M4777
MAWILL

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Scheduled Inspection

M477723230

FACILITY: BASF CORP		**SRN / ID:** M4777
LOCATION: 1609 BIDDLE AVE, WYANDOTTE		**DISTRICT:** Detroit
CITY: WYANDOTTE		**COUNTY:** WAYNE
CONTACT: Bryan Hughes , EHS Team Leader		**ACTIVITY DATE:** 09/27/2013
STAFF: Jeffrey Korniski	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MAJOR
SUBJECT: Scheduled Inspection		
RESOLVED COMPLAINTS:		

SCHEDULED INVESTIGATION REPORT
(PCE for an FCE source)

Date of Investigation: September 27, 2013
Date of Report: February 19, 2014
Source: BASF Corporation, Plastics Plants
SRN: M4777
Address: 1609 Biddle Ave., Wyandotte, Michigan 48192
Subject: Scheduled Investigation
Author: Jeff Korniski, Air Quality Division, Detroit Office

Safety Equipment/Safety Training/Security:
Hard hat, steel-toed boots, and goggles or safety glasses are required in process areas of the plant; hearing protection is required in specific process areas. Visitors must sign in at the administration building and at each specific process area in the plant. A visitor will be issued a Visitor's Badge which must be worn at all times. A visitor is required to observe an orientation and safety video; an orientation card is then issued to the visitor which remains valid for one year. The administration building is a red-colored structure just to the north of Alkali Street (the street on which the main gatehouse is located). Turning east onto Alkali off Biddle, the administration building is to the immediate left across the railroad tracks with the visitors' parking lot adjacent to and south of the building.

Facility Background:
BASF Corporation (BASF) specializes in the manufacture of various chemicals and plastics products. BASF's Wyandotte operations at 1609 Biddle Ave. comprise three separate stationary sources: (1) chemical production plants with a Standard Industrial Classification (SIC) major grouping of 28 and identified as State Registration Number (SRN) B4359; (2) plastics production plants with an SIC major grouping of 30 and identified as SRN M4777; (3) laboratory and research operations with an SIC major grouping of 87 and identified as SRN M4808. Polytech Moulding (SRN N7238) and Abbott Laboratories (P0164) also operate manufacturing plants at this site.

BASF's plastics plants operations comprise the Cellasto plant and the Engineering Plastics Compounding (EPC) plant. BASF Plastics is operating under Renewable Operating Permit No. MI-ROP-M4777-2009 issued 12/10/1999.

Process Description and Summary of Facility Visit:
I arrived at BASF on 9/26/2013, signed in at 1:15 PM, and watched the safety video. I met with Mr. Jordan Thompson, Senior EHS Specialist, and Mr. Bryan Hughes, EHS Team Leader, of BASF's environmental staff and indicated my intention to perform annual inspections of the BASF's Chemical Plants (B4359), the Plastics Plants (M4777), and the Labs and Application Centers (M4808) that day and the next. Mr. Thompson had a conflict on the 27th but Mr. Hughes was available and agreed to escort me through the site that day. Mr. Dan Hannewald, lately of BASF's environmental staff and now with the process staff, also assisted on the inspection along with various plant personnel at each individual manufacturing location. The site visit lasted until about 3:00 PM on 9/26/2013 and then extended from about 8:40 AM until 2:00 PM on 9/27/2013. On both days the sky was mostly sunny with a temperature in the low-70s°F and a light wind generally from the east at 5 to 10 miles per hour. The inspection documented here is for the M4777 Plastics Plants stationary source; the inspection of M4777 plants occurred entirely on 9/27/2013.

Cellasto Plant

The Cellasto plant manufactures automobile suspension parts by curing a mixture of polyol and diisocyanate with 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 and a urethane plastic is produced; eleven mold lines are installed at the plant. The plastics are cured to completion in one of nine ovens and shaken ("deburred") to remove imperfections. Storage vessels and reactor vessels are controlled by carbon canisters. Curing oven emissions are controlled by mist eliminators. The three deburring machines are controlled with knock out boxes and mesh filters.

