

M4808
MAWILL

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

M480823227

FACILITY: BASF Corporation		SRN / ID: M4808
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, Labs and Application Centers
SRN: M4808
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 research and development operations, termed the Labs and Application Centers, comprise various operations at the site: the wet chemical and physical analysis laboratories at the main R&D building and at the various QA/QC labs appended to each process, the urethane application operations, the paint laboratory, the woodbinder laboratory, and the non-production operations at analytical and chemical engineering (ACCE). BASF's Labs and Application Centers is operating under its initial Renewable Operating Permit No. MI-ROP-M4808-2007 issued on 8/2/2007.

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 M4808 Labs and Application Centers stationary source; the inspection of M4808 occurred entirely on 9/27/2013.

Based on the 2005 inspection, the Labs and Application Centers activities comprise the following:

- Central R&D – wet chemical and physical laboratories
- Urethane Application Center – wet chemical and physical laboratories
- Quality Assurance/Quality Control – chemical laboratories at Polyol Plant, Cellasto Plant, and EPC Plant
- Urethane Application Center – molding operations
- CET – process development operations
- Woodbinding – woodchip molds
- Paint operations – spray booths
- EPC – mini-extruder

The first three are composed of wet chemical laboratories and physical property labs such as one might find at a university chemistry or materials science building. The final five are composed of process equipment manufacturing trial products for testing.

Please see report A-WC-02483 for a more complete description of the various processes. BASF asserts the operations at M4808 are exempt from the requirement to obtain a permit to install through Rule 283(1)(a) and Rule 283(1)(b) because they are utilized for the purposes of research and development only. Following the 2005 inspection, AQD concurred, based on the information obtained at the time and this conclusion is reflected in the M4808 ROP.

Those operations exempt under Rule 283(1)(a) are required to operate under T-BACT. BASF's ACCE plant is the most prominent operation of this type at M4808; the ACCE plant was visited from 11:30 AM to 12:10 PM on 9/27/2013. Three reactors are installed. The smaller 60 gallon R-20 and 250 gallon R-100 reactors are more often utilized for R&D while the larger 2,000 gallon R-30 reactor is more often utilized for commercial manufacture. A wet scrubber and vacuum jet condenser controls are applied for emissions control under either scenario. The wet scrubber located in Building 55R and controls emissions from reactor vents and raw material tank air displacements. The N/S vacuum jet or the E/W vacuum jet condensers located in Building 53Z control emissions from oxide stripping. At about 11:40 AM, the oxide scrubber control panel in Building 55R showed a T-110 wet scrubber pH of 1.9 and a pump outlet pressure of 0.95 bar. The operations log entry for 9/4/2013 showed a scrubber water concentration of 100% and a pH of 0.92. The north/south vacuum jet was in operation at the time of the inspection and registered a temperature of 25.8°C (or 78.4°F).

The Woodbinder Lab was visited from 12:40 PM to 1:10 PM on 9/27/2013. The Woodbinder Lab specializes in the research and testing of MDI (diphenylmethane diisocyanate) based binding resins, under the BASF trademark "Lupranate" series of products, in the engineered wood products industry, which includes products such as medium density fiberboard (MDF), particleboard (PB), and oriented strand board (OSB). In each case, wood chips, flakes, and/or strands are mixed with the binder in a reactor to be pressed and cured into the engineered wood products. The products are then sawed, cut, and otherwise tested in the lab for their physical properties. BASF staff will often take a reactor off-site to a client's facility to demonstrate techniques to improve a client's product when using a BASF binding resin. Dust from certain equipment vents to a filter control; otherwise, operations in the lab vent uncontrolled into the lab or to atmosphere.

Compliance Status:

Stationary source M4808 is currently covered under MI-ROP-M4808-2007, issued on 8/2/2007. 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.

