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

N795958141

FACILITY: PENINSULA POWDER COATING INC		**SRN / ID:** N7959
LOCATION: 128 HEMLOCK, BARAGA		**DISTRICT:** Marquette
CITY: BARAGA		**COUNTY:** BARAGA
CONTACT: Bill Kunick , Operations Manager		**ACTIVITY DATE:** 05/13/2021
STAFF: Michael Conklin	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MINOR
SUBJECT: Targeted inspection for FY 21.		
RESOLVED COMPLAINTS:		

Facility: Peninsula Powder Coating (SRN: N7959)

Location: 128 Hemlock St, Baraga, MI 49908

Contact(s): Bill Kunick, Operations Manager, 906-353-7234

Regulatory Authority

Under the Authority of Section 5526 of Part 55 of NREPA, the Department of Environment, Great Lakes, and Energy may upon the presentation of their card, and stating the authority and purpose of the investigation, enter and inspect any property at reasonable times for the purpose of investigating either an actual or suspected source of air pollution or ascertaining compliance or noncompliance with NREPA, Rules promulgated thereunder, and the federal Clean Air Act.

Facility Description

Peninsula Powder Coating, located in Baraga, MI, provides powder coating services to commercial, municipal, and residential customers. The company was founded in 2004 and currently employs 35-40 employees within their 34,000 square foot facility. Powder coating is a process that provides a protective and decorative finish to both metallic and non-metallic products. It is often used in a variety of industry such as automotive, agriculture, electronics, furniture, fitness and medical equipment.

Peninsula Powder Coating provides a range of decorative colors and finishes to any electrically conductive metal or material that can endure 400 degrees Fahrenheit. They primarily work with steel, sheet metal, and foundry castings of ductile iron and aluminum. The facility works with parts ranging from 2 inches long up to a maximum of 26 feet long, 12 feet wide and 10 feet high. The company provides surface preparation, finishing, assembly, and delivery services.

Emission units at this source include 4 powder coating booths, 4 natural gas-fired curing ovens, 2 sand blasting booths, 1 natural gas-fired wastewater evaporator, 1 natural gas-fired water heater, and natural gas-fired space heaters.

Process Description

The powder coating process begins with sandblasting parts to a dry and bare surface or by using another surface preparation technique when sandblasting cannot be done. The surface preparation stage removes contaminants, oil, rust, and other substances that interfere with coating adhesion. Next, the parts are moved into the powder coating spray booth where parts are coated. The coating material is a dry powder consisting of resins, pigments, leveling agents, flow modifiers, and other additives. Inside the booths, the powder is applied using a spray gun that electrostatically charges the powder. The powder is applied using a process called electrostatic spray deposition (ESD) where the charged powder particles (typically positive) are attracted to the grounded part (negative) causing them to adhere. After the parts have been coated, they are moved into the natural gas-fired batch curing ovens that bake the parts at 400 degrees Fahrenheit. The thermosetting powder begins to melt and produce long polymers that cross-link. These long molecular chains within the coating provide a durable, uniform, and aesthetic finish on the part.

Emissions

Abrasive blasting, such as sandblasting, causes the emissions of particulate matter (PM). Fabric filter collectors can be used to control emissions from sandblast enclosures that use air recirculation systems.

Particulate emissions from the powder coating process are very little. The process also contains very little VOCs as compared to solvent-based paints. The process occurs in an enclosed booth and typically has a coating transfer efficiency of 93%. Many booths use cartridge filters that collect excess material from overspray and exhaust to the general in-plant environment.

Pollutants emitted from the combustion of natural gas-fired curing ovens include nitrogen oxides (NOx), carbon monoxide (CO), volatile organic compounds (VOCs), particulate matter (PM), carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), and trace amounts of sulfur dioxide. NOx is formed and emitted primarily through one of three mechanisms: thermal, fuel, and prompt. Thermal NOx formation occurs in the high temperature zone, near the burners, by the reaction of nitrogen (N2) and oxygen (O2) molecules in the combustion air. Fuel NOx formation occurs through the reaction of nitrogen molecules in the fuel and the oxygen molecules in the combustion air. This form of NOx formation is low when burning natural gas since there is a low nitrogen content in the fuel. Prompt NOx is formed through the reaction of nitrogen molecules in the combustion air and hydrocarbon radicals from the natural gas. Higher temperatures of burning and longer residence time results in higher NOx emissions. CO and VOC emissions are directly related to combustion efficiency. Higher combustion temperatures, longer residence times, and well mixing of fuel and combustion air results in greater combustion efficiency and lower emissions of CO and VOCs. Emissions of sulfur oxides are low since processed natural gas

contains a very low sulfur content. PM emissions are also low since natural gas is a gaseous fuel. Nitrous oxide and methane emissions are related to the combustion temperature and amount of excess oxygen.

Emissions Reporting

The source is not a fee-subject facility and does not have to report its annual emissions to the Michigan Air Emissions Reporting System (MAERS).

Compliance History

The facility received a Rule 201 violation notice on 01/27/2020 for not having a permit for the wastewater evaporator. PTI No. 55-20 was issued on 08/18/2020 and the violation notice was considered resolved.

