N7238
MSWILA

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

N723832013

FACILITY: Polytech Moulding Industries Inc.		**SRN / ID:** N7238
LOCATION: 1609 BIDDLE AVE, WYANDOTTE		**DISTRICT:** Detroit
CITY: WYANDOTTE		**COUNTY:** WAYNE
CONTACT: Mark Knowles , Production Superintendent		**ACTIVITY DATE:** 10/27/2015
STAFF: Todd Zynda	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MAJOR
SUBJECT: Scheduled Inspection		
RESOLVED COMPLAINTS:		

REASON FOR INSPECTION: Scheduled Inspection
INSPECTED BY: Todd Zynda, AQD
PERSONNEL PRESENT: Eric Ley, Technical Manager; Mark Knowles; Plant Manager
FACILITY PHONE NUMBER: (734) 720-0609
FACILITY WEBSITE: www.concepp.com

FACILITY BACKGROUND

Polytech Moulding Industries (Polytech), also known as Concepp Technologies, is a plastics processing plant located on the grounds of the BASF Corporation site at 1609 Biddle in Wyandotte, Michigan, specializing in the expansion of polypropylene pellets (expanded polyolefin process [EPP]). Formerly owned by BASF and part of State Registration Number (SRN) M4777, on April 30, 2003, control of the operations was passed to Concepp Technologies and the EPP process became a separate stationary source assigned SRN N7238. On August 1, 2009, Polytech Moulding Industries located in Granby, Quebec purchased the plant. The facility is co-located with the BASF Corporation and Abbott Laboratories on an industrial site bounded at the north by Perry Place, at the east by the Detroit River, at the south by Mulberry Street, and at the west by Biddle Avenue.

Currently the facility has 15 employees and operates 24 hours per day, Monday through Friday.

Polytech was issued Renewable Operating Permit (ROP) No. MI-ROP-N7238-2011 on May 26, 2011. A ROP renewal application was received on August 17, 2015.

PROCESS OVERVIEW

The facility comprises two expanded polyolefin (EPO) process lines known as EPOI and EPOII. Polypropylene solids are extruded, cut into pellets, and charged into a process vessel with water, tricalcium phosphate (TCP) powder, and a nitrogen/butane gas mixture. The gas migrates into the pellets under pressure; subsequent depressurization expands the gas and thus expands the pellets. Nitric acid washes the pellets of TCP, which is recovered from the wash through pH adjustment. The pellets are dried, held for a time in batch silos to allow residual butane to off-gas, and finally transferred to bulk storage silos to await shipment.

Fabric filters control particulate emissions at the TCP bag dump station and at the batch silos. Butane/nitrogen gas is drawn from the process vessels to collection tanks and the butane is recovered in a nitrogen condensation system for reuse in the process vessels. Off-gassing residual butane vents unrecovered and is replaced with fresh butane from storage as needed. The nitric acid storage tank is equipped with a water scrubber control.

Alterations to the polypropylene/butane ratio and modifications to the temperature and pressure within the process vessels produce expanded polypropylene pellets with different densities and physical characteristics. The products are marketed under the Concepp Technologies business unit; according to the company's website, 12 products are currently offered with densities ranging from approximately 2 to 6 pounds per cubic foot.

COMPLAINTS

There are no recent complaints for this facility on file.

OUTSTANDING VIOLATIONS

None

INSPECTION NARRATIVE

On October 27, 2015, the Michigan Department of Environmental Quality (MDEQ) Air Quality Division (AQD) inspector, Mr. Todd Zynda, conducted an inspection of Polytech located at 1609 Biddle Avenue, Wyandotte, Michigan. During the inspection, Mr. Eric Ley, Technical Manager and Mr. Mark Knowles, Plant Manager provided information and a tour of facility operations relating to air quality permits. The inspection was conducted to determine the facility's compliance with the Natural Resources and Environmental Protection Act (NREPA), Act 451, Part 55, and ROP No. MI-ROP-N7238-2011.

At 1:20 PM, Mr. Todd Zynda (AQD) arrived onsite and performed outside observations. Prior to entering the facility, observations were made (limited to the facility's property boundary along Biddle Avenue). No visible emissions were observed. Odors were not detected at the property boundary. At 1:30 PM Mr. Zynda entered the facility, stated the purpose for the inspection, and was greeted by Mr. Ley. Prior to the inspection a visitor pass was obtained at the BASF administration building.

An opening meeting was held and ROP record keeping requirements were discussed. According to Mr. Ley, there have been no changes to the facility since the AQD inspection on July 2, 2014. During the opening meeting, the company demonstrated that electronic records are maintained. The requested records were submitted via email on October 28, 2015 and November 3, 2015.