The Cellasto plant was visited from 9:00 AM to 9:40 AM on 9/27/2013. The two carbon canisters controlling VOC emissions from storage tanks 111 and 112 and the five carbon canisters controlling VOC emissions from the reactors showed varying degrees of use, but all were observed to have at least 20% capacity ("purple" coloring) remaining. The heated oven exhaust gas vents to one of two mist eliminators ("demisters" or filters) which drop out particulates and condense VOCs. The two demisters were observed during the inspection and pressure drops were noted at 0.7 inches water column for the unit servicing ovens 101 through 106 and 0.5 inches water column for the unit servicing ovens 107 through 109. Proper operation ranges from 0.5 to 2.0 inches water column. Cured parts are tumbled together in one of three "deburring" machine to remove chaff (extraneous folds and ridges on the parts). Exhaust from the two older machines is blown through a drop-out box and the remainder is collected in filter socks, one for each deburring machine. The filter socks were observed in operation and no visible emissions were noted. The third, newer, deburring machine collects all particulate in drop-out boxes prior to venting inside: no filter sock is installed.

The cold cleaner at Cellasto was observed to have its lid closed and to have proper operating procedures posted. This cold cleaner is equipped with an agitator and the lid is motorized.

EPC Plant

The EPC plant produces plastic pellets from seven extruder lines. Solid raw materials (filler, fiberglass, nylon, pigment) are poured from supersacs into mixing vessels which are then fed into the extruder hoppers. The solids are melted into semi-solids under heat and extruded into thin wires which are cooled to harden, cut into pellets, and packaged. Material handling and hopper charging operations are controlled by dust collectors. Vapors from the extruders are controlled by water scrubbers. EPC is divided into two sub-plants, EPC II and EPC III, each operating with its own extruders, dust collectors, and scrubber.

The EPC plant was visited from 9:45 AM to 10:00 AM on 9/27/2013. EPC operations are housed in a single building and comprise two independent sub-plants: EPC II is older and operates extruder lines 4, 5, and 6; EPC III is newer and operates extruder lines 7, 8, 9, and 10 (an EPC I sub-plant does not exist).

The water scrubber at EPC II was observed operating with a flowrate of 221 liters per minute during the inspection. EPC II's four primary dust collectors are on the roof of the building. Three of these dust collectors filter particulate emissions generated when raw materials are blown into the mixers from the hopper (filler) and the storage silos (nylon); these dust collectors (F-1040Z-3 services line 4, F-1040Z-4 services line 5, F-1040Z-2 services line 6) only operate when the blower operates; it generally takes less than 5 minutes to charge a mixer. The fourth dust collector (F-405Z-1) draws on the mixers themselves to filter the combined flue. Also on the roof is located the EPC II water scrubber exhaust. The dust collectors were observed during the inspection; none of the collectors registered an identifiable pressure drop.

In EPC III, all the fabric filters are housed in a single room on the ground floor. These pulse-jet baghouses with circular filters are not equipped with pressure drop gauges; the casings are opened and the filters cleaned and inspected according to a schedule. These filters were observed during the inspection. The filter room and the filters themselves were clean; there is no other visual gauge to determine if the filters are operating properly. The stacks for the filters, which previously vented down at about a 30° angle from horizontal, are now directed into a rectangular structure equipped with baffles. The structure is designed to reduce the noise generated from the exhaust; emissions are now exhausted at the bottom of the rectangular structure near to ground level.

The venturi water scrubber servicing EPC III is located in a room on the ground floor. The scrubber continually runs at a set flow and there are not any gauges observable measuring the flowrate. The EPC III stack vents out the east wall of the EPC building. No odors were observed from the EPC III venturi scrubber area during the inspection; the EPC III scrubber was the cause of a confirmed odor event in 2002.

Storage silos are located outside along the southern end of the plant. Fabric filters are installed on the top of each silo to filter particulate entrained in air displaced on filling. The filters on top of these silos were not inspected during the site visit.

The cold cleaner at EPC was observed to have its lid closed and to have proper operating procedures posted. The cold cleaner solvent is not agitated or heated and therefore the lid is not mechanically assisted.

