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

U5408078940678

FACILITY: Federal Screw Works		**SRN / ID:** U54080789
LOCATION: 400 Dekraft, Big Rapids		**DISTRICT:** Grand Rapids
CITY: Big Rapids		**COUNTY:** MECOSTA
CONTACT: Rich Ulrich , Manufacturing Manager		**ACTIVITY DATE:** 06/23/2017
STAFF: Tyler Salamasick	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:**
SUBJECT: Minor source compliance evaluation FY 2017		
RESOLVED COMPLAINTS:		

Background

Federal Screw Works (Federal) SRN: U54080789 is a metal forming facility located at 400 Dekraft Road, Big Rapids, Michigan. Federal is located in a primarily commercial area with the nearest residential structures approximately 650 feet north and west of the facility. The facility was inspected on 6/23/2017 by Tyler Salamasick, Environmental Quality Analyst of the Michigan Department of Environmental Quality, Air Quality Division. The intent of the inspection was to determine the facility's compliance with the Federal Clean Air Act Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act of 1994, PA 451, as amended, and Michigan's Air Pollution Control Rules. Federal Screw Works does not currently have any air permits with the MDEQ AQD. The facility does not paint, coat or plate parts at this location.

Inspection

Site arrival was at approximately 1:00pm, 6/23/17. Upon meeting I presented my State of Michigan identification card, informed the facility representative of the intent of my inspection and was permitted onto the site. Rich Ulrich, Manufacturing Manager showed me the facility. Jim Miller, the Environmental Manager, and Carol Beam, General Manager assisted with answering questions during my inspection. Federal Screw Works manufactures a variety of automotive parts, including close tolerance machined parts. The facility operates 24 hour a day Monday through Friday, with occasional work on Saturdays. Federal has 140 employees at this location. We walked through the facility and I inspected each process for potential emission to the ambient air. I asked to be shown the facility's process from the raw material delivery to the final product shipping.

Process Overview

Federal has approximately 80,000 lbs of steel delivered per day. The steel comes in various gauges of steel that range from fractions of an inch to several inches. The steel is pre-packaged as large wire coils. Due to their weight, the coils must be moved around the facility with fork lifts. Each of the coils is checked to verify the quality of the steel. Once check, the steel is either rejected or it is staged prior to being brought to a work station. This process did not appear to generate a significant amount of air contaminants.

Once checked and sorted, the steel is sent to dies to be shaped and cut. Federal has two main production areas. Both areas are a combination of dies, machining and CNCs with the same function except half of the facility is automated and the other half is older traditional machines. Federal is in the process of adding modern, automated lines to increase production of high precision parts. The dies use a water based lubricant with a low VOC content. This lubricant would not likely emit significant amounts of air contaminants. The shaping, cutting and machining appears to meet the permit exemptions R 336.1285(2)(l)(i) and R 336.1285(2)(l)(ii) which in part states…

2) The requirement of R 336.1201(1) to obtain a permit to install does not apply to any of the

following: …
…(i) Equipment used exclusively for bending, forming, expanding, rolling, forging, pressing, drawing, stamping, spinning, or extruding either hot or cold metals.
(ii) Die casting machines. …

After being shaped the part is then either threaded or heat treated. The parts that are threaded require a specialized threading die. The parts that are not threaded sent to the heat treating area. The heat treating process consists of hardening, quenching and tempering.

The hardening takes approximately 2 hours, at 1800 degrees Fahrenheit in a natural gas fired continuous belt furnace. The continuous belt furnace has a nitrogen atmosphere that utilizes gas that is produced on site. This process is vented outside.

After hardening, the parts are oil quenched. This process is not vented outside, but is instead done in a closed system. The droplets that form inside of the vessel are recaptured and cycled in the process. This process did not appear to generate any externally vented particulate emissions. The oil is regularly changed and recycled by a private vendor. I did not observe any oil or soot around the process.

Once quenched, the parts are washed and tempered. The tempering is also heated with natural gas but at a lower temperature range. Federal operates their tempering oven between 900F and 1000F. The hot parts are then dipped into a Thermisol AQ Blucoat solution. This solution deposits a thin film on the outside of the part. Rick described the film as a rust inhibitor. This inhibitor is not a permanent coating, but instead it is a temporary grease like substance that prevents rusting while on site. Rick provided me with the SDS and the total usage of the Blucoat. The facility uses approximately 55 gallons per month, or approximately 2.6 tons per year. Blucoat consists of primarily mineral oil (60-100%), sulfonate 7-13%, and alkyl polyglycol ether carboxylic acid 1-5%. The mineral oil is a volatile organic compound (VOC) which is a regulated air contaminant. The SDS did not indicate the CAS number that would define the specific mineral oil, so it could not be determined if the air contaminant was a hazardous air pollutant (HAP). If it was assumed that all of the Blucoat was emitted to the outside air, the total emissions from this process would be 2.6 tons of VOC (or potential HAP). This is below the 40 ton VOC significance level that would exclude the facility from using exemptions pursuant to Rule 278. This process appears to meet the exemption R 336.1285(2)(r)(i) which in part states …

…(2) The requirement of R 336.1201(1) to obtain a permit to install does not apply to any of the following:
…(r) Equipment used for any of the following metal treatment processes if the process emissions are only released into the general in-plant environment: (i) Surface treatment.

The furnaces for the hardening and tempering of the steel are both natural gas fired. The facility washes the quench oil off of the parts prior to the tempering stage. The process appears to meet the exemption for R 336.1282(2)(a)(i) which in part states …

… (2) The requirement of R 336.1201(1) to obtain a permit to install does not apply to any of the following: (a) 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. …

After the heat treating, some parts are finished at various CNC or machining areas. The machining and CNCs are vented internally to the in plant environment after passing through a filtration system. This process does not appear to vent outside and appears to meet the exemption R 336.1285(2)(l)(vi)(B).

Federal does have some parts washers, most of which were water based. They did not have any halogenated solvents, and I did not observe any on site. The facility did have one petroleum based parts washer. The SDS indicated that the chemical used is 90-100% distillates (petroleum) hydrotreated light. The CAS No for the distillates is not listed as a HAP. The distillate is likely a VOC, but Federal does not use significant quantities of the material. This process appears to meet the exemption R 336.1281 (h) which in part states…

(2) The requirement of R 336.1201(1) to obtain a permit to install does not apply to any of the following:
(h) Cold cleaners that have an air/vapor interface of not more than 10 square feet.

Conclusion

It appears that Federal Screw Works is in compliance with the Federal Clean Air Act Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act of 1994, PA 451, as amended, and Michigan's Air Pollution Control Rules.

NAME _____ DATE 8/7/17 SUPERVISOR _____