During the opening meeting, the cold cleaner that was identified during the previous inspection was discussed. According to Mr. Ley, the cold cleaner has not been in use and is currently locked out. Additionally, Mr. Ley stated that there are no emergency generators onsite.

The walkthrough inspection began with observation of the volatile organic compound (VOC) recovery system (referred to as the Polaris by the facility), the EPP Building, and the control room. Production equipment is housed within the EPP building and around its perimeter. Polytech monitors production and pollution control equipment on computer consoles displaying valve position, temperature/pressure controls, tank levels, pressure drops, etc. on EPOI, EPOII, and raw material equipment in the plant. These parameters were viewed in the control room.

Emissions of butane, a VOC, are the predominant air emission at the plant. At 3,800 cubic feet for TK-780 in EPOI and 5,500 cubic feet for TK-880 in EPOII, each of the two waste gas tanks has the capacity to accommodate an entire waste gas vent from its respective process vessel. A computer interlock prevents the pressure/temperature from rising above specified levels in a process vessel until the respective waste tank registers sufficient capacity to accept the volume of waste gas to be released after a completed batch.

The condensation system consists of a non-contact water chiller, two (alternating) dehydrators, a nitrogen-coolant condenser, and a butane collection tank. The chiller and a dehydrator condense out the water vapor and the nitrogen condenser liquefies the butane for collection. The remaining waste gas, composed almost entirely of nitrogen, is vented to atmosphere at a discharge point approximately 10 feet above ground. The liquid butane is collected in the in-process butane collection tank and reused in the process. The liquid nitrogen coolant is stored in a vertical storage tank. An interlock prevents the release of butane from a waste gas tank if one or more indicators reflect a malfunction in the condensation system, such as a gas temperature exiting the condenser in excess of -50°F. Taken with the interlock linked to the waste gas tanks, this system is designed to prevent an emergency release of butane to atmosphere due to a breakdown in either a waste gas tank or the condensation system; upon detection of an irregularity operations are halted at points where the butane gas may be contained until the problem is corrected.

The condensation system recovers approximately 99% of the butane entering the system if the top of the condensation column maintains a temperature of -186°F or lower. From the computer display in the control room, the temperature gauge at the top of the column registered -184°F at the time of the

inspection. Overall, the condensation recovers approximately 85% of the butane used in a given batch; the remainder is lost as fugitive emissions emitted after the expanded beads exit the process vessels. Butane lost to atmosphere is replaced with fresh butane from a 16,000 gallon storage tank. At the time of the inspection, the tank contained 26,100 pounds butane, approximately 39% of capacity.

The condensation unit is a part of the ambient butane monitoring system installed at the plant wherein 32 butane detectors are placed at locations of known possible butane release points. All sensors are set to alarm and shutdown that section of the process should the sensor read a butane concentration of 1100 ppm or greater, 10% of butane's lower explosive limit. Four of the butane sensors are installed at the condensation system – one near the waste gas vent and three near ground level (because butane is heavier than air at ambient conditions). None of the sensors were displaying an alarm in the control room when observed during the inspection.

Within the control room, the pressure drop for the bag houses F-780, F-841, and F-841 were observed. During the inspection the measure pressured drop for baghouses were as follows: F780 - 0.7 inches water; F841 – 0.9 inches water; F880 - 1.1 inches water.

The stacks for the three baghouses were observed. All three baghouses vent vertically unobstructed to the ambient air. There were no visible emissions present at the time of inspection.

The packed bed water scrubber installed on the nitric acid storage tanks was observed to be operating. The control room reading indicated at flow of 24.2 pound per minute which is above the 15 pound per minute minimum as specified in previous correspondence dated August 6, 2014.

The tour concluded with observation of the Bulk Loading Facility (BLF). A single plastic extruder was observed installed and operating, producing pre-expanded pellets from a black-colored polypropylene raw material. Expanded product pellets manufactured in the Expanded Polyolefin Process (EPP) building are housed in the forty mesh-product storage silos installed within the BLF. The Graymills tool bath (cold cleaner) was observed to be locked up. According to Mr. Ley, at this time the facility does not have any planned use for the cold cleaner.

No spillage was noted in the EPP Building, in the BLF, or on the surrounding grounds. No odors were noted and no opacity emissions were observed from the process equipment viewed.

COMPLIANCE STATUS:

The ROP covers flexible groups FGEPO and FGRULE290. FGEPO comprises emission units EUEPOI, EUEPOII, EUEPORAWMATERIAL, and EUEPOBULKSTORAGE; these emission units represent the EPOI equipment, EPOII equipment, raw material storage equipment (including the TCP hopper, blower, conveyor, slurry tank, and baghouse F-841), and the Bulk Loading Facility, respectively. FGRULE290 comprises emission units EUEPOACIDTK702 and EURULE290.