Compliance Status:
Stationary source M4777 is currently covered under MI-ROP-M4777-2009, last renewed on 12/10/2009. The EPC Plant is covered in Section 1 and the Cellasto Plant is covered in Section 2. Prior to the inspection of 9/27/2013 the last site inspection was conducted on 9/14/2011, with the last full compliance evaluation covering compliance activities reviewed through approximately 9/30/2011. In general, this report covers compliance activities that have occurred since 10/1/2011 through approximately 9/30/2013. A request for information from BASF was received on 9/25/2013.

MI-ROP-M4777-2009, General Conditions
These general conditions are repeated at the beginning of each ROP section and are addressed here in total.

9, 10 – Compliance – Collected air contaminants shall be removed to maintain controls at required collection efficiency; air cleaning devices installed and operated in a satisfactory manner – Controls were installed and operating as directed by the ROP during the 9/27/2013 inspection.

11 – Compliance – Visible emissions limited to 20% over a six-minute average, with the exception of one 27% opacity per hour unless otherwise specified in the ROP or in a federal new source performance standard. This limit applies to point source (non-fugitive) emission units at the plant – I did not observe visible emissions exceeding 20% opacity during the 9/27/2013 inspection.

12 – Compliance – Nuisance emissions prohibited – No citizen complaints has been received by the AQD's Detroit Office for the BASF Wyandotte operations in the period since the last inspection.

19 through 23, 25 (and under individual EU/FG tables at SCs VII.1 through 3) – Compliance – Certification of reports and prompt reporting of deviations – Annual certifications and semiannual deviation reports were received or postmarked 9/13/2013, 3/14/2013, 9/12/2012, and 3/13/2012. Please see reports M477722969, M477721288, M477719219, and M477717183.

24 – Compliance – Submissions to the Emissions Inventory – The AQD received this facility's 2012 and 2011 MAERS databases on (or postmarked) 3/14/2013 and 3/13/2012. Please see reports M477721115 and M477717507.

MI-ROP-M4777-2009, SOURCE-WIDE
These general conditions are repeated at the beginning of each ROP section and are addressed here in total.

I.1 and 2, VI.1 through 3 – Compliance – Hazardous Air Pollutant (HAP) emissions limited to less than 9.0 tons per 12-month rolling time period for each individual HAP and 22.5 tons per 12-month time period for combined HAPs; records; these requirements apply to the three stationary sources B4359, M4777, and M4808 combined.

BASF provides site-wide HAP emissions totals for the period 8/2012 through 7/2013 in the 9/25/2013 submittal. Monthly total HAP emissions range between 1.13 and 1.24 tons. For the 12-month period ending 7/2013, acrylic acid registered the highest total of any single HAP at 2.64 tons. BASF reports 12 tons for the 12-month total HAP calculation. AQD tabulates the 12-month total at 13.89 tons. The difference appears to result from BASF's truncation of the monthly totals to calculate to the annual value (e.g. 1.1 to 1.2 tons is expressed as 1 in the column used to tabulate to the 12-month total). The difference does not represent an issue of non-compliance.

MI-ROP-M4777-2009, FGEPCRULE290 and FGELARULE290
Both sections of the ROP contain flexible group and/or emission units relating to Rule 290 subject equipment installed in each area (section) of the ROP. R 336.1290 exempts from R 336.1201 those sources with limited emissions. The rule is divided into three general sections and further divided into subsections, depending on the type of emission (VOC, particulate, etc.), the carcinogenicity of the emissions, and the health-based screening level(s) of the emissions. Only those rules applicable to the Rule 290 emission units at the stationary source will be addressed.

R 336.1290(a) through (d) – Compliance – Emissions less than 1000 lbs. uncontrolled and 500 lbs. controlled with more restrictive limits for certain ITSL/IRSLs; particulates limited to emissions of 0.01 lbs. particulate per 1000 lbs. gas, controlled by dust collector or equivalent installed and maintained, 5% opacity limit and monthly

visible emission observation; description on file and records maintained. Required records are as follows for each emission unit: written description of the emission unit and control device, including the design control efficiency and exhaust gas flowrate; identify air contaminants emitted, carcinogenicity, screening level, and level of control; monthly emissions calculations; record of monthly visible emission readings.

