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

N558772036

FACILITY: WOODARD-CM		**SRN / ID:** N5587
LOCATION: 210 S. DELANEY RD, OWOSSO		**DISTRICT:** Lansing
CITY: OWOSSO		**COUNTY:** SHIAWASSEE
CONTACT: Mike Majerowicz , Industrial Engineer		**ACTIVITY DATE:** 05/16/2024
STAFF: David Rauch	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** SM OPT OUT
SUBJECT: Routine On Site Inspection to determine compliance with PTI 270-95C.		
RESOLVED COMPLAINTS:		

Staff Activity Report - N5587 Woodard CM

On May 16, 2024, David Rauch of the Air Quality Division (AQD) conducted a routine inspection of Woodard-CM (SRN N5587). The facility is located at 210 S. Delaney Rd, Owosso.

David started an extended leave from work before the report for this inspection or the records review was completed. The report and records review were completed by Michelle Rogers on September 20, 2024.

The Environmental Contact:

Mike Majerowicz, Industrial Engineer; 989-725-4462; mmajerowicz@woodard-furniture.com

Facility Description:

This facility manufactures outdoor furniture with steel and aluminum frames. The manufacturing operation includes metal forming, welding, metal surface treatment, coating of metal, and fabric and upholstery manufacturing. The finished furniture is packaged (shrink wrapped and/or boxed) for shipping. The facility also manufactures propane-fueled fire pits.

Regulatory Overview:

Woodard-CM (N5587) is an opt-out source because they have accepted legally enforceable emission limitations for hazardous air pollutants (HAPs) with opt-out limits of less than 9.0 tpy of any single HAP, and less than 22.5 tpy total HAPs. Therefore, the facility is not subject to the Title V - Renewable Operating Permit Program.

The facility has one Permit to Install (PTI), 270-95C, issued March 16, 2018 which is for a burn-off oven, an E-coat line, and includes the HAPs opt-out limits. The facility also has many exempt processes. The various processes at the plant are listed below.

Fee Status:

The facility reports to MiEnviro as a Synthetic Minor, Fee Category D. The site submitted 2023 Emissions to MiEnviro.

Facility History and Location:

The facility is in an industrial park on the westside outskirts of Owosso. Woodard moved all furniture manufacturing operations to this location in 1995.

Inspection:

I (David Rauch) arrived at the facility at 11:00 am where the site EHS was out at lunch and I waited for him to return. Mike Majerowicz met me in a conference room where we discussed the permit and the conditions in the PTI. Our discussion focused on any new processes. Then we toured the plant. The plant appeared to be the same as previous inspections and the only new equipment is a new laser welding equipment that has not yet been finished being set up. While on site, there was not much production occurring, just some minor welding assembly. The tour showed me all of the equipment and the newer powder coat booths. I was also shown the full assembly process, and requested the SDS forms for the paints and antiquing. While on site I also observed the oven operating but the loads going through are very small. We discussed all the final notes of the inspection before I departed and requested records.

Metal bending and shaping activities (Rule 285(2)(l)(vi)(B)): Some bending and shaping of metal coils and rods is done by hand, and some by machine (CNC bender, etc.). The metal bending and shaping activities exhaust to the general, in-plant environment.

Forges (Rule 282(2)(a)(i)): The two (2) small natural gas-fired forges (manufactured by the Johnson Gas Appliance Co.) are used for forming some steel furniture pieces. The two forges are greater than 50 years old. There is lower demand for steel furniture than aluminum furniture. They usually run 4 to 8 hours per week depending on orders. The process is vented out the roof.

Welding Department for aluminum and steel (Rule 285(2)(i)): Aluminum and steel are welded in separate welding stations. The aluminum is welded by hand using the wire and torch method. For steel, there are two robotic welding stations (1980s vintage), and the rest is done by hand. The robotic welders were in operation and some hand welding was being done at the time of inspection. After welding, the furniture pieces are hung on a chain-on-edge conveyor line to travel to the next processing area in the plant.

Production Grinders (Rule 285(2)(l)(vi)(B)): Because aluminum is soft, and can easily get nicked or scraped, the aluminum parts are buffed, prior to being washed and painted. The furniture is removed from the conveyor when passing the hand grinding areas as needed. The production grinders exhaust to the general, in-plant environment.

Aluminum parts cleaning booth (Rule 285(2)(l)(vi)(B)): A process for surface buffing of aluminum parts was installed around 2015. It consists of an enclosed booth which uses walnut shell particulates and has a cartridge dust collector and collection system for disposal of the walnut particulates. The booth is manually operated. The operator stands inside the booth and "sprays" the walnut shells at the part. No particulate or dust was observed outside of the booth, and the process is vented into the plant atmosphere.

