

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

K324929204

FACILITY: Michigan State University		SRN / ID: K3249
LOCATION: 426 Auditorium Rd., EAST LANSING		DISTRICT: Lansing
CITY: EAST LANSING		COUNTY: INGHAM
CONTACT: Thomas Grover, Environmental Compliance Officer		ACTIVITY DATE: 04/14/2015
STAFF: Brian Culham	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: This was a Scheduled Inspection and a Partial Compliance Evaluation (PCE). An inspection of the TB Simon Power Plant is scheduled for next week. Following that inspection a Full Compliance Evaluation (FCE) will be completed.		
RESOLVED COMPLAINTS:		

**Contact** – Tom Grover, MSU Office of EH&S, [grovert@msu.edu](mailto:grovert@msu.edu)  
Mary Lindsey-Frary, MSU Office of EH&S, [lindseym@msu.edu](mailto:lindseym@msu.edu)

**Purpose** – This was a Scheduled Inspection and a Partial Compliance Evaluation (PCE). An inspection of the TB Simon Power Plant is scheduled for next week. Following that inspection a Full Compliance Evaluation (FCE) will be completed.

**Description** – Michigan State University (MSU) is a learning institution with a campus that covers several square miles. Several sources of air emissions are scattered about the campus including a coal fired power plant, multiple incinerators, and many reciprocating internal combustion engines. AQD determined that the campus was one stationary major source and the source was issued Renewable Operating Permit (ROP) MI-ROP-K3249-2009. The ROP is in two sections. The TB Simon Power Plant is managed as a separate section from the rest of campus.

**Location** – The emission units are located in separate physical locations scattered about the MSU campus. The campus is in East Lansing straddling the Red Cedar River. The south side is University Farm with the surrounding area being mostly agricultural and recreational land use. The north side of campus borders commercial and residential land use.

**History** – A ROP renewal application was received on May 14, 2014. A working draft of the ROP renewal is presently being reviewed. When approved, the working draft will be shared with MSU staff. Several permit amendments have been issued since the last inspection, including changes to engine test cells and power plant boiler operations.

**Regulatory Applicability** – Because of emissions from the T.B. Simon power plant, Michigan State University (MSU) is a PSD Major Source for the criteria Pollutants NO<sub>x</sub> and SO<sub>x</sub>. MSU is also a Title V Major Source for the same criteria pollutants. Additionally, MSU is also a Title V Major source of Hazardous Air Pollutants (HAP), because of HCl emissions from T.B. Simon. MSU has been issued Renewable Operating Permit MI-ROP-K3249-2009. Several NSPS and MACT subject processes have also been identified at the source.

**MAERS/Fees** – Because MSU is a Major Source it is required to submit an annual emissions report and pay fees. The MAERS report of 2014 emissions data has been submitted, was certified, and has been reviewed.

**Activity** – I arrived at 150 Giltner Hall at 8:30 a.m. as scheduled the week prior. The inspection was scheduled because T. Grover needed time to make sure that various MSU staff would be available at the many locations that would be visited. I met with Tom Grover and Mary Lindsey-Frary of the MSU Office of Environmental Health and Safety. Tom drove us to the various sites.

#	Emission Unit or Flexible Group	Location	Description	Permit Number or Exemption	Comp. Status
1	FG-WSF	Jolly Rd.	2 drum hoods and 1 lab hood.	PTI 175-11	C
2	EU-1-DCPAHIN01	Beaumont Rd. University Farms	Pathological Waste Incinerator	MI-ROP-K3249-2009	C
3	EU-1-CREMATORY	Beaumont Rd. University Farms	Pathological Waste Incinerator	MI-ROP-K3249-2009	C
4	EU-1-FLNRINC01	Farm Lane Rd. behind Simon	Institutional/Pathological/Med. & Infectious/Pharmaceutical	PTI 28-12	C