The following emission units are listed as Rule 290 subject in the 2012 MAERS with their reported annual emissions in pounds:

2012 MAERS emissions reported (in pounds)

Section	Emission Unit	VOC	PM10	NOx	SO2
1	EUEPCFillerHndlg	------	88.00	------	------
1	EUEPCOven	56.00	43.00	1,797.00	10.80
2	RGElaReacs&Molds	51.00	1,652.00	------	------
2	RGElaCuringOvens	2,379.00	1,353.00	------	------
2	EUELADEBURRING	------	18.00	------	------

Fabric filters control particulate emissions from EGEPCFillerHndlg and EUELADEBURRING. Carbon adsorbers control volatile organic compound emissions from RGElaReacs&Molds. Demisters control particulate and volatile organic compound emissions from RGElaCuringOvens.

Emissions for EGEPCFillerHndlg and EUELADEBURRING total to less than 500 pounds per year and therefore meet the monthly limit. Emissions for EUEPCOven average 159 pounds a month; the emissions will exceed 500 pounds per month only if the oven is used a few times a year and it is AQD's understanding that this emission unit is used regularly; according to MAERS 2012 the EUEPCOven was used 347 days during the year.

RGElaReacs&Molds and RGElaCuringOvens average 142 pounds per month and 311 pounds per month, respectively. RGElaReacs&Molds is a combination of two emission units in the ROP (EGELAREACTOR and EGELAMOLDING). RGElaCuringOvens is a combination of nine emission units (one for each curing oven) in the ROP. The data presented for 2013 indicates a fairly consistent production rate across the year, therefore, the average monthly emissions for RGElaReacs&Molds are considered sufficient for AQD to determine compliance at this time. For example, according to MAERS 2012 the curing ovens operated most often during the fourth quarter of 2012 and accounted for 31% of the annual production time; 31% of the annual emissions equates to 1,157 pounds for an average of 386 pounds during each of the three months.

Emissions include MDI (CAS #101-68-8, 24-hr ITSL of 0.6 micrograms per cubic meter), NDI (CAS #3173-72-6, no current screening level), DIPPI (CAS #28178-42-9, no current screening level), NMP (CAS #872-50-4, 24-hr ITSL of 700 micrograms per cubic meter), and DIPA (CAS #110-97-4, annual ITSL of 4 micrograms per cubic meter). With respect to NDI (1,5-naphthylene diisocyanate) and DIPPI (2,6-diisopropylphenyl isocyanate), the 12th Report on Carcinogens was consulted, published by the National Toxicity Program of the U.S. Department of Health and Human Services. Searching on-line under the two categories in the report, the "Known to be Human Carcinogens" and the "Reasonably Anticipated to be Human Carcinogens", the only chemical with the term "cyanate" found in its name is toluene diisocyanate (TDI). Therefore, it appears the current pollutant (aggregate of VOC, PM10, etc.) threshold for the emission units is 500 pounds per month controlled.

In the 9/25/2013 submittal, BASF reports PM emissions at EPC from 1/2013 through 8/2013 totaled 143 pounds, with a maximum monthly emission of 20 pounds. BASF reports diisocyanate emissions at Cellasto from 1/2013 through 8/2013 totaled 895 pounds, with a maximum monthly emission of 212 pounds.

Visible emissions records are provided for 7/2013 at the EPC plant. BASF reports one deviation in the four semiannual reports received since 10/1/2011. The monthly visible emission observation for March 2012 was not performed at EPC. The deviation was corrected and has not been repeated since. The deviation is considered minor and the facility considered in compliance.

Exemptions are not applicable to emission units that represent a PSD major source or major modification nor an ROP significant or minor modification. None of the emission units cited as Rule 290 sources in the ROP are excluded from the classification. As reported in the 2012 MAERS, the annual emission from each Rule 290 source is less than the significance levels in Rule 119(e).

