operate, and maintain carbon adsorption units.

COMPLIANCE. I observed that each reactor and the knockout pot has a carbon adsorption drum. It appears to be maintained. Carbon adsorption drums were installed to control odors from dimethylformamide (DMF), but DMF is no longer used. Carbon drums have saturation indicators that are initially purple and turn brown as carbon is exhausted. The facility does not take credit for any control efficiency from carbon adsorption drums when calculating monthly emissions.

Reaction Injection Molding Lines (EUELAMOLDING, FGELAMACTS, FGELARULE290)

There are six pairs of reaction injection molding (RIM) lines. Within molds along the RIM lines, prepolymer is reacted with part B to form polyurethane jounce bumpers.

We observed the raw material storage and mixing area for part B additives such as catalysts and inhibitors. Tanks were closed and there were no odors.

We visited the pair C6 and C7 RIM lines, where C7 was operating, and observed the wax mold release being sprayed onto molds along the C3 RIM line. From observing ventilation and talking with staff, RIM lines don't appear to exhaust to ambient air.

Ovens and Deburring (EUELAOVEN101-112, EUELADEBURRING, FGELAMACTS, FGELARULE290)

Parts created from RIM are put into one of 12 electric ovens to cure. Ovens are numbered 101 through 112. I observed ovens 101 & 102, which were not operating.

Ovens exhaust to ambient air. Particulate matter and VOC emissions are controlled by two banks of "mist eliminators", which are fabric filters. The first demister controls the first bank of ovens (101 through 106), and the second demister controls the second bank of ovens (107 through 112). Pressure drop across the fabric filters is measured and the process is interlocked with pressure sensors. If pressure is outside of the set parameters, the ovens and demisters will shut down. We visited each demister. They are located on the upper "mezzanine" level. Both were operating during the inspection. While pressure drop is being measured and interlocks appear to be in place, the pressure drop value does not appear to be displayed at the demisters.

After being cured in ovens, the parts are deburred in one of three deburring machines. In deburring machines, parts are cooled with liquid nitrogen and tumbled with metal pellets to knock off any chaff (extraneous folds and ridges on the parts). Deburring machines used to have filter socks and exhaust to ambient air. In recent years, deburring machines have been replaced with units that do not have filter socks and do not exhaust to ambient air. On site, observing deburring machines and talking with staff, it appeared deburring machines do not exhaust to ambient air. However in records received 9/6/24, particulate emissions are provided, and a note indicates "All 3 units vent individually to the outside atmosphere." Talking with Bryan Hughes on 9/2/24, he explained that deburring machines do not in fact exhaust to ambient air. However nitrogen exhausts to ambient air after being used in deburring machines. I requested updated RGELADEBURRING records from the facility.

There is also some cutting equipment, as well as presses to add plastic rings to the jounce bumper depending on the customer requirement. No adhesive or coating is required when adding the plastic ring onto the jounce bumper.

FGELAMACTS Special Conditions and Compliance Status

The Cellasto Plant appears to be a molded flexible polyurethane foam process subject to 40 CFR Part 63 Subpart III. Below is a summary of FGELAMACTS special conditions from ROP MI-ROP-M4777-2015b, and an explanation of the facility's compliance status.

SC III.1, VI.1: Do not use HAPs to flush the mixhead or elsewhere as an equipment cleaner. Diisocyanates may be used to flush the mixhead and associated piping during periods of startup or maintenance, provided the diisocyanate compounds are contained in a closed-loop system.

COMPLIANCE. BASF explained white oil is used for flushing the mixhead. BASF provided the SDS, which indicates the product is 100% mineral oil and contains no HAPs. NMP is also used as a cleaner. BASF provided the NMP safety datasheet during the 2022 inspection, which indicated it contains no HAPs.

SC III.2, VI.2: Do not use HAPs in the mold release.

COMPLIANCE. The facility provided the MSDS for mold release agent 621/E7. It contains isotridecanol (CAS No. 9043-30-5), which is not a HAP.

SC VII.4: Annually submit a certification of compliance with 40 CFR Part 63 Subparts A and III. The annual ROP certification of compliance may satisfy this requirement.

COMPLIANCE. The facility submits annual certifications of compliance with the ROP.

SC IX.1: Comply with applicable provisions of 40 CFR Part 63 Subparts A and III.

COMPLIANCE. Applicable requirements are included in the flexible group special conditions.

FGELARULE290 Special Conditions and Compliance Status

Regarding the controlled VOC and particulate emissions, Rule 290 requires compliance with either (1) PM and VOC meet the combined 500 pounds per month air contaminant emission limit in FGELARULE 290 SC I.2; or (2) VOC emissions may comply with the 500 pound limit in I.1, or the controlled air contaminant limit in I.2, while particulate complies with exhaust concentration and opacity requirements (no pounds/month emission limit) in SC I.3. BASF records indicate that the facility complies with both options.

Equipment exempt from obtaining a PTI per Rule 290 at Cellasto Plant is the curing ovens (EUELAOVEN101-112); EUELADEBURRING, EUELAMOLDING, and FGELAREACTOR.