			Waste Incinerator		
5	EU-ENCLSD_FLARE	College Rd. University Farms	Methane Digester with a flare and RICE engine/generator	PTI 95-12	C
6	EU-DIENGINE	College Rd. University Farms	Methane Digester with a flare and RICE engine/generator	Rule 285(g) NSPS JJJ MACT ZZZZ	C
7	FG-TESTCELLS	Bouge St.	2 engine test cells	PTI 229-05A	C
8	EU-TESTSTAND	Bouge St.	an engine test stand.	PTI 229-05A	C
9	FG-1-STERILIZERS	Bouge St. Vet Clinic	One ETO sterilizer with catalytic oxidation.	MI-ROP-K3249-2009	C
10	FG-EMERGENZZZZ	Various	Approx. 60 individual units scattered across campus.	MACT ZZZZ	C
11	FG-COLDCLEANERS	Various	5 Saftey Kleen parts washers	MI-ROP-K3249-2009	C

### 1. FG-WSF

This is a waste facility used to consolidate, drum, and label liquid laboratory waste for proper storage and disposal. The waste is received from various laboratories across campus. A permit was issued March 19, 2012 for the purpose of clarifying recordkeeping requirements and to simplify the conditional permit exemptions that applied to emissions discharged to atmosphere from the hoods. The emission unit is being added in the ROP renewal.

Three consolidating stations are installed. Two stations are for filling 55 gallon drums and one is for consolidating small bottles into medium size containers. Only one station in the facility is operated at a time. Access to the building during consolidation is denied unless persons are properly trained and attired. Inspectors will not be allowed to witness actual operations unless properly trained and attired.

Benzyl chloride, ethylene dibromide, and hexachlorobutadiene are not allowed to be consolidated at this facility. All drums and containers appeared to be appropriately labeled. The materials are recorded as they are consolidated. There was no evidence in the records I looked at of any of the three chemicals identified above.

Logs are being maintained of the hours of operation of each fume hood. Records for each station were submitted following the inspection along with the monthly summary for March. The 12-month period ending March was reported as a total of 124.3 hours of operation. The permit limit is 300 hours.

Permit 175-11 requires an air monitoring study every 12 months. 4-ethyltoluene and propylene are no longer required to be analyzed during the study. The most recent air monitoring occurred over May, June and July of 2014. A final report was submitted July 29, 2014. A high acetone concentration of 87 ppb was identified.

The permit does not contain emission limits for specific chemicals. Ambient impact is restricted by hours of operation and by defined work practices. Dispersion from the stack point to the nearest receptor is expected to provide adequate dilution to protect human health when the permit conditions are being met.

### 2. EU-1-DCPAHIN01

The DCPAH facility is located at, and operated by MSU, but includes other agencies such as MDNR and MDARD. The isolated facilities primary purpose is for veterinary diagnostic and disease control, but is also designed for holding and disposing of animals if an epidemic disease event should occur. The pathological waste incinerator located at this location is rated at 1200 pounds/hour.

Scott Crandall is one of the operators of the MSU incinerators. He met us at the facility and allowed us access. S. Crandall maintains a Method 9 certification and was last certified by ETA. S. Crandall stated that he has certified every 6 months since 1998. Method 9 evaluations of stack opacity are completed daily during operation. A copy of a Method 9 evaluation was submitted to me after the inspection. The evaluation was for March 6, 2015 and showed 0% opacity. The opacity from the incinerator stack was 0% when I left the location.

The incinerator had been loaded and was operating during the inspection. Horses had been load earlier that morning. The permit restricts loaded materials to pathological waste and medical/infectious waste. Records are maintained of load times, weights, and descriptions of loaded material. Temperature on the secondary chamber digital read out was 1836 °F. A minimum of 1800°F is required. The two primary chambers were at 1690°F and 1695°F.

The required Operational and Maintenance Guide (MAP) and Waste Management Plan have been submitted as appendices to the ROP.

A copy of a record for March 6, 2015 was submitted to me. The load sheet indicated horses and parts had been charged that day. A total of 61,000 pounds were incinerated during March 2015.

