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

N625148540

FACILITY: CABOT CORPORATION		SRN / ID: N6251
LOCATION: 3603 S SAGINAW ROAD, MIDLAND		DISTRICT: Saginaw Bay
CITY: MIDLAND		COUNTY: MIDLAND
CONTACT: Kevin Musser , Safety, Health, & Env Specialist		ACTIVITY DATE: 04/11/2019
STAFF: Benjamin Witkopp	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Scheduled inspection		
RESOLVED COMPLAINTS:		

On April 11, 2019 Ben Witkopp of the Michigan Department of Environmental Quality - Air Quality Division (MDEQ-AQD) met with Kevin Musser. Kevin is the sites Safety, Health, and Environmental Manager.

The facility manufactures amorphous fumed silica for sale to the adjacent site of Dow Silicones Corporation (formerly Dow Corning Corporation) as its primary customer among others. Cabot is situated on the north end of the site. Cabot receives chlorosilanes from Dow Silicones via piping. Cabot's process consists of vaporizing and then using combustion air and hydrogen to produce amorphous silica. The hydrogen is supplied by Air Products which is considered a support facility and is located on the south east side of Cabot. Byproducts are HCl and chlorine. Natural gas and hydrogen are used in a "staged injection" at high temperatures. The result is a push of the chlorine to HCl. The hydrogen also helps in temperature control and also helps to lower the levels of carbon monoxide. HCl, CO2, CO, and chloromethanes are formed. A filter is used to collect the amorphous silica. Any HCl remaining on the surface of the silica is removed when the material is routed through a calciner. The silica is then cooled for storage and delivery. HCl is recovered from the entire process and sold. A caustic scrubber control system uses sodium hydroxide to remove small amounts of HCl and chlorine prior to atmospheric discharge. The scrubber is monitored by two continuous emissions monitors (CEM) to measure the amount of CO being discharged. One monitor basically operates as a backup. In the case of a monitor failure it could then be used to minimize downtime.

The entire source (both Cabot and Air Products) is covered by renewable operating permit MI-ROP-N6251-2013. The permit also contains opt-out limits for hazardous air pollutants (HAPs) though the source does not have the potential to be a major source of them. The limits are there only as a point of clarity. The permit has two sections, the first being for Cabot and the second for Air Products. An air permit for the use of a different feedstock was sought and subsequently issued as 29-18. The permit was granted for using a new adiabatic tower. An increased capacity of the Air Products hydrogen plant is also needed though that does not require permitting action.

Kevin and I started out with a records review in his office. Verification of CEM accuracy was last conducted on Dec 11, 2018. One CEM read 2320 while the other read 2370 ppm CO. CO has a ton per year (tpy) limit of 432 based on a 12 month rolling time period. The most recent high level was 190 for January 2018. Total chloromethanes have a limit of 21 ppmv and testing showed 1.223. The chloromethanes also have a limit of 8.9 tpy based on a 12 month rolling time period. The highest recent level was 1.11 in April of 2017. Particulate matter has a standard limit of 0.10 pounds per 1,000 pounds of stack gas and had a test requirement which was fulfilled in 2007. It also has a limit of 3.4 tpy on a 12 month rolling time period. The highest level recently achieved was 0.71 in June of 2018. The 12 month rolling time period limits on HAPs are 8.9 tpy for individual ones and 22.4 tpy for aggregate. The highest amount of aggregated HAPs was 7.30 tons. Kevin did not have the individual HAPs records on a 12 month rolling time period but the data was there. I asked him to send it later. Since the level of aggregate HAPs was below that for even individual HAPs there clearly would not be an emissions limit problem.

We then went to the control room to check instantaneous values. The highest reading of CO was 2243 ppmv. The highest recent historical reading was 3,829 on April 27, 2018. Bear in mind this is still well below the permit limit of 4,000 ppmv based on a 15 minute rolling time period. The caustic scrubber CD-SCRUB pH level is to operate within the range of 7.8 to 9.5 and have a recirculation flow rate of 50,000 to 140,000 Kg/hr. It was currently running at 80,000 Kg/hr. The post reaction peak temperature range is 1,300 to 1,600 F. It was running at 750 - 760 C which equates to 1,382 to 1,400 F. Maintenance records

are kept concerning things like the caustic scrubber, filters, etc. For instance, the pH probes for the scrubber are manually calibrated every two weeks and compared to values registered by the control room. Pressure drop gauges for filters are also checked and bags are checked and replaced on the filter vent (TF 13). A complete bag and clamp change was conducted on May 23, 2018.

We next went over to the maintenance building to check on the emergency engine records and the cold cleaner. The engine is subject to 40 CFR 63 ZZZZ. The latest maintenance on the engine was performed by Cummins on June 6, 2018. It included a full service check including the battery, coolant, oil change, load test etc. For the latest 12 month period the engine had run a total of 26 hours. The cold cleaner was not being used at the time, the lid was closed, and operating instructions posted as required.

After leaving the maintenance building, we walked around the outside of the facility and Kevin showed me the new adiabatic tower. He also showed me where an area had been cleared to accommodate the expansion of the Air Products hydrogen plant. He explained the expansion was likely going to consist of three skid package units. He felt the units were going to be connected in series and then joined with the existing infrastructure. Upon entering the facility again, Kevin mentioned the installation of a new "burner" to accommodate mixing the new feedstock with hydrogen It was also going to be equipped with an automatic ignitor at the point where air is added to the mix. It is not clear if the resulting products of combustion were presented and taken into account in the most recent permitting action. It will be explored as a separate issue.

Section 2 of the ROP concerns Air Products Corporation. The company is considered a support facility to Cabot as it supplies hydrogen solely to the plant. It operates under permit to install exemption Rule 290. It is also subject to the overall source wide limits for HAPs. George Beris is the new environmental contact for Air Products. Records required to demonstrate compliance with rule 290 and HAPs limits were requested for 2018 and subsequently provided. Total HAP emissions were less than 0.06 tons on a 12 month rolling time period basis. This is far less than the limit of 8.9 tons for individual HAPs let alone the 22.4 tons allowed for total HAPs. Carbon monoxide, methanol, ethanol, and ammonia are the emissions of concern under rule 290. The highest monthly total was less than 40 pounds in comparison to the 1,000 pounds allowed.

Based upon the records reviewed and equipment checked at the time, the facility is considered to be in compliance.

NAME B. Zaltoff DATE 5-14-19 SUPERVISOR C. Hare