

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

N716131378

FACILITY: POLYCHEMIE		SRN / ID: N7161
LOCATION: 38070 VAN BORN ROAD, WAYNE		DISTRICT: Detroit
CITY: WAYNE		COUNTY: WAYNE
CONTACT: Quintus Enow , Manager		ACTIVITY DATE: 08/26/2015
STAFF: Katherine Koster	COMPLIANCE STATUS: Compliance	SOURCE CLASS: Minor
SUBJECT: FY2015 Targeted Inspection		
RESOLVED COMPLAINTS:		

REASON FOR INSPECTION: Targeted Inspection

INSPECTED BY: Katie Koster, AQD

PERSONNEL PRESENT: Quintus Enow, Facility manager

FACILITY PHONE NUMBER: 734-641-9842

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**FACILITY BACKGROUND**

Polychemie produces water treatment polymers. They are mainly used in municipal sewage treatment plants. The facility is located in Wayne, Michigan. This was formerly operating as Axchem and was purchased by Polychemie around the 2003 time period.

**REGULATORY ANALYSIS**

**NSPS**

Kb – Mannich product storage tanks are not large enough to be subject to this NSPS.

The subpart Kb requirements referenced in the original permit application were dated July 1, 2002. At the time of the original permit application submittal, the Mannich storage tanks were subject to 40 CFR 60, subpart Kb requirements based on their capacity of 15,000 gallons (57 m<sup>3</sup>) each and the following: 60.110b "(a) Except as provided in paragraphs (b), (c), and (d) of this section, the affected facility to which this subpart applies is each storage vessel with a capacity greater than or equal to 40 cubic meters (m<sup>3</sup>) that is used to store volatile organic liquids (VOL's) for which construction, reconstruction, or modification is commenced after July 23, 1984." Since the original permit application submittal, 40 CFR 60, subpart Kb was revised in October 2003 as follows: 60.110b: "(a) Except as provided in paragraph (b) of this section, the affected facility to which this subpart applies is each storage vessel with a capacity greater than or equal to 75 cubic meters (m<sup>3</sup>) that is used to store volatile organic liquids (VOL's) for which construction, reconstruction, or modification is commenced after July 23, 1984. "

Based on the current version of the subpart Kb requirements, the Mannich product storage tanks are no longer subject to these requirements due to their capacity being less than 19,813 gallons (75 m<sup>3</sup>) each.

DDD - Polychemie does not appear meet the definition of an affected facility. "*Affected facilities*. The provisions of this subpart apply to affected facilities involved in the manufacture of polypropylene, polyethylene, polystyrene, or poly (ethylene terephthalate) as defined in §60.561 of this subpart. The affected facilities designated below for polypropylene and polyethylene are inclusive of all equipment used in the manufacture of these polymers, beginning with raw materials preparation and ending with product storage, and cover all emissions emanating from such equipment."

RRR - Facility does not use chemicals listed in 60.707. Also, operations are a batch process which exempts it from the regulation.

## **NESHAP**

I reviewed the area source regulations but did not identify any that appeared applicable. For 6V, the facility does not use any of the HAPS listed in Table 1.

## **PROCESS OVERVIEW**

4 products are made (the description is from the permit file):

**EU-MANNICH** - Mannich polymer production consisting of three major steps: production of polyacrylamide, which vents inside the process building uncontrolled; production of dimethylaminomethanol, which is controlled by scrubber SC-1 and vents through stack SV1; and production of Mannich polymer; which is controlled by scrubber SC-1 and vents through stack SV1. The four 5,500 gallon acrylamide storage tanks, which are controlled by scrubber SC-1 and vent through stack SV1, and the 6,500 gallon formaldehyde storage tank, which vents inside the process building, are part of this emission unit. Seven 15,000 gallon tanks store finished product.

**EU-COPOLYMER** - Acrylamide and diallyldimethylammonium chloride are reacted together to produce copolymer. The four 5,500 gallon acrylamide storage tanks, which are controlled by scrubber SC-1 and vent through stack SV1, are part of this emission unit as well as an approximately 3,000 gallon tank for final product adjustment which vents inside the building.

**EU-ADAMQUAT** Acrylamide and dimethylaminoethylacrylate-methyl chloride (ADAM-MeCl) are reacted together to produce ADAM-Quat copolymer. The emissions are vented inside the building without control. The four 5,500 gallon acrylamide storage tanks, which are controlled by scrubber SC-1 and vent through stack SV1, are part of this emission unit.

**EU-MELFORM** Melamine formaldehyde copolymer production including the syrup reactor, acid reactor, melamine-formaldehyde storage tanks, and melamine-formaldehyde tank truck loading vents, all of which vent through scrubber SC-2 for odor control and stack SV2, and the 6,500 gallon formaldehyde storage tank.

The description for EU-MELFORM differs from the original permit application. Facility decided to vent this equipment to a separate scrubber instead of the same scrubber.