MI-ROP-M4777-2009, FGEPCCOLDCLEANERS and FGELACOLDCLEANERS

II.1 – Compliance – Less than 5% of any combination of methylene chloride, perchloroethylene, trichloroethylene, 1,1,1-trichloroethane, carbon tetrachloride, and chloroform – The MSDS for the cleaning solvent, "Safety-Kleen Premium Solvent", is provided in the 9/25/2013 submittal and indicates the solvent is composed of 100% petroleum distillates (CAS #64742-47-8).

III.1 and 2, IV.1 through 5, VI.1 through 4 – Compliance – Cold cleaner operational requirements, including draining parts, closing cover when not in use, posting operating procedures near the cleaner, and storing waste solvents in closed containers; cold cleaner operational requirements are based on the type of cleaner and the vapor pressure of the solvent; information on each cold cleaner to be maintained on file.

EPC and Cellasto house one cold cleaner each. The cold cleaners were observed during the 9/25/2013 inspection and information on the four cold cleaners currently installed at the Wyandotte site is provided in the 9/25/2013 submittal. The vapor pressure of the solvent is reported at 0.2 mmHg (0.004 psia). The covers were observed to be closed and signs posted near or on the cleaner with proper procedures (keep cover closed when not in use, etc.) and thus the cold cleaners were judged in compliance with SCs IV.3 and VI.3. I judged the air/vapor interfaces to be less than 10 square feet and therefore in compliance with SC IV.1.a. The solvent in the EPC cold cleaner is neither heated nor agitated. The solvent in the Cellasto cold cleaner is agitated and its lid motorized, in compliance with SC IV.4.

MI-ROP-M4777-2009, EUELAREACTOR
This emission unit covers the reactors used to generate the prepolymer for polyurethane molding operations.

I.1, III.1, VI.1 – Compliance – VOC emissions from the reactors, thinning tanks, and blending tanks, requires either a reduction in VOC emissions by 95% or a maximum emission rate of 0.5 pounds per 1000 pounds of completed organic resin; requires records be kept to demonstrate compliance.

In the submittal of 9/25/2013, BASF calculates the monthly emissions per reactor for each month in the period 1/2013 through 8/2013. The monthly VOC emissions from each reactor, and the combined monthly VOC emissions from all reactors, calculate to less than 0.5 pounds per 1,000 pounds of product. Also, in the 2012 MAERS BASF reports 51 pounds of VOCs from the reactors and molds with a total production of 2128 tons of product (or 4,256,000 pounds), calculating to 0.012 pounds VOC per 1,000 pounds of product.

IV.1 – Compliance – Carbon units on each reactor to be installed and operating properly – The carbon canisters were observed during the 9/17/2013 and each observed to have a measurable amount of "purple" remaining, which indicates that full saturation of the carbon had not yet been reached.

MI-ROP-M4777-2009, EUELAMACTS
The equipment constituting EUELAMACTS at the stationary source is subject to the National Emission Standards for Hazardous Air Pollutants for Flexible Polyurethane Foam Production promulgated in Title 40 of the Code of Federal Regulations (CFR), Part 63, Subparts A and III. On 10/8/2001, the first compliance date of the standard for an existing source, the stationary source M4777 was a part of a group of stationary sources (B4359, M4777, and M4808) that met the definition of a "major source" as defined at paragraph (a)(1), section 112, title I, of the Clean Air Act.

The equipment constituting EUELAMACTS at the stationary source is subject to the National Emission Standards for Hazardous Air Pollutants for Flexible Polyurethane Foam Production and Fabrication Area Sources promulgated in Title 40 of the Code of Federal Regulations (CFR), Part 63, Subparts A and OOOOOO. On 7/16/2007, the first compliance date of the standard for an existing source, the stationary source M4777 was a part of a group of stationary sources (B4359, M4777, and M4808) that met the definition of an "area source" as defined at paragraph (a)(2), section 112, title I, of the Clean Air Act.

At the time of ROP renewal, language had not been identified exempting a facility from one standard when subject to the other, therefore, the ROP was written to include requirements for both standards.

