

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

B276368721

FACILITY: U.S. Army Garrison-Detroit Arsenal		SRN / ID: B2763
LOCATION: 6501 E Eleven Mile Rd, WARREN		DISTRICT: Warren
CITY: WARREN		COUNTY: MACOMB
CONTACT: Ali Alsaffar , Air Program Manager		ACTIVITY DATE: 08/14/2023
STAFF: Adam Bognar	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: scheduled inspection		
RESOLVED COMPLAINTS:		

On Monday August 14th, 2023, I, Adam Bognar, Michigan Department of Environment, Great Lakes, and Energy (EGLE) Air Quality Division (AQD) staff, conducted an inspection of U.S. Army Garrison – Detroit Arsenal, located at 6501 E. Eleven Mile Road, Warren, MI. The purpose of the inspection was to determine compliance with the Federal Clean Air Act; Article II, Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451); the administrative rules; and Permit to Install (PTI) Numbers 146-02 and 566-96B.

U.S. Army Garrison – Detroit Arsenal is a research and development facility, with buildings used for office space, research laboratories, vehicle testing, and facility operations and maintenance. The facility is permitted to operate 10 engine test cells (PTI No. 566-96B), as well as the ventilation hood associated with a can crushing operation (PTI No. 146-02). PTI No. 566-96B also contains facility-wide opt-out limits for NO_x, CO, VOCs, and HAPs. Additionally, the facility operates two side-draft coating booths, 13 boilers, and 14 emergency generators.

Facility Inspection

I arrived at the facility at 10:00 am and met with Ali Alsaffar, Environmental Protection Specialist, and Peter Schappach, Environmental Division Chief. I introduced myself and explained the purpose of my inspection.

The three of us held a pre-inspection meeting where we reviewed records, discussed current facility operations, and planned our tour of the facility. Ali showed me how emissions and usage records were kept in their database. Ali explained that various staff at the facility send him monthly usage data which he inputs into his spreadsheets. After the pre-inspection meeting the three of us toured the facility.

PTI No. 146-02

PTI No. 146-02 covers the ventilation hood associated with the can crushing operation. The only special condition of PTI No. 146-02 specifies the dimensions of the stack associated with this process. I observed the stack associated with the can crusher. It appeared to meet the minimum height and maximum diameter dimensions specified in the permit. Staff were in the middle of crushing cans during my inspection. The can crusher is mostly used for crushing aerosol cans, along with some paint cans. According to staff, this process operates for approximately 3 hours per week.

PTI No. 566-96B

EUENGINETEST

The facility is permitted to operate ten engine testing cells. I observed that there were 10 test cell bays. Peter stated that essentially only jet fuel is used. Occasionally, they will run diesel in one of the test cells. Fuel is stored in underground storage tanks which are hard piped to the test cells. Each test cell has a meter which tracks fuel usage. I went inside two of the test cell bays and observed the equipment. Depending on the tests (“missions”) being done, total time to set up and execute the testing can range from hours to weeks or months.

In addition to the permitted engine test cells, the facility also operates a Power and Energy Vehicle Environmental Laboratory (PEVEL). This is used to test whole vehicles under a variety of environmental conditions. The vehicle testing in the PEVEL is considered to be a mobile source of emissions and therefore is not subject to the requirement to obtain an air permit to install or stationary source air quality regulations enforced by EGLE.

Special Condition 1.1a: Limits NOx emissions from the test cells to 22.5 tons per year. The facility meets this emission limit based on the records I reviewed. NOx emissions were reported highest during the 12-month period ending in November 2022 at 2.08 tons. I verified that NOx emissions are calculated according to Appendix A.

Special Condition 1.2: States that diesel fuel usage in the test cells shall not exceed 50,000 gallons per 12-month rolling time period. Ali stated that no diesel fuel has been used during the period I evaluated (August 2022 through July 2023). The records I reviewed showed no diesel fuel usage.

Special Condition 1.3: States that jet fuel usage shall not exceed 150,000 gallons per 12-month rolling time period. Based on the records I reviewed, jet fuel usage was highest during the 12-month period ending in November 2022 at 42,691 gallons.

Special Conditions 1.4, 1.5, & 1.6: Specify recordkeeping requirements for the test cells. U.S. Army Garrison must maintain records of monthly and 12-month rolling NOx emissions and fuel usage. I verified that these records are maintained.

FGFACILITY

Special Condition 2.1a: Limits facility-wide NOx emissions to 89.9 tons per year. NOx emissions were reported highest during the 12-month period ending in June 2023 at 12.7 tons. The facility is in compliance with this emission limit based on the records I reviewed.