Inspection

On May 13, 2021, a targeted inspection on Peninsula Powder Coating was conducted to determine compliance with PTI No. 55-20 and all other air pollution control rules. I arrived at the office building and met with Operations Manager, Bill Kunick. I explained to Mr. Kunick the purpose of the inspection was to ensure compliance with state air pollution control rules and federal regulations. The inspection began with a tour of the facility and associated emission units.

Shot Blasting

The facility operates two completely enclosed sandblasting booths for surface preparation. Parts are brought in and cleaned with 80 grit shot media. A large air filter vent at the end of the booth is used to draw in air during sand blasting operations. Each booth has an air recirculation system that goes through a common fabric filter collector. Air is drawn out of the booths, filtered, and is vented back into booths. This is considered a closed recirculation system with the baghouse not exhausting to the atmosphere and exhausting back into the booths instead. Waste shot material is collected in the hoppers of the baghouse.

After inspecting the sandblast booths, we went outside to inspect the baghouse. At the time of the inspection, the baghouse was not operating. This was due to staff being on a lunch-break and not conducting sand blasting at the time. The baghouse is equipped with a magnehelic gauge for monitoring the static pressure drop. Mr. Kunick stated the baghouse normally maintains a pressure drop reading in the 3-4 in. WC range. The baghouse is cleaned daily and bags are replaced on a semi-annual basis. The baghouse does not exhaust to the atmosphere.

During the last inspection, waste shot media collected in the hoppers was observed becoming a source of fugitive dust when being emptied into the bins. Before, the emptying of the baghouse hoppers was not enclosed and wind was picking up some of the material and blowing it around the area of the baghouse. This was brought to Mr. Kunick's attention and he stated that the company plans to install an enclosed system for emptying/disposal of waste material collected in the baghouse. During this inspection, the waste media was observed being collected in enclosed bins with no signs of fugitive emissions. This new design appears to correct the fugitive emissions issue from the collected waste material.

Equipment for shot blasting that has externally vented emissions controlled by a fabric filter collector can be considered exempt from the need for a PTI per R 336.1285(2)(l)(vi)(C).

Powder Coating

The facility operates 4 powder coating booths, each with a cartridge filter collection system that exhausts to the general in-plant environment. The collection system has a backflow pulse generator to drop excess material off the cartridges. After every shift, the cartridges are "popped", and excess material is deposited onto slide-out trays beneath the filters. No emissions were observed from the powder coating booths.

Equipment that is used for metal surface treatment with process emissions released into the general in-plant environment can be considered exempt from the need for a PTI per R 336.1285 (2)(r)(i).

Curing Ovens

In addition to the 4 powder coating booths, there are 4 natural gas-fired curing ovens. Theses ovens work in a batch process that bake coated parts at 400 degrees Fahrenheit for about 10 minutes. Two of the ovens have a rated heat input capacity of 2 MMBtu/hr, one oven is rated at 1.5 MMBtu/hr, and the fourth oven is rated at 950,000 Btu/hr.

Powder coating booths and associated ovens, where the booths are equipped with fabric filter controls can be considered exempt from the need for a PTI per R 336.1287(2)(d).

EUVAPORATOR

Behind the wash bay for parts and equipment is a natural gas-fired water heater and wastewater evaporator. The wastewater evaporator is used to minimize the amount of wastewater requiring disposal. A drain at the bottom of the wash bay collects wastewater containing metal contaminants, alkaline cleaners, phosphate coating treatments, and other metal preparation chemicals. The wastewater is then pumped into the evaporator where water is evaporated and concentrate remains behind for disposal. Emissions from wastewater evaporators can include VOCs from chemicals contained in the wastewater. Wastewater evaporators do not explicitly meet a state air permit exemption rule and have been previously permitted in the past. EUEVAPORATOR was permitted under PTI No. 55-20 on 08/18/2020. The wastewater evaporator is an EMC 240G with a natural gas-fired 285,000 btu/hr burner.

SC II.1, VI,1, VI.2

The facility has a requirement to not use more than 500 gallons of metal cleaners per 12-month rolling time period. Peninsula Powder Coatings uses three different chemicals in the wash bay that are collected by the wastewater evaporator. These include GX Clean 5787U, Duratec Wand FRP, and GF Seal Prep 639. During the inspection records were reviewed that track the monthly usage of each chemical in gallons. The monthly chemical tracking began in September 2020. The record provided show the name of each cleaner and gallons used per calendar month. The records did not show a 12-month rolling total, however. I stated to Mr. Kunick a 12-month rolling total is required and provided information on how to add in the 12-month rolling total calculation. Currently, the facility is no where close to exceeding the 500 gallons 12-month rolling time period limit. The facility also maintains the SDS of each chemical used in EUEVAPORATOR on file.

SC III.1,2

During the inspection, it was observed all chemicals being used and waste materials were stored in containers with lids. All waste materials are disposed of through landfill service. Chemicals that are being used in the wash bay are piped in from the storage containers. Lids are used to minimize generation of fugitive emissions.

Compliance

Based on this inspection, Peninsula Powder Coating is in compliance with PTI No. 55-20 and all state air pollution control rules and federal regulations.

NAME Michael Kibler DATE 5/25/21 SUPERVISOR EL