E-coat dip line (EU-Ecoat, PTI 270-95C): The E-coat process applies a primer to steel parts to protect against rust. Typical operation is 3 days per week. Aluminum parts do not need to be primed. The entire process line is enclosed. The steel parts are first spray washed in a seven-stage washer to remove dirt and dust. The washer chemicals consist of various nitric acids, phosphoric acids, inorganic salts, nitrates, fluorides, silicates, and sodium hydroxide. The water-based primer is applied in a 1750-gallon dip tank. It is a two-part water-based mixture consisting of a paste and resin. A solvent is added to balance the tank. The solvent addition is glycol ether

EB (CAS No. 111-76-2) which has been delisted as a HAP. Lactic acid is no longer used as an additive. A new additive/solvent is being reviewed for use. It is ethylene glycol monohexyl ether (2-hexyloxyethanol), CAS No. 112-25-4. It appears to be a listed HAP. I recommended the chemical be reviewed for meaningful change per the Policy and Procedure: AQD-025: Permit Exemption for Changes in a Process or Process Equipment that are not a Meaningful Change or a Meaningful Increase in Toxic Air Contaminants. Lactic acid has an Annual ITSL of 7 µg/m^3, and ethylene glycol monohexyl ether (2-hexyloxyethanol), (CAS No. 112-25-4) has an Annual ITSL of 8 µg/m^3.

After coating, the furniture pieces enter a flash-off area, and then a natural gas-fired curing oven. The oven temperature is approximately 350°F to 375°F. There is one stack on the dip tank and two stacks on the curing oven which appear to be at the permitted heights in Special Condition (SC) VIII.1 - 3.

The use of manufacturer's formulation data to determine volatile organic compound (VOC) coating content per Special Condition (SC) V.1 was approved on June 28, 2016 by the Lansing District Supervisor. Technical specification sheets for the E-coating system are maintained and scans of the chemical composition/information of the ingredients are in the electronic file. The facility is in compliance with SC V.1 and SC VI.2.

The records required by SC VI.3 for calculation of VOC emissions from EU-Ecoat are in the electronic file and are discussed below.

A small hot water boiler that is part of the emission unit is used to provide heat to the tanks in the process. The E-coat process tanks are cleaned out once a year and there are various holding tanks sitting close to the E-coat process for this purpose.

Parts cleaning process (Rule 281(2)(e)): There is a large parts washing process at the plant. It can wash either steel or aluminum parts, but not both at the same time. It has one operating mode for washing steel parts, and a more intensive, 7 stage washing process for aluminum with caustic and acidic solutions being sprayed, followed by clean water rinses. All of the metal parts go through a natural gas-fired dryer following the wash process. Then, the parts are ready for powder coating application.

Powder coating booths (Rule 287(2)(d)): They have three powder coating booths which are used to apply topcoats. These are in a separate room, and slide on rails to be moved on and off the process chain-on-edge conveyor line. A fourth powder coating booth for clearcoats sits outside of the room housing the topcoat booths. Of the three topcoat booths, two automated lines apply high volume colors to the metal furniture. Overspray of the high-volume colors is collected for reuse. The smaller orders in different colors are applied using a manually operated powder coating booth. The automatic booths require two (2) operators each, and the manual booth requires four (4) operators. The booths have particulate filters, and exhaust into the in-plant environment. The manual booth was operating, and operators wear particulate masks when powder coating. The powder is collected in the lower sides and bottom of the booth.

After the topcoat powder coating has been applied, the parts are cured in either of two curing ovens. After curing, a chain-on-edge conveyor takes the parts by an antiquing area. If the

antique finish is not desired, the part stays on the conveyor. If antiquing is ordered, the part is removed from the conveyor, and taken to the antiquing area.

Antiquing area with spray booth (Rule 287(2)(c)): Operators spray on a water-based antiquing finish using HVLP spray guns. The booth is equipped with a wall of mat/panel filters. Various dabbing or streaking techniques using newspapers or rags to achieve an aged look is done outside of the booth.

After metal furniture has an antiquing finish applied, it is placed back on the chain-on-edge conveyor, and goes through the powder coating booth for the clearcoat finish. The furniture then enters the second of two curing ovens. (If antiquing is ordered, the units are not fully baked in the first oven.) This allows the powder coat to be reheated in the second oven which provides a harder finish.

Burn-off oven (PTI 270-95C): The natural gas-fired Blu-surf burn-off oven is used to remove the layers of paint which can build up over time on metal part hooks used to convey the parts through the production process. Additionally, when the coating on a piece of painted steel furniture does not meet the standards for quality that piece of furniture is cleaned in the burn-off oven. The operating temperature of the oven is 750°F and the afterburner temperature is set to 1400°F when operating, in compliance with SC IV.1. The oven is equipped with a temperature gauge to continually monitor the afterburner temperature as required by SC IV.2. If the temperature in the oven gets too hot, there is an auto-shutdown. This is indicative of a fire in the oven. The burn-off oven runs about 4 hours per day depending on rejects or customer refurbishments.