Special Condition 2.1b: Limits facility-wide CO emissions to 54 tons per year. CO emissions were reported highest during the 12-month period ending in July 2023 at 5.15 tons. The facility is in compliance with this emission limit based on the records I reviewed.

Special Condition 2.1c: Limits facility-wide VOC emissions to 25 tons per year. VOC emissions were reported highest during the 12-month period ending in May 2023 at 2.47 tons. The facility is in compliance with this emission limit based on the records I reviewed.

Special Condition 2.1d&e: Limits facility-wide aggregate HAP emissions to 22.4 tons per year and facility-wide individual HAP emissions to 8.9 tons per year. HAP emissions were reported highest during the 12-month period ending in May 2023 at 456 lbs (0.228 tons). In the monthly and 12-month rolling HAP emission records provided, only HAP emissions from the two coating booths were accounted for. HAP emissions from the boilers, generators, and test engines (combustion sources) were not accounted for in this spreadsheet. Total annual VOC emissions from all sources at the facility were highest in May 2023 at 2.47 tons. Facility-wide annual HAP emissions will be a fraction of the 2.47 tons of VOC, which will meet the HAP emission limits of this permit condition. I informed Ali that US Army Garrison needs to include all sources of HAP emissions in the 12-month rolling data moving forward. Ali agreed to include HAP emissions from all sources going forward. The facility is in compliance with this emission limit based on the records I reviewed.

Special Conditions 2.2, 2.3, 2.4, 2.5, 2.6, 2.7: Specifies recordkeeping requirements for FGFACILITY. U.S. Army Garrison must keep monthly and 12-month rolling records of NOx, CO, VOC, and HAP emissions. I verified that these records are kept and collected digital copies of these records. The facility must also keep monthly records of facility-wide fuel usage. I verified that monthly fuel usage records are kept.

Special Condition 2.8: Requires U.S. Army Garrison to maintain records of each material used, the VOC/HAP content of each material, the monthly clean up solvent usage and disposal rates, and purchase orders for materials. I verified that these records are maintained. The facility has an internal hazardous material management system. This data is all maintained within this system. Hazardous materials are assigned a barcode. The barcode can be scanned to determine what the material is, where it is used, and how to dispose of it.

Coating Operations

The facility operates two side-draft coating booths used to coat metal vehicle parts and occasionally full vehicles. The booths are large enough to fit full size military vehicles. Prior to coating, parts are pretreated with a liquid alkaline cleaner that is spray applied. Waste solvents from this process run into a drain which then collects in a closed storage barrel. Coatings are applied by hand using spray paint guns. The coatings used at the facility are primarily water based. Each paint booth is equipped with filters at one end of the booth. These filters are changed based on the pressure drop across the paint booth filters. There is also a paint storage and a small paint mixing room adjacent to the coating area. All coatings were stored in closed containers and organized in chemical storage cabinets. The coatings used are all labeled and tracked through the facilities hazardous material management system.

Based on my review of the usage records, the coating booths are considered exempt from Rule 201 requirements per Rule 287(2)(c), which requires that coating usage is less than 200 gallons per month and that records of monthly coating usage are maintained. I reviewed records of monthly coating usage at the facility from August 2022 through July 2023. Monthly coating usage for both booths combined was reported highest in March 2023 at 95 gallons.

Machining Equipment

The building with the coating booths also houses welding, deburring, drilling, and other machining equipment, which all vent to the general in-plant environment. Based on my observations, the machining equipment is considered exempt from the requirement to obtain a permit to install according to Rule 285(2)(I)(vi)(B) and the welding operations are considered exempt according to Rule 285(2)(i).

Boilers and Generators

The facility has 13 diesel/natural gas fired emergency generators and 13 natural gas-fired boilers used to supply supplemental power, back-up power, and heat to the operations at the facility. During my inspection, Ali & Peter led me on walking tour of the facility to see several of the emergency generators, the cogeneration unit, and natural gas fired boilers located on the property. I did not view each boiler and emergency generator during this inspection. I looked at six of the boilers – Three of them were Fulton boilers with 6MMBTU/hr maximum heat input, two of them were Clayton boilers with 15MMBTU/hr maximum heat input, and 1 of them was a Victory boiler (nameplate was under insulation and not visible). I also looked at the cogeneration unit.

Based on the maximum heat input information provided to me about the boilers, the boilers at the facility are considered exempt from the requirement to obtain a permit to install per Rule 282(2)(b) (i) since they have a maximum heat input less than 50MMBTU/hr and are natural gas fired. The boilers are subject to the Area Source Boiler MACT standard, as specified in 40 CFR Part 63 Subpart JJJJ, but do not have any applicable requirements under this part. Boilers at the facility that are over 10 MMBTU/hr are also subject to the requirements of 40 CFR Subpart Dc, Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units. This NSPS requires that the facility maintain records of fuel usage for these boilers. I verified that fuel usage records are kept for all boilers regardless of size.