Below is a summary of FGELARULE290 special conditions from ROP MI-ROP-M4777-2015b, and an explanation of the facility's compliance status.

SC I.1 , VI.1: If complying with Rule 290 via I.1, non-carcinogenic VOC emissions limited to 500 pounds per month. Keep sufficient emissions calculations.

COMPLIANCE. Each oven of EUELAOVEN101-112 emits 23 pounds of VOCs monthly which do not have indications that they are carcinogenic according to the Michigan Air Toxics System.

Pollutant (CAS)	ITSL/IRSL (ug/m3)	Monthly Emissions (lbs)
MDI (101688)	0.6/--	0.00451
NDI (3173726)	5600/--	0.0451
DIPPI (28178429)	Not available	11.1
9HF9 (486259)	Not available	0.392
PMDT (3030475)	Not available	2.22
TMAP (1184787)	Not available	9.26
Total pounds VOC/month		23

Reactors FGELAREACTOR and molding EUELAMOLDING emit 1,374 pounds VOC on an annual basis, which do not have indications that they are carcinogenic according to the Michigan Air Toxics System, as indicated below. Monthly, emissions appear to be less than 500 per month because production at the Cellasto Plant is steady throughout the year and so the average monthly emission calculates to approximately 115 pounds.

Pollutant (CAS)	ITSL/IRSL (ug/m3)	Annual Emissions (lbs)
NDI (3173726)	Not available	69
MDI (101688)	0.6/--	12
NMP (872504)	5600/--	1118
DIPA (110974)	4/--	175

Total pounds VOC/year 1,374

Deburring does not have VOC emissions.

SC I.2, VI.1: If complying with Rule 290 via I.2, noncarcinogenic air contaminants limited to 500 pounds per month controlled. (PM may fall into this category.) Keep sufficient emissions calculations.

COMPLIANCE. RGELACURINGOVENS have 18.5 pounds of particulate emissions each per month. Combined with the 23 pounds of monthly VOC emissions, this 41.5 pounds of emissions does not exceed 500 pounds per month.

SC I.3, VI.2.b, VI.3: If complying with Rule 290 particulate requirements via SC I.3, particulate emissions are controlled via fabric filter or equivalent control system. Visible emissions less than 5% opacity. Maintain a written description of the control device including designed control efficiency and the designed exhaust gas flow rate. Perform monthly visible emission observations for emission units that emit particulate.

COMPLIANCE. Curing oven visible emissions records were provided for EUELACURINGOVENS for September 2022 through June 2024. Records indicate that no visible emissions have been observed for EUELACURINGOVENS. I did not request control efficiency and exhaust gas flow rate.

SC VI.2.a: Maintain an inventory of each emission unit including a written description of each emission unit as it is maintained and operated.

COMPLIANCE. In records provided on 9/6/24, BASF provided Rule 290 equipment name, description, and control.

Site-Wide Conditions

MI-ROP-M4777-2015b, Sections 1 and 2, General Conditions

These general conditions (GC) are listed in each ROP section and are addressed here in total.

GC 9, 10: Collected air contaminants shall be removed to maintain controls at required collection efficiency; air cleaning devices installed and operated in a satisfactory manner.

COMPLIANCE. Controls appeared to be installed and operated properly.

GC 11: Visible emissions limited to 20% over a six-minute average, with the exception of one 27% opacity per hour.

COMPLIANCE. Visible emissions were not observed during the inspection.

GC 12: Nuisance emissions prohibited.

COMPLIANCE. There have been no Rule 901 violations for the BASF Wyandotte operations in the period since the last inspection.

GC 19-23, 25: Certification of reports and prompt reporting of deviations.

COMPLIANCE. Annual certifications and semiannual deviation reports were received timely.

GC 24: Annual emissions report submittal.

COMPLIANCE. AQD received BASF Plastics' 2023 annual emissions report timely on March 14, 2024. The due date was March 15, 2024.

MI-ROP-M4777-2015b, Sections 1 and 2, Special Conditions

These plant-wide special conditions are repeated at the beginning of each ROP section and are addressed here in total.

I.1 and 2, VI.1-3: Hazardous Air Pollutant (HAP) emissions limited to less than 10.0 tons per 12-month rolling time period for each individual HAP and 25.0 tons per 12-

month rolling time period for combined HAPs; records; these requirements apply to the three stationary sources B4359, M4777, and M4808 combined.

COMPLIANCE. BASF provided monthly and 12-month rolling site-wide HAP emission totals for the time period of August 2022 through June 2024. Records indicate that the highest 12-month rolling individual HAP emissions were 2.6 tons of acrylic acid. The highest 12-month rolling aggregate HAP emissions were 14.05 tons in June of 2024. These emissions are below the facility emission limits.

Conclusion

Based on the AQD inspection and records review, BASF Plastics appears to be in compliance with the federal Clean Air Act, Michigan NREPA, the Michigan Air Pollution Control Rules, and facility ROP No. MI-ROP-M4777-2015b.

NAME



DATE

11/13/24

SUPERVISOR