Most of the standards apply to "slabstock flexible polyurethane foam production", where "slabstock flexible polyurethane foam" is defined in 63.1292 as the "flexible polyurethane foam that is produced in large continuous buns that are then cut into the desired size and shape." BASF's Cellasto plant molds the plastic into the desired shape and therefore is subject to the standards for molded flexible polyurethane production at 63.1300 in MACT III and at 63.11416(c) in MACT OOOOOO.

The flexible polyurethane foam process is defined at 40 CFR 63.1292 as "the equipment used to produce a flexible polyurethane foam product", inclusive of "raw material storage; production equipment and associated piping, ductwork, etc.; and curing and storage areas." Therefore all permitted, exempt, and grandfathered equipment within the flexible polyurethane foam process constitute a single emission unit at the facility, termed EUELAMACTS.

There are requirements for storage tanks (e.g. 63.1303(d) and (e), 63.1307(a)) not limited (by the language in the subparagraphs) to slabstock processes. However, 63.1308 ("Compliance demonstrations") specifies the obligations for each source type are to be found in Tables 3, 4, and 5 of subpart III; for molded flexible polyurethane production, only the requirements at 63.1300(a) & (b) and 63.1307(g) & (h) are listed in the tables.

III.1, VI.1 – Compliance – Under MACT III at 63.1300(a), HAPs and HAP-based materials cannot be used to flush the mixhead or clean other equipment, with the exception of diisocyanate, which may be used to flush the mixhead and piping during startup or maintenance as long as the diisocyanates are used in a closed-loop system and re-used in production; under MACT OOOOOO at 63.11416(c)(1) and (2), methylene chloride cannot be used to flush the mixhead, clean other equipment, or employed as a mold release agent.

According to the submittal of 9/25/2013, the material used to flush the mixhead and lines is "CHEVRON Superla White Oil". The MSDS lists the chemical component as 100% white mineral oil with a CAS #8042-47-5. No HAPs are listed on the MSDS.

III.2, VI.2 – Compliance – Under 63.1300(b), a HAP cannot be used as a mold release agent; under MACT OOOOOO at 63.11416(c)(1) and (2), methylene chloride cannot be employed as a mold release agent.

According to the submittal of 9/25/2013, the mold release agent is "münch chemie international Release Agent 621/E7 special". The Technical Data Sheet indicates this is an aqueous emulsion of different waxes with 0% organic solvents.

VI.3 and 4, VII.1 through 4 – Compliance – Semiannual deviation reports, Rule 912 reports, compliance certifications and report certifications, including certifications for compliance with MACTs III and OOOOOO – There have not been deviations reported for this flexible group in the four semiannual reports received since 10/1/2011.

IX.1 and 2 – Compliance – Comply with all applicable provisions of 40 CFR 63, Subparts A, III, and OOOOOO – Applicable requirements are included in the flexible group table.

<u>Rule 286(a)</u>
Rule 286(a) excludes from the requirement to obtain a Permit to Install "[p]lastic extrusion . . . and associated plastic resin handling, storage, and drying equipment." This exemption applies to the EPC extruding lines and plastic storage silos. This equipment is still required to comply with Rules 301, 331, 901, and 910. Observations during the inspection of 9/27/2013 suggest compliance with these requirements, as visible emissions and off-site odors were not noted during the site visit. There is also no evidence suggesting this equipment is excluded from exemption under Rule 278. In MAERS 2012, BASF reports VOC emissions at about 3 tons for all emission units within EUEPCEXTRUSION combined.

<u>NSPS Kb</u>
TK-102 is a 12,000 gallon volatile organic compound storage tank formerly required to comply with the New Source Performance Standard at Subparts A and Kb regulating volatile organic compound storage tanks that commenced construction or modification after 7/23/1984. As of October 2003, the affected facility is defined at 40 CFR 60.110b as storage vessels containing volatile organic liquids (as defined in the subpart) and with capacities greater than or equal to 75 cubic meters (19813 gallons). This tank is no longer an NSPS Kb tank as its capacity of 12,000 gallons is less than the regulatory threshold.

Conclusion:
At the time of completion of the investigation, the M4777 stationary source at BASF's Wyandotte facility appear to in compliance with its applicable requirements.

NAME Jeff Kraut DATE 2/19/2014 SUPERVISOR W.M.