

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: On-site Inspection

N687472598

FACILITY: Quantum Composites Inc.		SRN / ID: N6874
LOCATION: 1310 South Valley Center Drive, BAY CITY		DISTRICT: Bay City
CITY: BAY CITY		COUNTY: BAY
CONTACT: Duane Gohr , Production Manager		ACTIVITY DATE: 06/27/2024
STAFF: Benjamin Witkopp	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Facility Inspection		
RESOLVED COMPLAINTS:		

Ben Witkopp of the Michigan Department of Environment, Great Lakes, and Energy - Air Quality Division (AQD) visited Quantum Composites, Inc. on June 26 and 27, 2024. Quantum is part of LyondellBasell. LyondellBasell is one of the largest plastics, chemicals, and refining companies in the world. I met with Duane Gohr, Site Production Manager, Travis Mason, Health, Safety, and Environmental and relatively new hire Kevin Hersey. Kevin is the Process Safety Engineer. The facility was issued a renewable operating permit (ROP). ROP MI-ROP-N6874-2022 regulates the emission of volatile organic compounds (VOC) and hazardous air pollutant (HAP) emissions. Due to the nature of the material it uses, and its products, the facility is subject to 40 CFR Part 63 Subpart WWWW, Reinforced Plastic Composites Production. The site also has small boilers and an emergency engine.

The facility is considered a major source of (HAPs) due to the potential to emit (PTE) over 10 tons per year (tpy) of a single HAP and/or over 25 tpy of all HAPs combined. The permit contains operational limits to restrict the VOC PTE. The operational limits consist of operating hours, material usage, and styrene limits. Prevention of Significant Deterioration (PSD) regulations don't apply to VOC due to the operational constraints.

The facility is a sheet molding compound (SMC) facility. Though there were plans at one point to also manufacture bulk molding compound (BMC) Duane confirmed that never came to fruition. Making SMC involves the use of resins, fillers, and other chemicals to produce the desired compounds for a variety of end users. The mix formulations are specific to customer's needs and desired characteristics. The facility tracks styrene percent by product group and emission unit. Mixers of various sizes are used to produce paste material in batches. In the past, any potential particulate emissions from the mixers were routed to a VTI dust collector. The air leaving the VTI dust collector was routed through an energy recovery unit prior to discharge. However, there have been changes at the facility concerning dust collectors and other control equipment. The changes are discussed later in a completely separate CHANGES section of the report. The paste material is used in one of the three molding compound machines. They are identified as SMCI, SMCI, and SMCI. Duane said SMCI continues to be rarely, if ever, used. Structural reinforcement in the paste can be provided by the addition of chopped fibrous material. Typically, the fibers are carbon fiber or fiberglass. SMCI is different from the other lines in that it is the one equipped to handle carbon fiber chopping / addition. In the past, the emissions from the chopping were routed to a Torit dust collector which exhausted internally. Similarly to the discussion above concerning the VTI collector, changes have been made to the duct collection system. The changes are discussed later in a completely separate CHANGES section of the report. SMCI is also the only one to use heat, if necessary, to facilitate a desired reaction rate, texture, etc. On each of the SMC lines, the paste mixture is spread between layers of carrier film.

The resulting product is cut to desired length, packaged, and subsequently shipped. It can also be stored in a cooler. The production equipment is cleaned with solvents. Cleaning is essential to avoid any possible contamination between batches. A solvent dispensing area is located on the south side of the production area. Spent solvents are stored on site until disposed. The facility also has quality assurance and product development and testing laboratories in the facility. The laboratory areas are deemed exempt from having to obtain an air use permit. Exemptions under rule 283 (a) or (b) seem to apply.

FGSMCBMC

The flexible group in the permit covers the mixing, solvents, and the individual production lines. Duane researched production information. The months of May 2024, March 2023, and October 2023 were found to have been the highest of the last two years. Records required by the permit were requested for those months and corresponding 12 month rolling time periods. The records were subsequently provided by the company consultant Jim Steudler of THG and associates.

Only Line 1 was in operation at the time. The solvent use area was checked and found to be well attended to in comparison to the last inspection. All pails of solvents had lids on them. Also, the grounding strip had alligator clips fastened to it.

There are emission limits of 37.2 tpy for VOCs, based on a 12-month rolling time period as determined at the end of each calendar month and 8.8 pound per hour limit for styrene based on a calendar day average. The company uses mix formulation and the employee time record to perform activities to produce a report. The hours of operation and pounds of each formulation used by the individual processes along with permit specified emission calculations results in emissions records. The results would be on the high side as they do not subtract waste amounts.

VOC emission rates were 3.87 tpy for the 12-month rolling time period ending October 2023. This is on the high side because waste amounts disposed are not considered. This amount is well below the permit limit. Review of records showed the hourly styrene emission rates were below the permit limit of 8.8 pph.

The permit also has pounds per year processing rate limits of 64,600,000, 180,000 and 1,000,000 for EUMIXERS, EUBMCMIXER, and EUPRESS respectively. Typical production was around 10,000 to 15,000 pounds per day, though some days were higher, and others lower. The limits are based on a 12-month rolling time period. Records review showed 452,724 pounds for the mixers. As previously mentioned, BMC was not installed. The press was not used for production but at one time was planned for such. It is used in the laboratory area for testing purposes.