### **3. EU-1-CREMATORY**

EU-1-CREMATORY is located in a separate building situated inside the fenced in area at DCPAH. It is a 75 pound/hour pathological waste incinerator used to dispose of pet remains. Charges are usually one animal at a time so that ashes may be returned to the pet owner.

The incinerator was operating during the inspection. S. Crandall displayed the temperatures readouts. A pen plotter and rotating disk are used to record afterburner and primary chamber temperatures as required by the ROP. I checked the current disk readout and determined that the afterburner was being maintained at 1650 °F. The permit limits the secondary chamber (afterburner) to a minimum of 1600 °F. The primary chamber digital readout was operating at 1550 °F.

Records of the loads charged and the date and time are being maintained. The records indicated that only animal remains were being charged to the incinerator. Today dogs were being incinerated. A stack of plotted disk charts from past operations were available to review.

The stack height and dimensions appeared to satisfy the permit restrictions. Opacity was 0%.

### **4. EU-1-FLNRINC01**

This unit may be subject to a Federal Implementation Plan (FIP) for requirements as developed by 40 CFR 60 subpart FFFF, Emission Guidelines and Compliance Times for Other Solid Waste Incineration (OSWI) Units That Commenced Construction On or Before December 9, 2004. I am not aware of either a State or Federal Plan developed for this source.

A stack test for particulate matter was completed on October 16, 2012. The analytical results were received on November 20, 2012. The test report was reviewed by Nathan Hude of the AQD Technical Programs Unit. Nathan accepted the results. Particulate Matter was reported at 0.0118 lbs/1000 exhaust gas. The limit is 0.20. The results indicate compliance with the limit. During the test VE's were determined to be 3.13%. The limit is 20%.

I did not inspect this incinerator. I did review and collect records. Copies of records for operations on March 24, 2015 were submitted to me. Incineration on that day included 2385 pounds of solid waste and 285 pounds of pathological waste. No infectious waste was burned. Infectious waste is limited to 10% of the loaded weight. The secondary chamber (afterburner) was reported at 1825 °F. A minimum of 1750 °F is required by permit. The pen plot showed afterburner operations between 1775 and 1875 throughout the day. The daily VE reading was reported at 0% opacity.

The required Operational and Maintenance Guide (MAP) and Waste Management Plan have been submitted as appendices to the ROP.

### **5. EU-ENCLSD FLARE and 6. EU-DIENGINE**

The dairy farms are located on College Road. Waste generated by the dairy cows is being digested to produce biogas (methane). Other sources of carbon may also be added to the digester. The biogas is combusted by a reciprocating internal combustion engine powering a generator set. A flare has also been installed to combust gas when the generator set is down. A continuous monitor for hydrogen sulfide (H<sub>2</sub>S) gas concentration from the digester has been installed.

Permit to Install 95-12 was issued August 23, 2012. The emission unit and conditions are being added to the ROP. The installation of the digester is complete and presently is at "non-stop" operation.

The unit was in operation during the inspection. The hour meter indicated 9,406 hours of operation. During my inspection the gas generated by the digester tank was 62.4% methane and contained 47.5 ppm of H<sub>2</sub>S. Engine operation can be sustained at methane values greater than 40%; therefore engine heat input from digester gas is currently near 100%. H<sub>2</sub>S in the digester gas is limited to less than 200 ppm.

The digester system includes a condenser tank and carbon system. The condenser tank removes water, which reduces the H<sub>2</sub>S content. The carbon system also helps remove residual H<sub>2</sub>S. The materials collected from the condenser tank and carbon system are returned to the digester tank.

The generator set is NSPS subpart JJJ certified and therefore does not need an initial performance test.

When the generator set is down, by-pass of the bio-gas must exit through the flare. The flare has only been operated for testing purpose and was not operating during my inspection. The flare stack appeared to be of the proper dimensions.

#### **7. FG-TESTCELLS and 8. EU-TESTSTAND**

EU-1-01097ENGINE was redefined in PTI 229-05A.