Operations at ACCE are asserted by BASF to be exempt under Rule 283(1). Rule 278 excludes from exemption those activities subject to major attainment or non-attainment NSR, activities with actual emissions in excess of significant levels as defined in Rule 119 (the significant level for VOCs is 40 tons), activities that construct or reconstruct a major source of HAPs, or activities subject to the NESHAPs at 40 CFR Part 61. Rule 278a requires a facility claiming exemption at Rules 279 through 290 to maintain documentation that Rule 278 does not exclude the activity or activities from exemption.

R 336.1283(1) exempts from the requirement of R 336.1201(1) to obtain a permit to install the following:

(a) pilot processes or process equipment utilizing T-BACT used for any of the following: (i) chemical analysis; (ii) physical analysis; (iii) empirical research; (iv) theoretical research; (v) the development of process or process equipment design and operating parameters; (vi) the production of a product for field testing; (vii) the production of a product for clinical testing of pharmaceuticals; (viii) the production of a product for use as a raw material in the research and development of a different product.

(b) laboratory equipment

R 336.1283(2) provides restrictions on the exemption at (1)(a), noting the rule does not include pilot processes or process equipment used for: (a) the production of a product for sale, unless such sale is only incidental to the use of the pilot process or process equipment; (b) the repetitive production of a product using the same process or process equipment design and operating parameters; (c) the production of a product for market testing or market development; (d) the treatment or disposal of waste which is designed, by listing or specified characteristic, as hazardous under federal regulations or state rules.

R 336.1278 precludes the exemptions from applying to any of the following:

- (1)(a) any activity subject to major New Source Review (Part 18 or Part 19 of the AQD rules);
- (1)(b) any activity resulting in an increase in actual emissions greater than the Rule 119 significance levels;
- (2) construction or reconstruction of a major source of HAPs (40 CFR 63.2 and 63.5(b)(3));
- (3) construction or modification of a HAP source at 40 CFR 61.

After the 2005 inspection, emissions information was obtained for all operations at M4808 (submittal of 10/10/2005). As explained in report A-WC-02483, the majority of emissions are assumed equivalent to usage for ease of calculation. These chemicals are used as raw materials in R&D processes and in chemical standard preparation, therefore, this assumption is conservative. For MDI, TDI, styrene, acrylonitrile, trichlorobenzene, EO and PO, emission factors are generated, in terms of percentage of material use, based on the volatility of the chemical and, in the cases of EO and PO, the use of pressure vessels for the raw material: 0.1% for MDI, 0.1% for TDI, 1% for styrene, 1% for acrylonitrile, 1% for trichlorobenzene, 5% for EO, 5% for PO. In the 10/10/2005 submittal, total VOC emissions are reported at 9.8 tons and methanol the highest contributor at 3.67 tons (emissions assumed to equate to usage). Therefore, the source was beneath major source thresholds for PSD, NAA, and MACT (here, I refer to the threshold required to define a project as constructing a new major source), as well as below all Rule 119(e) significance levels (i.e. 40 tons VOC, 15 tons PM-10).

ACCE equipment that share production and R&D activities was in operation at ACCE during the 9/27/2013 inspection. Based on the observations of the 9/27/2013, the production logs for 6/2012 through 7/2013 (submittal of 9/25/2013), and the monitoring data for 6/6/2013, 6/11/2013, and 6/12/2013 (submittal of 9/25/2013), the ACCE operations appear to be in compliance with the requirements within the B4359 ROP:

