

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

B276357347

FACILITY: U.S. Army Garrison-Detroit Arsenal		SRN / ID: B2763
LOCATION: 6501 E Eleven Mile Rd, WARREN		DISTRICT: Warren
CITY: WARREN		COUNTY: MACOMB
CONTACT: Peter L. Schappach , Environmental Protection Specialist		ACTIVITY DATE: 03/18/2021
STAFF: Kaitlyn Leffert	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: FY2021 Scheduled Inspection		
RESOLVED COMPLAINTS:		

On March 18, 2021, I, Kaitlyn Leffert, 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 primarily a research and development facility, with buildings used for office space, research laboratories, vehicle testing, and facility operations and maintenance. The research and development activities at this site are primarily focused on vehicle testing and development. The facility is permitted to operate 10 emission 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.

On Friday, March 5th, I contacted Peter Schappach, Environmental Protection Specialist, U.S. Army Garrison – Detroit Arsenal to request the required records and schedule the inspection. On March 10th, Mr. Schappach sent the requested records, including facility-wide emissions calculations and fuel usage records. While air quality inspections are typically conducted entirely on-site and unannounced, the inspection was scheduled ahead of time due to the ongoing concerns related to COVID-19.

Facility Inspection

I arrived at the facility around 9:00 am on March 18th. I first went through security at the guard shack and then was greeted by Peter Schappach. Due to the size of the facility, Mr. Schappach first led me on a driving tour of the facility, which was done with each of driving in our separate cars and him explaining what we were seeing over the phone. I was provided a map of the Detroit Arsenal complex, which is attached to the physical copy of this report. Following the driving tour, we stopped to visit the buildings where permitted equipment and potential emission sources are located.

We first went to the building where the can crushing operations are located. PTI No. 146-02 covers the ventilation hood associated with the can crushing operations. The permit does not contain any specific requirements, beyond the dimensions of the stack associated with this process. When entering the building, I observed the stack associated with the can crusher. It appeared to meet the minimum height and maximum diameter dimensions specified in the permit. The can crusher was not in use on the day of my inspection. I observed the area where cans were crushed and the associated hood where emissions are vented to ambient air. The

area around the can crushing operations and the ventilation hood appeared to be well maintained.

The can crushing operations are in the same building as the operations that manage the internal hazardous material tracking and management system. When any chemical or potentially hazardous material is received onto the campus, it is barcoded and input into this hazmat management system. The materials are then sent to the section of the arsenal where they are needed and following use, they are sent back to hazmat management building, where the barcode can be scanned to determine what the material is, where it was used, and how it should be disposed of. Through this system, staff showed me how they can pull information on any of the products that are currently on-site. They can even query for materials based on their components, such as any VOC-containing materials and identify their composition from within that system. This hazardous material management and recordkeeping system satisfies the requirement that the facility maintain records of all VOC and HAP- containing materials, including records of percent VOC or HAP, usage rates and disposal records, and purchase orders for these materials (PTI No. 566-96B, S.C. 2.8). All of this information is available within the internal hazardous material management system and can be queried as needed.

Engine Test Cells

I also visited building that houses the engine test cells. In this building, the facility operates six standard engine test cells, two drive-in test cells, one large test cell used for whole tanks, as well as three small test cells for testing batteries. The three small battery testing cells are not burning fuel and are not generating emissions that are vented to ambient air. These units are not covered by PTI No. 566-96B. All of the fuel-burning test cells primarily utilize F24 fuel, which is considered to be equivalent to JP8 fuel. The test cells are also equipped to burn diesel fuel. However, F24 fuel is the only fuel being used in the cells at this time.

During my inspection, Test Cell #1 was the only one operating, while the other were in various stages of preparation for future tests. The engine tests being performed at the facility can take weeks to set up, and the test cells often have long periods of downtime between engine testing periods. I entered the observation area for Test Cell #1, where staff were currently observing output parameters of the engine.

In addition to the standard engine test cells, I also visited the Power and Energy Vehicle Environmental Laboratory (PEVEL), which is a vehicle test laboratory, where whole vehicles can be tested in a variety of environmental conditions that may be encountered in the field. Conditions such as solar intensity, temperature, and humidity can be controlled to mimic real world conditions. The vehicles tested in this laboratory also primarily run on F24 fuels.

Coating Booths

Following our tour of the engine test cell facility, Mr. Schappach and I visited the building where coating operations are located. The facility operates two paint booths, which are used to coat metal tank parts. These operations are primarily used to refurbish tanks to be sent back out in the field. The booths were not operating at the time of my inspection and the operation was between coating batches while I was there.