## **INSPECTION NARRATIVE**

I arrived at the facility on August 5, 2015 and met with Mr. Quintus Enow, Plant Manager. I noticed a rotting odor while in the parking lot (approximately level 2-3), however I did not notice it on Wayne Road. Mr. Enow accompanied me about the facility. I viewed both scrubbers; the flow rate and pressure drop gauges were functional. I recorded the following: Scrubber 1 – 30 gpm water flow, 2 in w.c. pressure drop; Scrubber 2 – 23 gpm water flow, 2.4 in w.c. pressure drop. All parameters are acceptable when compared to the O&M plan, Revision #02. I also reviewed the scrubber daily and monthly checklists that are maintained in the office.

HCl is storage in a tank outside of the facility and is received via tanker.

All storage tanks in the facility appeared to be in good condition.

The formaldehyde tank for the melform process is equipped with a conservation vent and the two reactors are housed in a separate room. Hot water and HCl are added to the first reactor and formaldehyde and melamine in the second. These are then combined in one of the reactors to produce melform.

Storage tanks, process vessels, and loading racks appear to have been reviewed during the original permit application.

## **APPLICABLE RULES/PERMIT CONDITIONS EVALUATED**

Conditions evaluated below are from PTI 78-02A. Records are attached. Also, I did not vet the emissions calculation methodology. It is fairly complex and it the same methodology that was used in original permitting and was accepted at that time. Emission below are the approximate highest value identified based on scan of attached records.

## MACES- Activity Report

### EU-MANNICH

1.1a. IN COMPLIANCE. Records were reviewed from July 2014 – July 2015. VOC limit is 1.1. tpy, 0.1 tpy was the highest emissions; acrylamide limit is 3.7 lbs/year 0.3 lbs/year was the highest emissions; formaldehyde limit is 113 lbs per year, 40 lbs per year was the highest emissions; dimethylamine limit is 538 lbs per year, 170 lbs per year is was the highest emissions reported.

1.2 IN COMPLIANCE. Mannich production is limited to: a. 19920000 lbs acrylamide (48-53% by weight) . Highest 12 month rolling was about 5 MM lbs from July 2014 – July 2015 b. 7,700,000 lbs formaldehyde (37% max by weight). Highest was about 2.3MM lbs from time period of July 2014 – July 2015 c. 4,280,000 dimethylamine (100% by weight). Highest was about 1.3 MM.

1.4 IN COMPLIANCE. Vapor balance on formaldehyde tank shall be installed. According to Mr. Enow, this is present.

1.7 and 1.8 Monthly and 12 month rolling usage/throughput and emissions records shall be maintained. IN COMPLIANCE. See attached.

1.10 IN COMPLIANCE. Stack vented unobstructed vertically upward.

### EU-COPOLYMER

2.1 IN COMPLIANCE. Records were reviewed from July 2014 – July 2015. Acrylamide limit is 0.02 lbs per year. 0.00 is the reported emissions.

2.2 IN COMPLIANCE. Acrylamide throughput 1,240,000 pounds (48-53%). Highest 12 month rolling was about 230,000 lbs from July 2014- July 2015.

2.5 and 2.6 Shall calculate emissions and throughput monthly and 12 month rolling. IN COMPLIANCE. See attached.

### EU-ADAMQUAT

3.1 IN COMPLIANCE. Records were reviewed from July 2014 – July 2015. Acrylamide limit is 0.02 lbs per year. 0.00 is the reported emissions.

3.2 IN COMPLIANCE. Acrylamide throughput 1,270,000 pounds (48-53%). Highest 12 month rolling was about 9,000 lbs from July 2014 - July 2015.

3.5 and 3.6 Shall calculate emissions and throughput monthly and 12 month rolling. IN COMPLIANCE. See attached.

EUMELFORM – See scrubber requirements below.

4.2 IN COMPLIANCE. Vapor balance must be installed and maintained. According to Mr. Enow, this is present.

Scrubber requirements (these are grouped together as they are repeated in every EU)

IN COMPLIANCE - Shall not operate unless flow rate and pressure drop for scrubber are kept within required range in O&M plan. Facility appears to be in compliance based on records reviewed on site and additional records submitted and observation during the AQD inspection.

IN COMPLIANCE - Shall not operate unless scrubber is installed and operating properly. Based on the maintenance records and daily checklists, scrubbers appear to be operating properly.

IN COMPLIANCE. Shall maintain scrubber with a water flow and pressure drop monitor. Both monitors were observed during the inspection.

IN COMPLIANCE. Water flow and pressure drop shall be recorded once per batch. At this time, one batch is being produced per day so records appear to meet the required frequency.

### EXEMPTIONS

MACES- Activity Report

The installation of second scrubber appears to be exempt per Rule 285(f).

Mannich finished product storage tanks appear to be exempt per R284(i). (1.5 psi = 10.34kPa).

**FINAL COMPLIANCE DETERMINATION**

At this time, based on the conditions evaluated in this report, the facility appears to be in compliance.

NAME Kaukne

DATE 9/29/15

SUPERVISOR W.M