- (1) the T-110 scrubber and the vacuum jets were installed and operating during the 9/27/2013 inspection;
- (2) the scrubber pump outlet pressure was continuously monitored and registered less than 2.0 bar, as seen by the 0.95 bar reading observed during the 9/27/2013 inspection, the continual readings of 1.0 bar in the daily records, and the maximum 0.98 bar log entry for 6/3/2013;
- (3) the monthly pH monitoring has been conducted and the pH has been less than 3.0, as seen by the 1.9 pH reading observed during the 9/27/2013 inspection and as noted in log entries where the pH reached a maximum of 2.1 on 2/5/2013;
- (4) the monthly water content monitoring has been conducted and measured greater than 60%, as noted in the log entries where the minimum water content registered 62.55% on 3/5/2013, after which the scrubber solution was changed prior to the next batch;
- (5) the monthly logs indicate the number of theoretical batches have been calculated;
- (6) the vacuum jets have been in operation and have measured consistently less than 113°F (N/S jets) and 140°F (E/W jets), as noted during the 9/27/2013 inspection when the north/south vacuum jet temperature was in operation and observed to measure a temperature of 25.8°C (or 78.4°F), and in the 6/6/2013, 6/11/2013, and 6/12/2013 daily records where all vacuum jet temperatures continually registered less than 40°C (104°F).

Please also see report B435923233. Because ACCE operations have met the emissions control, monitoring, and recordkeeping requirements of the B4359 ROP when under commercial operations, I presume the R&D operations have met the T-BACT requirements under Rule 283(1)(a).

MI-ROP-M4808-2007, General Conditions

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 in accordance with T-BACT 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 M480822965, M480821282, M480819203, and M480817180.

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 M480821086 and M480817511.

MI-ROP-M4808-2007, SOURCE-WIDE CONDITIONS

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.

R 336.1707

This rule applies to all new cold cleaners. According to the information submittal of 9/25/2013, M4808 no longer houses cold cleaners.

NESHAP for Chemical Manufacturing Area Sources, 40 CFR Subparts A and VVVVV

On 3/9/2010, the AQD received from BASF Corporation, dated 2/26/2010, a "declaration of non-applicability regarding the Chemical Manufacturing Area Source Rule 40 CFR 63 Subpart VVVVV as it relates to the manufacturing operations at the BASF Corporation facility located at 1609 Biddle Avenue Wyandotte, MI .” No further information is provided.

Published in the 10/29/2009 Federal Register beginning page 56008, the Subpart VVVVV contains the Area Source MACT for nine source categories in the chemical manufacturing sector. At 40 CFR 63.11494(a), the standard applies to chemical manufacturing process units (CMPUs) that uses as feedstocks, generates as byproducts, or produces as products any of the following HAPs: 1,3-butadiene, 1,3-dichloropropene, acetaldehyde, chloroform, ethylene dichloride, hexachlorobenzene, methylene chloride, quinoline, arsenic compounds, cadmium compounds, chromium compounds, lead compounds, manganese compounds, nickel compounds hydrazine. At 40 CFR 63.11494(c)(3) and (4), the standard does not apply to research and development facilities (as defined in Section 112(c)(7) of the Clean Air Act) or to quality assurance and quality control operations. Section 112(c)(7) of the Clean Air Act defines a research or laboratory facility as "any stationary source whose primary purpose is to conduct research and development into new processes and products, where such source is operated under the close supervision of technically trained personnel and is not engaged in the manufacture of products for commercial sale in commerce, except in a de minimis manner."

The Labs and Applications Centers (M4808) uses methylene chloride but appears to be classified as a research and development facility and therefore does not appear to be subject to 40 CFR 63 Subpart VVVVV. However, the AQD has not received delegation from the U.S. EPA to administer MACT VVVVV. Please see report M480809750.

On 5/28/2013, the AQD received from BASF Corporation, dated 5/21/2013, an Initial Notice of Compliance Status report for Chemical Manufacturing Area Source MACT at 40 CFR 63 Subpart VVVVV. Please see B435923198. According to BASF, MACT VVVVV applies to certain equipment at the ACCE plant associated with the EUCHEHARDELEN and EUCHEORGACT emission units. This appears to not change the status of MACT VVVVV as it relates to M4808.

Conclusion:

At the time of completion of the investigation, the M4808 stationary source at BASF's Wyandotte facility appears to in compliance with its applicable requirements.

NAME Jeff Komula

DATE 2/17/2014

SUPERVISOR W.M.