There were no engines in operation during the inspection. One engine was in place and I was able to identify the catalytic convertor. Records were submitted to me and indicated that during a 6 month period beginning January 2014, only 5 gallons of gasoline were combusted.

Gasoline is measured by filling up the 5 gallon container used as a gas tank.

The proposed testing that required the permit amendment has been cancelled. There is presently no testing being conducted at this location.

#### **9. FG-1-STERILIZERS**

This was originally permitted by a general permit to install. The requirements of Subpart WWWW for Hospital Ethylene Oxide (EtO) Sterilizers were removed when the emission unit was rolled into the ROP. MSU is not a Hospital, nor an area source of HAP, and is therefore not subject to WWWW.

Although the EtO sterilizer was not in operation, I did identify the Catalytic Oxidizer (CatOx), the sterilization chamber, evacuation equipment, and dispenser. The dispenser uses a 3.52 oz. single use canister. I examined the canister and learned that it was 100% EtO without any inert HCFC propellants. Records submitted to me indicated that for the month of February a total of 10 cans, or 35.2 oz., or 2.2 lbs. was used. Only one canister was used each day of operation. The CatOx is expected to be 99.9% efficient at controlling EtO, meaning .0022 pounds of EtO was emitted in February. The permit limit is 0.141 pounds per month.

The CatOx was last maintenance in December by an outside firm and is inspected by contract on an annual basis.

Remote monitoring systems are installed and, among other things, monitor for leaks in the work area around the sterilization chamber. Horns and lights are activated for volatile organics analyzed in levels greater than 2.0 ppm (probably in terms of butanol). I saw a level of 0.6 ppm. The lab attendant stated that it was probably reading volatiles from colognes or aftershave.

#### **10. FG-EMERGENZZZ**

There are approximately 60 generator sets scatter across campus. Some are over 500 horsepower, some less; some are compression ignition, others are spark. Many of these units have not operated since they became subject this year.

Most engines are exempt from Air Pollution Control (APC) Rule 201 by Rule 285(g), but are still subject to various federal restrictions such as 40CFR63 (MACT) subpart ZZZZ or 40CFR60 (NSPS) subpart JJJ. Several different tables are being added to the ROP to help identify the various applicable requirements.

I examined one large generator set at DCPAH. It was a Cummins manufactured unit rated at 450 BHP. T. Grover did not have keys to open the operator's panel, but we could see a digital display. The unit was new enough that data would be logged by a PLC. According to Grover, all units are equipped with an analog meter or the digital logger to track operational hours.

At present records are being maintained by the individual operators at their respective locations. T. Grover stated that he is working on centralizing records for all units. We discussed the importance of logging operational date, hours, and operational purpose to satisfy and show compliance with the definition of "emergency use". T. Grover submitted samples

of maintenance records for 5 different generator sets.

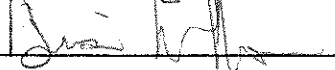
**11. FG-COLDCLEANERS**

There are 5 cold cleaners. They are located at the University Farms, Golf Course, Physical Plant, and 2 at Landscape Services. These are small APC Rule 281(h) exempt units. I did not look at any cold cleaners during my inspection. The units are managed by Safety-Kleen.

According to T. Grover the cleaning solvent used in the cold cleaner is Safety-Kleen 105 solvent supplied and recycled by Safety-Kleen. Safety-Kleen 105 solvent is 99% recycled petroleum distillates with less than 0.2% tetrachloroethylene (perc) and trichloroethylene (TCE). The vapor pressure of the solvent is reported at 0.02 psia @ 100°F.

**Summary** - I left the facility at 12:30 p.m. I did not identify any violations during the inspection.

Conversations with T. Grover and M. Lindsey-Frary over the past two years have dealt with topics involving permits to install, ROP applications, monitoring study details, clarification of conditions, and plan submittals. Good on-going communication has been an asset when working with this source.

NAME  DATE 4/21/2015 SUPERVISOR \_\_\_\_\_