MI-ROP-N7238-2011, General Conditions

GC 9, 10 – **COMPLIANCE** – Air cleaning devices shall be installed, maintained and operating properly; collected air contaminants shall be removed to maintain the control at the required operating efficiency; the collection and disposal of air contaminants shall minimize introduction of air contaminants to the outer air.

The ROP emission unit conditions require proper operation of the primary pollution control devices: the baghouses at EUEPOI and EUEPOII, the baghouse at EUEPORAWMATERIAL, the butane condensation system at FGEPO, and the scrubber for EUEPOACIDTK702. These requirements will be addressed individually within each emission unit or flexible group.

GC 11 – **COMPLIANCE** – Visible emissions from process stacks and vents are limited to 20% opacity over a six-minute average, except for one six-minute average per hour of not more than 27% opacity – During the inspection of October 27, 2014, the stacks were viewed and visible emissions were not identified. Method 9 readings were not completed to determine compliance.

GC 12 – **COMPLIANCE** – Nuisance dust and odors are prohibited – No citizen complaints have been received by AQD alleging nuisance dusts or odors from this source since the last compliance inspection in 2014.

GC 19 through 23, 25 (and under individual EU/FG tables at SCs III.B.IV.1 through 3) – **COMPLIANCE** – Certification of reports and prompt reporting of deviations – Annual certification and semiannual deviation reports were received September 29, 2015, February 18, 2015, September 26, 2014, and April 14, 2014. On September 29, 2015 a deviation was reported. An air leak was identified on pulsed air system for EUEPOII. As result pulsed air system was replaced. Zero deviations are reported for the other semiannual periods

GC 24 – **COMPLIANCE** – Submissions to the Emissions Inventory – The AQD received the facility's 2013 and 2014 MAERS databases on March 6, 2014 and March 11, 2015.

MI-ROP-N7238-2011, FGEPO Special Conditions

SC I.1, II.1, VI.3 – **COMPLIANCE** – VOC emissions limited to 129 tons per 12-month rolling time period; fresh butane usage limited to 129 tons per 12-month rolling time period; records of fresh butane usage.

In the information submittal received October 28, 2015 Polytech reports fresh butane usage from October 2013 through October 2015. The highest amount reported occurred at the end of November 2014 with 87.7 tons butane.

SC III.1, IV.1, VI.1 and 2 – **COMPLIANCE** – EPOI, EPOII, or the raw material storage shall not be operated unless the baghouse operating procedures are installed and implemented; F-780, F-880, F-841 shall be installed and operating properly, including maintaining pressure drops within specified ranges; pressure drops shall be monitored and recorded daily.

An operating procedure is maintained for the three dust collectors and was provided in the October 28, 2015 submittal. The proper ranges are quoted at 0.2 to 5 inches water column for F-780 (during pellet transfer), 0.4 to 5 inches water column for F-880 (during pellet transfer), and 0.1 to 5 inches water column for F-841 (when making a tricalcium phosphate batch). Pressure drop data for September 1, 2015 through October 28, 2015 indicates that the baghouses were operating with pressure drop readings within specified operating ranges. Visible emissions or fallout from these dust collectors have not been identified during past plant visits in 2014, 2012, 2010, 2008, 2006, 2004, 2003, and 2002.

SC III.2, III.3, IV.2, IV.3 – **COMPLIANCE** – EPOI or EPOII shall not be operated unless the butane collection system and condensation system are installed and operating properly and in accordance with operating procedures required to be developed and implemented; EPOI or EPOII shall not be operated unless the two systems are installed and operating properly and in accordance with operating procedures required to be developed and implemented.

Operating procedures have been developed (October 28, 2015 submittal). These procedures, and others concerning the rundown vessels, etc., are carried over with slight modifications from previous BASF procedures (see reports A-WC-01587 and A-WC-00653). The levels in hold tanks TK-780 and TK-880 are measured by dual monitors in each tank. The computer logic, operating the control of valves and blowers, etc., will not allow transfer to a hold tank unless the tank can accommodate the transfer, will abort a transfer from a hold tank to the condensation system if the hold tank is nearly empty, will abort a transfer if one of the area monitors detects a butane release, and will abort a transfer if the condensation system ("Polaris" system) alarms. The condensation system operates at its peak efficiency when the temperature at the top of the condensation column is less than -186°F; the monitored temperature at the top of the column was observed to be -184°F during the inspection, indicating that the system was operating slightly below peak efficiency.

SC VI.4 – **COMPLIANCE** – Monthly records kept of all instances where butane collection and tank or condensation system fails to capture butane as designed, including amount failed to capture – Polytech reports there were no instances from October 2013 through October 2015.