Shot blast machine with mechanical collector and baghouse (Rule 285(2)(l)(vi)(C)): The shot blast machine is used for removing ash deposits from hooks and metal parts that have gone through the burn-off oven. It can also be used to remove rust from steel. It was operating at the time of the inspection. Parts are placed on a holding rack and moved into and out of the shot blast machine using a fork lift. The baghouse for it sits across from it and vents externally. The shot blast machine system was moved from the old Woodard plant and is approximately 100 years old. The shot blast machine runs not more than 4 hours per day.

Textile, finishing and packaging area: Fabric, cushions, and/or a lattice of plastic straps are applied to the furniture here. There are over 300 different fabric choices for customers. The fabric can be heat sealed and/or machine sewn to create pillows and cushions for the furniture.

In the finishing area, there is some touchup of paint using spray cans (Rule 287(2)(b)) and cleanup as necessary. Small cans of toluene, which is a HAP, were used for cleanup but that practice has been discontinued. The annual usage of toluene in painting processes in 2020 was 142 gallons which is a decrease since the last inspection. Rule 290(2)(a)(ii)(A) allows up to 1,000 lb/month of toluene.

After finishing, the furniture is carefully packaged to avoid damage in shipping. They glue and assemble cardboard boxes using water-based glue. They have a large mechanical box cutter. They also have a process which shrink wraps products with clear plastic using a propane hot gun. A reaction injection molding machine to create packing pillows uses a 2-component liquid isocyanate material. Two drums of isocyanate materials were connected and when mixed,

polymerize to create foam pillows in a plastic bag. This process appears exempt under Rule 286(2)(e).

Machine shop: Their machine shop has a vertical milling machine and other metal machining processes, which are exempt because they are used on a non-production basis (Rule 285(2)(l)(vi)(A)). They exhaust into the general, in-plant environment.

Natural gas-fired space heaters (Rule 282(2)(b)(i)): There are 10 natural gas-fired space heaters used for building heat.

Natural gas-fired emergency generator (Rule 285(2)(g)): There is one (1) emergency generator for lighting that was installed when the building was built. It is in the Maintenance Department. It runs about once every 5 years.

Federal Regulations:

40 CFR Part 60, Subpart EE: The coating processes (when coating metal furniture) are subject to the federal requirements of 40 CFR Part 60, Subpart EE, New Source Performance Standards (NSPS) for Surface Coating of Metal Furniture. For 40 CFR 60, Subpart EE, the following applies:

§60.310 Applicability and designation of affected facility.

(a) The affected facility to which the provisions of this subpart apply is each metal furniture surface coating operation in which organic coatings are applied.

(b) This subpart applies to each affected facility identified in paragraph (a) of this section on which construction, modification, or reconstruction is commenced after November 28, 1980.

§ 60.312 Standard for volatile organic compounds (VOC): 0.90 kilogram of VOC per liter of coating solids applied.

1 kilogram / liter = 8.34540445 pounds / US gallon

0.90x 8.34540445 = limit of 7.51 lb/gal. In 2022 Woodard calculated 17.9 lb VOC/GACS for their Antique process, but this is based on several of the paints having zero (0) solids content, and the gold glaze paint having 7.6 lb VOC/gal which seems incorrect. In 2023 the Gold glaze paint is recorded as having only 0.12 lb VOC/gal and overall lb VOC/GACS is 0.1.

There currently is no EPA electronic reporting requirements through the Compliance and Emissions Data Reporting Interface (CEDRI) in 40 CFR 60, Subpart EE.

40 CFR 63, Subpart ZZZZ: National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE) – This subpart establishes emission limitations and operating limitations for HAPs emitted from stationary RICE located at major and area sources of HAP emissions. The natural gas-fired engine on the emergency generator is subject as an existing RICE at an "area source" of HAPs.

Woodard is an "area source" of HAPs with two (2) small natural gas-fired boilers. The gas-fired boilers are not subject to 40 CFR 63 Subpart JJJJJJ, the National Emission Standard for Hazardous Air Pollutants (NESHAP) for Industrial, Commercial, and Institutional Boiler Area Sources.

PTI 270-95C Conditions:

EU-Ecoat:

SC I.1 & 1.2: Emission limits for VOCs (lbs/mo and tpy).

Result: Compliance. The facility submitted records showing VOC and HAP calculations for 2022, 2023, and the first 4 months of 2024. Total emissions are much lower than the lbs/month and tpy limits in the permit for EU-ECoat. 2022 and 2023 records show less than 1 ton of VOCs and less than 1 ton HAPs each year.