The facility has 13 emergency generators. The new diesel emergency engines at the source are subject to 40 CFR 60 Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines. The new natural gas-powered generators are subject to 40 CFR 60 Subpart JJJJ, Standards of Performance for Stationary Spark Ignition Internal Combustion Engines. Based on their maximum heat capacity (less than 10MMBTU/hr), the emergency generators are exempt from Rule 201 requirements pursuant to Rule 285(2)(g).

In order to demonstrate compliance with both 40 CFR 60 Subpart JJJJ and 40 CFR 60 Subpart IIII, all emergency engines must be certified and maintain records of non-emergency operating hours for each engine. Both standards also limit non-emergency operating time to 100 hours, including time for maintenance checks and readiness testing. The facility provided records during a previous inspection demonstrating that all of the emergency engines at the facility are certified. Ali stated that no new generators have been added since that time.

Ali showed me records of emergency generator usage for 2022 and so far in 2023. Total non-emergency hours for each emergency generator were well below 100 hours during each 12-month rolling period I reviewed. The hours log for the emergency generators indicates that all emergency generators satisfied the requirements of 40 CFR Part 60 Subparts JJJJ and IIII.

Reciprocating internal combustion engines (RICE) may also be subject to 40 CFR Part 63 Subpart ZZZZ, National Emissions Standards for Hazardous Air Pollutants for Stationary RICE (commonly known as the RICE MACT). EGLE has not accepted delegation to implement and enforce the RICE MACT at area sources of HAPs and therefore compliance with this standard was not evaluated.

Cogeneration Unit

Up until May 2023, the facility operated a natural gas fired cogeneration unit equipped with a waste heat steam boiler. The boiler is heated with the exhaust gases from the generator. The cogeneration unit has an output of 1.2MMBTU/hr (479 HP). Ali stated that prior to May 2023 the unit was operated for 7 hours per day for peak shaving (11 am to 6 pm), but is no longer used since the facility built a new electrical substation. U.S. Army Garrison reached out to AQD in 2010 for clarification on whether or not the cogeneration unit would need a permit to install. AQD staff advised U.S. Army Garrison that this unit does not require a permit and is exempt under Rule 285(2) (g) since it has a maximum heat input less than 10MMBTU/hr. In general, heat input in an internal combustion engine can be estimated assuming a 25% thermal efficiency. Using these numbers gives a heat input of 4.8 MMBTU/hr in the cogeneration unit.

This cogeneration unit is not certified for compliance under NSPS JJJJ. Compliance with NSPS JJJJ required that the facility do an initial performance test on this generator within 1 year of installation. US Army Garrison conducted this test in 2015. I reviewed the test report and found that the results showed compliance with the emission limits of NSPS JJJJ. I verified that maintenance records are kept for the generators at the facility. I verified that emissions from this unit are included in the facility-wide emission totals.

I left the facility at around 12 pm.

Recordkeeping Issues

While reviewing the original emissions record spreadsheet that the facility submitted as part of this inspection, AQD noticed that some of the reported emissions did not match what the facility reported in MAERS in 2022. After reviewing the spreadsheet with Ali, it was determined that errors were made when the facility transferred emissions data from their internal database to the emissions spreadsheet. We did not determine the exact source of the errors, but part of it was because unit conversions were not set up properly. During a Teams meeting, Ali was able to show me that their internal database shows emissions that are consistent with what the facility reported to MAERS in 2022. Ali provided me with the emissions data from their internal database. Ali apologized and stated that they moved all their data to this new database in the past year and facility staff are still adjusting to the new system.

There were not emission limit exceedances reported in the original emissions spreadsheet or the internal database. All emissions data in this inspection report were taken from their internal database. At AQD discretion, no violation notice will be issued for the recordkeeping issues identified.

Due to the recordkeeping errors identified during this inspection, AQD is requiring that US Army Garrison submit complete emission and usage records again along with their 2023 MIEnviro Portal (formerly MAERS) submittal. If US Army Garrison cannot submit complete emission records which are consistent with what they report in their 2023 MIEnviro Portal report, then a violation notice will be issued.

Compliance Determination

Based on my inspection and record review, U.S. Army Garrison is operating in compliance with the Federal Clean Air Act; Article II, Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451); the administrative rules; and Permit to Install (PTI) Numbers 146-02 and 566-96B.

NAME Adam Bogner

DATE 9/27/2023

SUPERVISOR R. Kelly