Prior to coating, the parts are hung on metal racks and 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. The metal racks with the hanging parts are then wheeled into one of the two paint booths, where 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 pressure within the paint booths. An increase in pressure in the booth indicates that the filters are becoming saturated and need to be replaced. There is also an area between the two paint booths where coatings are stored, as well as a small room where coatings are prepared for use in the booths. All coatings are all 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.

The coating booths are considered exempt according to Rule 287(2)(c)(i). According to coating usage records provided with their MAERS report, the facility used a total of 870 gallons of coatings during the 2020 calendar year. Coating usage is consistent from month to month and ranged from 63.1 to 77.7 gallons per month over the course of the year.

Boilers and Emergency Generators

The Detroit Arsenal complex is powered by a number of small boilers and emergency generators. During our initial driving tour, Mr. Schappach identified the areas where these boilers and emergency generators were located. I requested a copy of the list of all emergency generators and boilers, including information on make, model, and output, which I was provided following the inspection.

I inspected the North Arsenal Steam Plant, which is one of the boiler houses at the facility and is used to power the test cell building, as well as some of the other nearby buildings. The boiler house had three Fulton natural-gas fired boilers, which can also run on propane, as well as two Clayton boilers. The Fulton boilers are the ones typically operated, while the Clayton boilers are only used when Test Cell 9, which is an entire tank test cell, is operated.

Following the inspection, I reviewed the list of boilers and generators that was provided by the facility. All of the boilers are considered exempt from the requirement to obtain a permit to install per Rule 285(2)(g). The boilers at the facility are subject to the Area Source Boiler MACT standard, as specified in 40 CFR Part 63 Subpart JJJJJ, but do not have any applicable requirements under this part. Two boilers over 10 MMBTU/hr are 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. Fuel usage records were provided prior to the inspection.

The facility has multiple 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.

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. Following my inspection, I was provided copies of certification for all of the emergency engines operated at US Army Garrison – Detroit Arsenal.

The facility also provided records of emergency generator usage for 2020 and so far in 2021. In 2021 so far, total non-emergency hours of operation across all generators at the facility ranged from 0 to 15 hours of operation as of April 2021. In April 2021, most of the engines operated for around 1 hour, including both emergency and non-emergency operating time.

In 2020, non-emergency operation across all generators at the facility ranged from 9.1 to 106.7 hours for the year. There was one diesel-powered generator that exceeded the allowed 100 hours of non-emergency operating time under 40 CFR 60 Subpart JJJJ. Mr. Schappach had notified EGLE of as soon as they became aware of the exceedance and on January 7, 2021, AQD staff issued a violation. In the response to the violation, the facility identified that the exceedance had occurred as a result of a programming error, which allowed the generator to run on recurring mode, which meant it was automatically switching on and off at regular intervals over the course of the fall and winter of 2020. The facility has since turned off this recurring mode to prevent future violations of this type.

Existing area source reciprocating internal combustion engines (RICE) are 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 assessed during the inspection.

Records Review

PTI No. 566-96B requires U.S. Army Garrison – Detroit Arsenal to maintain records of fuel usage and NO_x emission calculations for the test cells at the facility. I was provided a copy of monthly fuel usage for the engine test cells from January 2019 through February 2021. Monthly usage of F24/J8 fuel over that time ranged from 92 to 11,895 gallons. Fuel usage is widely variable and depends on what type of engine tests are being conducted. The permit limits jet fuel usage to 150,000 gallons per 12-month rolling time period (PTI No. 566-96B, S.C. 1.3). Total fuel usage during the 12-month period ending in February 2021 was 21,631 gallons. This was also the highest 12-month rolling total fuel usage over the compliance period. Based on the provided records, Detroit Arsenal appears to be operating in compliance with the fuel usage limit for EUENGINETEST.

The permit also contains a limit on diesel fuel usage of 50,000 gallons per 12-month rolling time period. Based on the records, diesel fuel was last used in the test cells in January 2019. In that month, 20 gallons of diesel fuel usage was recorded. This is consistent with the information provided during the inspection that diesel fuel is no longer used in the test cells.

Detroit Arsenal is required to maintain records of monthly facility wide fuel usage. The facility provided copies of monthly fuel usage from March 2020 through February 2021 for all boilers, generators, and engine test cells. These records are used to calculate facility-wide emissions and are also required by the NSPS and MACT standards that the boilers and generators are subject to.

