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

N703473453

FACILITY: Saginaw Carbon		SRN / ID: N7034
LOCATION: 2927 Venture, MIDLAND		DISTRICT: Bay City
CITY: MIDLAND		COUNTY: MIDLAND
CONTACT: Chris Beeck , Lead Technician		ACTIVITY DATE: 08/23/2024
STAFF: Benjamin Witkopp	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MINOR
SUBJECT: Facility inspection		
RESOLVED COMPLAINTS:		

On August 23, 2024, Ben Witkopp of the Air Quality Division (AQD) went to 2927 Venture Drive in Midland Michigan to inspect Saginaw Carbon. The site was formerly Mersen Midland USA, however, the site was no longer owned or operated by Mersen.

I met with Mr. Chris Beeck, Lead Technician. During a previous inspection, it was determined the site did not do anything that Mersen had conducted. Therefore, the existing permit for the location was invalid and was requested to be voided. I met Chris in the bay area of the southwest corner of the building. Behind him was a large piece of equipment which was not present during the previous inspection. We saved discussion of it for the end of the inspection.

The company makes metal tubular housings in which the customer places thermocouples for use in the copper mining/melting business. However, the company does not purchase metal for trimming and machining. It makes the metal itself using a specific formula to get the desired qualities.

The process begins by blending chromium and alumina with nitric acid. The acid removes impurities. Any resulting acid fumes are discharged outside the building through a horizontal and downward ductwork. Water is then run through the mix to facilitate removal of the acid. The water / acid is routed to the waste room where powdered lime is added for neutralizing. The area is exhausted via a horizontal and downward duct. The solution is then pumped to a holding tank. Periodically the solution is routed to an electrically heated dryer where the water is evaporated. The water vapor is discharged through a horizontal and downward duct. The resulting solid is then waste. The blending and storage process would be exempt from permitting via rule 284 (2) (i) - Storage, mixing, blending, or transfer operations of volatile organic compounds or noncarcinogenic liquids in a vessel that has a capacity of not more than 40,000 gallons where the contents have a true vapor pressure of not more than 1.5 psia at the actual storage conditions. The vapor pressure of the nitric acid used in the blending process is approximately 0.928 psia and the vessels are quite small.

Having the impurities removed, the original chromium and alumina mixture is put in an electric Wisconsin oven at 200 degrees fahrenheit to dry off any remaining water. The resulting water vapor is discharged through a horizontal and downward duct. The dried material is then set aside until needed. Since there is no air contaminant being released and the oven is electrically heated, air permitting would not come into play. If it is felt an exemption was needed, rule 281 (2) (e) could be used - Equipment used for washing or drying materials, where the material itself cannot become an air contaminant, if no volatile organic compounds that have a vapor pressure greater than 0.1 millimeter of mercury at standard conditions are used in the process and no oil or solid fuel is burned.

Molds are made on site in the mold room using pottery plaster. The molds are dried in an electric oven running at 150 degrees fahrenheit f. The resulting water vapor is externally exhausted. The rationale for not needing an air permit is the same as presented above for the Wisconsin oven.

Once the molds are made and dried, they are ready to receive material. Dry cakes of chromium and alumina are then mixed with water and blended in a mixer in the mold room. Once adequate mixing has occurred the material is placed into the molds. The filled molds are then taken to a pre-fire oven located along the north wall, just east of the mold cure oven. The pre-fire oven is

electrically heated to about 820 degrees fahrenheit and exhausts internally. Once again, the rationale for not needing an air permit is similar as presented above for the Wisconsin oven due to the lack of an air contaminant.

Molds then go from the pre-fire oven to a hardening furnace. The furnace uses nitrogen, argon, and hydrogen gases. Surprisingly there was still a hydrogen burner next to the hardening furnace. Previously they found out there is not enough residual hydrogen present to warrant the burners use, so the unit was going to be removed. However, it remains in place unused. The hardening furnace is electrically heated and operates at 1,480 degrees celcius with a typical run time of eight hours. It is exhausted vertically upwards through the roof and has a cap on it. The hardening furnace is exempt from permitting via rule 282 (2)(a)(i) - any of the following processes or process equipment which are electrically heated or which fire sweet gas fuel or no. 1 or no. 2 fuel oil at a maximum total heat input rate of not more than 10,000,000 Btu per hour: (i) Furnaces for heat treating or forging glass or metals, the use of that does not involve ammonia, molten materials, oil coated parts, or oil quenching.