R 336.1201, R 336.1278, R 336.1278a, R 336.1284(b) & (h) & (j), R 336.1286(a), FGRULE290

The following exemptions from the requirement to obtain a permit to install apply to the nitric acid storage tank, butane storage tank, acid neutralization tank, tricalcium phosphate tank, and plastic extrusion system provided the equipment is not excluded from exemption pursuant to R 336.1278 and provided records are maintained according to R 336.1278a.

R 336.1278 excludes from exemption any of the following activities: prevention of significant deterioration (PSD) and nonattainment new source review (NSR) activities, significant actual emissions increases, new or reconstructed major Hazardous Air Pollutants (HAPs) sources subject to case-by-case Maximum Achievable Control Technology (MACT) standards, National Emission Standards for Hazardous Air Pollutants (NESHAP) sources. R 336.1278a specifies that to be eligible for an exemption, the owner or operator must be able to provide the following within 30 days of a written request for information:

1. A description of the exempt process or process equipment, including the date of installation;
2. The specific exemption being used by the process or process equipment.
3. An analysis demonstrating that R 336.1278 does not apply to the process or process equipment.
4. Any other records required for a specific exemption.

R 336.1284(b) – **COMPLIANCE** – Storage of butane, propane, or liquefied petroleum gas in a vessel with a capacity less than 40,000 gallons – This exemption applies to the 16,000 gallon capacity liquid butane storage tank and the small butane recovery tank within the condensation system.

R 336.1284(h) – **COMPLIANCE** – Storage of water solutions of inorganic salts and bases and of water solutions of sulfuric acid not more than 99% by weight, phosphoric acid not more than 99% by weight, nitric acid not more than 20% by weight, hydrochloric acid not more than 11% by weight – The acid water neutralization tank and the tricalcium phosphate tank are water solutions of inorganic salts and thus exempt by this rule.

R 336.1284(j) – **COMPLIANCE** – Pressurized storage of gases, including nitrogen, with boiling points less than 0°C – The nitrogen storage tanks used in the condensation system are exempt by this rule.

R 336.1286(a) – **COMPLIANCE** – Plastic extrusion, rotocasting, and pultrusion equipment and associated plastic resin, storage and drying equipment – The extruder system in the Bulk Loading Facility appears to qualify for exemption under this rule. Please see the information submittal of September 15, 2010 for details.

FGRULE290, R 336.1290(a), (b), (c), (d) – **COMPLIANCE** – Emissions limited to 1000 lbs. uncontrolled and 500 lbs. controlled, please see rules for specifics under (a)(1), (2), and (3). Description maintain on file; records maintained – The nitric acid storage tank, not eligible for exemption under R 336.1284(h)(iii) due its high nitric acid weight percentage (exceeds the exemption eligibility limit of 20% nitric acid), is claimed exempt under R 336.1290(a)(ii)(A) and in the ROP under FGRULE290; nitric acid has ITSL of 50 micrograms per cubic meter on an eight-hour averaging time.

In the submittal of November 3, 2015, Polytech calculates monthly nitric acid emissions ranging from 0.07 to 0.15 pounds per month. These figures are consistent with past estimates. The computer system monitoring the scrubber will alarm if the water flowrate down through the scrubber falls below 15 pounds per minute (1.8 gallons per minute). The scrubber was in operation during the October 2015 inspection with a flowrate of 24.2 pounds per minute.

R 336.1201, R 336.1278a, R 336.1281(h), R 336.1707

A cold cleaner has been installed at the plant but has not yet been in use. Currently, Polytech does not have not have plans to begin using the cold cleaner.

R 336.1281(h) – COMPLIANCE – A cold cleaner with an air/vapor interface of not more than 10 square feet is exempt from the requirement to obtain a permit to install provided the cold cleaner is not excluded from the exemption under R 336.1278 and R 336.1278a – According to the August 21, 2014 submittal from the previous inspection, the Graymills cold cleaner has an air/vapor interface of less than 10 square feet. If a non-organic cleaning medium is selected, then R 336.1281(e) will likely be the applicable exemption.

R 336.1707 – UNDETERMINED – The cold cleaner is installed and but not in use. The applicability of R 336.1707 is dependent upon the vapor pressure of the organic solvent selected (if an organic solvent is selected) and whether that solvent is heated or agitated. The rule is not applicable until the cleaner is filled with a cleaning solution and becomes operational.

CONCLUSION

At this time, this facility appears to be in compliance with ROP MI-ROP-N7238-2011 and federal and state regulations.

NAME _____ DATE 11/5/15 SUPERVISOR JK