PTI No. 566-96B sets facility-wide emission limits for NO_x, CO, VOC, and hazardous air pollutants (HAPs), as determined based on a 12-month rolling time period (S.C. 2.1). The facility is also required to maintain records of monthly and 12-month rolling emissions calculations for all pollutants with permitted emission limits (PTI No. 566-96B, S.C. 2.3 through 2.6). I was provided monthly and 12-month rolling records of individual and aggregate HAPs, CO, NO_x, and VOC. The facility also provided calculations for PM, SO₂, and Ammonia, although there are not any permit limits for emissions of these pollutants.

A summary table of 12-month rolling emissions at the end of February 2021, along with the associated permit limits for each of those pollutants is provided below. The provided records indicated that facility-wide rolling 12-month emissions of all permitted pollutants were consistent across the previous two years and the 12-month rolling emissions ending in 2021. The 12-month rolling period ending in February 2021 is the one where the highest emissions

were observed for HAPs, Formaldehyde, and VOCs, and appears to be representative of typical 12-month rolling emissions for NO_x and CO. Based on the provided emissions calculations, U.S. Army Garrison – Detroit Arsenal appears to be in compliance with all facility-wide emission limits.

Table 1: Summary of 12-Month Rolling Emissions with the Permit Limits for HAPs, NO_x, CO, and VOC

Pollutant	12-Month Rolling Emissions at the end of February 2021 (tpy)	Emissions Limit from PTI No. 566-96B (tpy)
Aggregate HAPs	0.28	22.4
Formaldehyde (Highest Individual HAP)	0.12	8.9
NO_x	11.8	89.9
CO	4.1	54.0
VOC	2.1	25.0

The permit also limits NO_x emissions from EUENGINETEST to 22.5 tpy, as determined on a 12-month rolling time period (PTI No. 566-96B, S.C. 1.1a). Total NO_x emissions from the engine test cells in the 12-month period ending in February 2021, which was the period with the highest 12-month rolling NO_x emissions from the engine test cells, were 2,113 pounds or 1.06 tpy. The emissions factors used to calculate monthly and 12-month rolling emissions from EUENGINETEST are the same as those used in MAERS calculations. The provided emissions calculations and fuel usage records are consistent with values previously reported in MAERS. Based on the provided calculations, the facility appears to be operating in compliance with the NO_x emission limit for the engine test cells at the facility.

2020 MAERS Submittal

Last fall, AQD staff received notification from Cheryl Neades of U.S. Army Garrison – Detroit Arsenal regarding the terms and conditions of the Michigan Air Emissions Reporting System (MAERS) online submittal. Specifically, it was identified by legal staff at the facility that the terms for submitting the MAERS electronically were in potential violation of the Anti-Deficiency Act. After some discussion between the facility, field staff, and AQD staff from the Emissions Reporting and Assessment Unit (ERAU), it was decided that the facility should submit MAERS via a paper submittal for this reporting cycle and the possibility of modifying the terms for electronic submittals would be explored for future submittals by the facility. I received a copy of the paper MAERS submittal from the facility on March 3, 2021.

Can Crusher

Following my inspection, on April 2nd, 2021, Mr. Schappach contacted me to inform me that U.S. Army Garrison - Detroit Arsenal is planning on replacing their can crusher with a new one. The ventilation hood on the existing can crusher is currently permitted by PTI No. 146-02. The hood will not be modified by this action, it would just be a replacement of the can crusher. Mr. Schappach was specifically wondering if any changes to the PTI would be needed if the crusher was replaced. I informed him that if it is a true one-for-one replacement of the crusher and that nothing else is changing with the operation, then the action may be exempt per the meaningful change exemptions. I let him know that it would be the responsibility of the facility to demonstrate this exempt status.

Conclusion

U.S. Army Garrison – Detroit Arsenal previously violated the requirements of 40 CFR Part 60 Subpart JJJJ by operating one of their diesel-powered emergency generators over the allowed 100 hours of non-emergency operating time. This violation has been corrected and adjustments were made to the generator programming to prevent a recurrence of this violation. Based on my on-site inspection and review of the required recordkeeping, U.S. Army Garrison – Detroit Arsenal appears to now be operating in compliance with the conditions of PTI Nos. 566-96B and 146-02, as well as all applicable air quality rules and regulations.

NAME

DATE 07/12/2021

SUPERVISOR