There are pieces of a second hardening furnace located east of the one in use. Chris stated the parts were brought in recently to show potential customers the company could provide additional production if needed. Chris said the unit would just need to be assembled and would operate the same as the existing one.

Once the molds have cooled the parts are removed. The south side of the room consists of a separate room and contains machining operations such as cutting, grinding, and a lathe. All machining operations are conducted in this room and the exhaust is handled by a small dust collector located outside the south wall of the building. A drop leg in the ductwork acts as a mechanical pre-cleaner / drop box, prior to the dust collector. The machining operations are exempt via rule 285 (l) (vi) (c) - the following equipment and any exhaust system or collector exclusively serving the equipment: (vi) Equipment for carving, cutting, routing, turning, drilling, machining, sawing, surface grinding, sanding, planing, buffing, sand blast cleaning, shot blasting, shot peening, or polishing ceramic artwork, leather, metals, graphite, plastics, concrete, rubber, paper board, wood, wood products, stone, glass, fiberglass, or fabric which meets any of the following: (A) Equipment used on a nonproduction basis, (B) Equipment that has emissions that are released only into the general in-plant environment, (C) Equipment that has externally vented emissions controlled by an appropriately designed and operated fabric filter collector that, for all specified operations with metal, is preceded by a mechanical precleaner.

There are two final steps in the process and the operations are in the south east corner of the main production area. The first step consists of a self-contained sand blaster. The sandblaster is exempt via rule 285 (l) (vi) (b). The exemption details are found above within the discussion of the machining operations.

The last step is a final cure oven. It is used to oxidize the parts as a purification step. The oven is electrically heated and operates at 2,000 degrees fahrenheit. The oven exhausts internally. The rationale for not needing an air permit is similar as presented above for the Wisconsin oven due to the lack of an air contaminant.

The south portion of the building is now called the CNC area per Chris. The new piece of equipment previously referenced was then discussed. Two different types of products could eventually be produced. In either case the process involves getting liquid mixtures to saturate a fabric like material. The mixtures are manually placed into a trough. A roll of fabric is automatically unrolled and drawn forward through the trough by the machine. A blade squeeges it to a desired thickness while the excess mixture drops back into the trough. The fabric mixture is then dried to eventually form rolls. Chris said the drying temperature was 300 degrees fahrenheit maximum. Pieces can then made by cutting them to various shapes and sizes. Some of the pieces may be cut with the use of a CNC machine. The properties of the pieces rely upon the amount and subsequent thickness of the materila allowed to penetrate and remain in the fabric. The exhaust is directed out the south wall and downward.

One of the mixtures consists of isopropyl alcohol, alumina, and silicones. lit would involve a ceramic fabric, per Chris. The other mixture is a phenolic water based resin and would involve carbon fabric. Chris did not know potential usage amounts and / or mixtures ratios anticipated and asked me to send the request via email so he could forward it on to the operations manager or others.

On August 30, 2024, Matt Reineke, VP of Saginaw Carbon, provided a breakdown of the mixture for the phenolic resin. It included the use of substance which acts as a "filler" and increases the carbon content. A 90% isopropyl solution is used to clean the through and rollers.

The mixture and processing involved for the ceramic fabric is still being developed for prospective customers.

Basically, the entire south portion of the building is currently functioning as a research development operation. As currently operated the equipment is exempt from permitting via Rule 283. (2) (a) pilot processes used for any of the following.....(v) the development of process or process equipment desgn and operating parameters. A lenghty discussion of air use permitting ensued. Matt was provided with various links to permitting information and a consultant directory.

We also discussed the presence of approximately 70 barrels of dried waste from lime that was used to neutralize acid mentioned in the report for the intial process steps. The barrels were located outside the south side of the building. They occupied an entire loading dock bay as well as a portion of a flat parking lot area. Matt was also given contact information for staff in the Materials Management Division for assistance in dealing with the waste.

If the plans for the CNC area come to fruition, an air use permit would likely be needed due to the presence, and potential emissions, of formaldehyde in the phenolic resin. Matt has beeen made well aware of the potential need for an air permit in the future.

The facility is in compliance with AQD requirements as the operations are exempt from permitting or lack the emission of an air contaminant.

NAME B Lothoff DATE 9-23-24 SUPERVISOR Gina L McCann