SC I.3: Emission limit for lactic acid.

Result: Compliance. The facility is no longer using lactic acid.

SC III.1: requirement to reclaim, recycle, or dispose of coatings and other materials in accordance with applicable regulations.

Result: Compliance, observed site's recovery process and control equipment.

SC III.3: handle all VOC and/or HAP containing materials, in a manner to minimize the generation of fugitive emissions. The permittee shall keep containers covered at all times except when operator access is necessary.

Result: Compliance, did not observe any open containers and fugitive emissions were not observed while on site.

SC V.1: Requirement to determine VOC content, water content and density of any coating, as applied and as received.

Result: Compliance, site uses manufacturer's formulation.

SC VI.1: Monthly recordkeeping

Result: Compliance, Reviewed site records and site was keeping records up to date.

SC VI.2: maintain a current listing from the manufacturer of the chemical composition of each material,

Result: Compliance, site kept on file

SC VI.3(a): Monthly records of coating used and reclaimed, in gallons

Results: Compliance, records sent via email and reviewed.

SC VI.3(b): VOC content (with water) of each material as applied.

Results: Compliance, records reviewed for VOCs as applied.

SC VI.3(c): VOC mass emission calculations: monthly

Results: Compliance, reviewed site records that were sent over via email.

SC VI.3(d): VOC mass emission calculations: 12-month rolling time period

Results: Compliance, the site isn't technically keeping 12-month rolling records but there is no possibility of exceeding the 12-month rolling limits given the fact that their annual emissions are so far below the limits.

SC VI.4: Records of lactic acid containing materials, lactic acid content, and emission calculations:

Results: The site is not keeping these records, however, they have discontinued their use of lactic acid as an additive. Technically the site should be writing down that they have zero lactic acid usage every month.

EU-BurnOffOven:

SC IV.1: afterburner is installed according to manufacturer's specifications and operates at a minimum temperature of 1400°F and a minimum retention time of 0.5 second.

SC IV.2: The permittee shall equip and maintain the afterburner portion of the burn-off oven with a temperature gauge to continually monitor the afterburner temperature.

Result: Compliance. While on-site, staff observed that the operating temperature of the oven was 750°F and the afterburner temperature is set to 1400°F when operating, in compliance with SC IV.1. The oven is equipped with a temperature gauge to continually monitor the afterburner temperature as required by SC IV.2.

The permit does not require recordkeeping for the temperature, as is normally required for burn off ovens (such as in the general permit for burn off ovens)

FG-Facility:

SC I.1, I.2, and I.3: HAP emission limits for individual (9 tpy) and aggregate (22.5 tpy) HAPs, and VOCs (30.0 tpy)

Result: Compliance. The facility submitted records showing VOC and HAP calculations for 2022, 2023, and the first 4 months of 2024. Total emissions are much lower than the lbs/month and tpy limits in the permit for FGFACILITY. 2022 and 2023 records show less than 1 ton of VOCs and less than 1 ton HAPs each year.

SC I.4: 7.5 lb VOC per gallon of coating solids applied (GACS) 40 CFR 60, Subpart EE

Result: Compliance. As noted above, there appears to be a mistake in the 2022 GACS calculation. In 2022 Woodard calculated 17.9 lb VOC/GACS for their Antique process, but this is based the gold glaze paint having 7.6 lb VOC/gal which seems incorrect. In 2023 the Gold glaze paint is recorded as having only 0.12 lb VOC/gal and overall lb VOC/GACS is 0.1.

SC VI.1 and 2: HAP, VOC, and water content, and density of each coating applied

Result: Compliance. Woodard is using manufacturer's information for their coatings and is keeping the necessary records.

SC VI.1: Monthly recordkeeping

Result: Compliance, Reviewed site records and site was keeping records up to date.

SC VI.2: maintain a current listing from the manufacturer of the chemical composition of each material,

Result: Compliance, site kept on file

RB **SC VI.3, 4, & 5: Monthly records of HAP and VOC-containing materials coating used and reclaimed, HAP and VOC content of each material, and monthly and 12-month rolling HAP and VOC emission calculations**

Results: Compliance, records sent via email and reviewed. The site isn't technically keeping 12-month rolling records but there is no possibility of exceeding the 12-month rolling limits given the fact that their annual emissions are so far below the limits.

Conclusions:

The site is in compliance with the applicable rules and regulations.

Some improvements could be made to their recordkeeping and further follow-up is likely warranted with this facility on several topics, including whether there was a meaningful change in switching from lactic acid to ethylene glycol monohexyl ether, how to show continuing compliance with the burn-off oven temperature requirement (EU-BurnOffOven SC IV.1), given that the permit requires no temperature records.

NAME Michelle Rogers DATE 9/20/2024 SUPERVISOR RB