In addition, the permit contains restrictions on the number of hours per year to operate EUSMCI, EUSMCII and EUSMCIII. The restrictions vary depending on both the material being processed and the equipment involved and are based on a 12-month rolling time period. SMCI has a polyimide group limit of 350 hours and a limit of 6,000 hours for the polyester, phenolic, and epoxy group. SMCII has a limit of 6,000 hours for the polyester group. SMCIII's polyester group has a limit of 4,000 hours. Records review showed the highest hours of operation being 91 2,018 611 and 0 respectively as shown in the records. These hours of production are well below permitted values.

The solvent use area is involved with record keeping too. Special Condition II.2 limits the net cleaning solvent usage rate to less than 100 gallons per month. The facility does have a report of "net" solvent usage, but it doesn't show how those values were determined. e.g., use minus disposal per month. Basically, it is solvent usage. Waste is not taken into account so the value is on the high side. The highest solvent usage was 87 gallons in June of 2023.

The two dust collectors the facility used had requirements. However, as previously mentioned, the Torit and VTI dust collectors have both been removed. The exhaust from those collectors had been routed to a roof top energy recovery unit (ERU). The ERU had also been removed. The section titled CHANGES further discusses the situation.

FGMACT

The facility is subject to 40 CFR Part 63 Subpart WWWW, Reinforced Plastic Composites Production. The regulation is part of a group of regulations termed Maximum Achievable Control Technology (MACT) standards. The facility is basically subject to the work practice standards in Table 4 of 40 CFR, Part 63, Subpart WWWW.

The total facility wide VOC emissions are basically also the HAPs emissions therefore a separate record is not present. The total VOC emissions were less than 5 tpy. It takes into account production as well as clean up solvent. This is on the high side because solvent waste amounts disposed are not considered. It also includes acetone, used in cleanup, which is not a VOC nor HAP. This amount is well below the permit limit of less than 100 tpy based on a 12-month rolling time period.

FGBOILERMACT

The facility has three boilers EULOCHINVAR#1, EULOCHINVAR#2 and EUSTEAMBOILER. The boilers are subject to the MACT standards for existing boilers and process heaters at a major source of HAPs, 40 CFR Part 63, Subparts A and DDDDD. The MACT requirements include meeting the tune-up and energy assessment work practice standards for each applicable boiler, completing a one-time energy assessment, and maintaining records of maintenance on the units. The latest five-year tune-up for all units was conducted on July 26, 2021 so a tune up is not due for a while.

FGRICEMACT

The facility has one emergency generator that utilizes natural gas and was installed in November 2012. The generator is available if the facility loses power. Maintaining temperature in a cooler where product may be stored is critical. The engine is deemed to be "new" and the means of compliance is through federal New Source Performance Standards (NSPS). The specific NSPS involved is subpart JJJJ for spark ignition engines. The engine is certified. There has been no run time. The engine is being maintained by Hamilton Electric. The unit was serviced on June 3, 2024. The company was told to be sure to maintain monthly records to document the run times or lack thereof.

CHANGES

On March 14, 2023 Travis Mason met with Chris Hare, former AQD District Supervisor, and I, at the District Office. He announced the facility had installed an incinerator. This was surprising since the facility has historically been well under its permit limits and production seemed to be steady as opposed to significantly increasing. Travis said LyondellBasell decided to install it since it felt there was going to be an increased product demand in the future. AQD spent time explaining the difficulty with that approach for any source, let alone a source that is subject to the federal Title V permit program. We stressed the basis of the AQD permitting program centers around a "permit to install." This means a permit is required prior to installation or determining a permit exemption applies to the situation. Fortunately for the company, we explained the presence of Rule 285 (2) (f) which allows for the installation of pollution control equipment for an existing process or process equipment as long as certain conditions were met. The conditions were discussed in general and Travis was provided a copy of the permit exemption handbook. It should be noted AQD does not approve exemptions. They are there for the company to use if they wish or a permit can be obtained in lieu of an exemption.

On April 4, 2023 the company supplied an exemption determination for the equipment that had already been installed. Since Travis had repeatedly stated at the meeting that the equipment consisted of an incinerator, it was no surprise when the calculations and demonstration only involved anticipated emissions from the unit. However, during the inspection it was obvious the VTI and Torti dust collectors had been removed. Instead, a "Schenk Process" was now installed outside the south west corner of the facility. It consisted of two units the first of which controlled dust and was equipped with safety blast ports. The exhaust from that unit was routed to an incinerator. Company staff were unable to provide any details. However, Kevin said he was familiar with a Schenk system in California and said it worked very well. John Bacon, the plant engineer, demonstrated the control panel along the south wall of the production area. He said all settings for both the particulate control and VOC controls were input by the pollution control manufacturer at the time of installation and were equipped with alarms. He stated maintenance steps were also provided. The particulate control was clearly a step up from the previous equipment however, the only mention of it in the exemption determination was "new baghouse." It did not appear any particulate emissions were taken into consideration in the exemption determination other than those resulting from fuel combustion. The focus of emissions centered around the incinerator. There is little if any doubt the controls would meet the qualifiers of the exemption. However, a more thorough description of the technology being employed and resulting emissions is in order. There is also at least one error in the demonstration found in the VOC potential to emit (PTE) calculations but the qualifiers of the exemption are still met when the calculation is done correctly.

The facility is currently evaluating options for enshrining the pollution control changes and potential increased production into a permit to install. Of note is that the designers of the collection / control system have a confidence basis of 50% capture in the new hooding and subsequent ductwork for getting pollutants to the control systems. One should note there was no delineation between particulate capture versus volatile capture. As is, the result is if there is 50% "capture" there is then 50 % fugitive.

CONCLUSION

The facility is considered to be in compliance with its current permit.

NAME

B. Z. [Signature]

DATE

9-27-24

SUPERVISOR

[Signature]