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

N749656242

FACILITY: LINCOLN MEMORIAL PK CEMETERY		**SRN / ID:** N7496
LOCATION: 21661 FOURTEEN MILE RD., CLINTON TWP		**DISTRICT:** Warren
CITY: CLINTON TWP		**COUNTY:** MACOMB
CONTACT: Sue Sullivan , Manager		**ACTIVITY DATE:** 10/29/2020
STAFF: Adam Bognar	**COMPLIANCE STATUS:** Non Compliance	**SOURCE CLASS:**
SUBJECT: Scheduled Inspection		
RESOLVED COMPLAINTS:		

On October 29, 2020, Michigan Department of Environment, Great Lakes, and Energy– Air Quality Division (EGLE-AQD) Staff, I, Adam Bognar conducted a scheduled inspection of Lincoln Memorial Crematorium (the "facility"), located at 21661 East 14 Mile Road, Clinton Township, MI 48305. The purpose of this inspection was to determine the facility's compliance status with the Federal Clean Air Act; Article II, Part 55, Air Pollution Control of Natural Resources and Environmental Protection Act, 1994 Public Act 451; Michigan Department of Environment, Great Lakes, and Energy (EGLE-AQD) rules; and Permit to Install (PTI) Nos. 281-05 and 251-07.

I arrived at the facility at 10 am. I met with Ms. Sue Sullivan, Manager (sullys48312@hotmail.com, Office: 586-791-3486). I identified myself and stated the purpose of the inspection. Ms. Sullivan gave me a tour of the facility. Mr. Martin Zimmerman, Foreman, was also present during the inspection. There are four employees that operate this crematory from 9 AM to 4 PM Monday through Saturday.

Lincoln Memorial Crematorium operates two crematory furnaces. Both are used to cremate human remains. The facility only accepts remains from a limited number of funeral homes. The facility provides a cardboard box to the funeral home to store the body in. This box is shipped to Lincoln Memorial Crematorium where it is burned in one of the two furnaces.

The facility is located on the grounds of a cemetery (Lincoln Memorial Cemetery). I-94 and a golf course are directly south of the facility. North and northeast of the facility is the Lincoln Memorial Funeral Grounds. The facility is bordered by Workmen Circle Cemetery to the west.

PTI No. 281-05 and PTI No. 251-07

These two PTI's are identical to each other – each issued for a single crematory furnace on different dates. The furnaces are both identical Matthews Cremation Division Power-Pak II natural gas fired crematories with a 150 lb/hr maximum design capacity and a 500 lb maximum load. PTI No. 281-05 was issued on December 13, 2005 for furnace "M1" and PTI No. 251-07 was issued on August 8, 2007 for furnace "M2". Therefore, I will address the conditions of both PTIs at once, highlighting any difference between furnaces as applicable.

Special Condition 1.1: Limits Particulate Matter (PM) emissions to 0.20 lbs/1000 lbs of exhaust gases, corrected to 50% excess air. Compliance with this condition is determined by monitoring the opacity of the furnace exhaust. I did not notice any opacity coming from the furnace during this inspection. An opacity sensor is present on each machine that will adjust the combustion parameters to mitigate excess opacity. Additionally there are two monitor screens near the crematories where operators can continuously view a video stream of the stacks.

Special Condition 1.2: States that the permittee shall only burn pathological wastes in the incinerator. Only pathological wastes are burned. Human remains and the boxes (wood/cardboard) used to transport the remains are the only waste burned at this facility. No animal remains are burned at this facility.

Special Condition 1.3: States that the permittee shall not combust waste in the incinerator unless a minimum temperature of 1600 ° F and a minimum retention time of 1.0 seconds in the secondary combustion chamber are maintained.

I observed the cremation process in furnace M1. To begin the cremation process, the box containing human remains is moved into position in front of the furnace entrance. The furnace is pre-heated until the secondary combustion chamber reaches 1650°F. The furnace operator opens the furnace door and inspects the flame patterns and makes sure everything looks right inside the furnace. The body is inserted into the furnace and the furnace door is closed.

Once the body was charged to the furnace, I noticed that the secondary combustion chamber temperatures began decreasing. After a few minutes in the chamber, the secondary combustion chamber temperature dipped below 1600°F. A few minutes later the temperature reached as low as 1440°F.

Mr. Zimmerman explained that the temperature sometimes dips when the furnace hasn't been used for a while. In this case, the furnace had not been used in a couple of days, which is rare according to facility staff. Mr. Zimmerman made a manual adjustment to the furnace which quickly brought the temperature back up above 1600°F. This problem is further caused by an improper flame pattern in the incinerator. Mr. Zimmerman explained that they have a work order with Matthew's Cremation to come in to fix the flame pattern, but Matthew's Cremation has been very busy during the Covid-19 Pandemic.

I explained to facility staff that operating the furnace while the secondary combustion chamber temperature is below 1600°F is a violation of their permit to install. A violation notice was sent to the facility in December 2020 seeking compliance with Permit to Install No. 281-05.

Furnace M2 was off during this inspection. There are not primary combustion chamber thermocouples on either furnace, only the secondary combustion chamber temperature is monitored/recorded.

Special Condition 1.4: States that the incinerator shall be installed, maintained, and operated in a satisfactory manner. Due to the issue noted above, Furnace M1 is not in compliance with this condition.

A trained operator, Mr. Zimmerman, is responsible for doing basic maintenance checks on the incinerator such as replacing the thermocouple, inspecting flame patterns, checking for signs of wear, and replacing temperature recording discs. Mr. Zimmerman explained that they do not accept oversized bodies at this facility. Anything more than about 400 lbs is rejected.

The furnace door is opened after about 2 hours of combustion time to check on the body. The furnace door is only cracked about 6 inches for this check. There is a line on each machine marking this 6-inch opening.

A copy of the manufacturer's manual is available in a cabinet near the furnaces. Guidelines on starting, stopping, and maintaining the furnace are posted near each furnace.

A service technician from Matthew's Cremation comes out annually to inspect and service the furnaces. The last time this service was performed was on October 28, 2019.

An opacity sensor is present on both furnaces. A laser is passed through the furnace exhaust to read the opacity. If the opacity gets too high, the furnace automatically shuts down the front burners and adjusts the fuel/air ratio to reduce smoke. Each furnace stack has a camera pointed at it that broadcasts to screens inside the crematorium. Staff operating the furnaces can look at these screens to determine if any opacity is present.

Special Condition 1.5: States that the permittee shall install, calibrate, and maintain in a satisfactory manner a device to monitor and record the temperature in the secondary combustion chamber on a continuous basis. Both furnaces are equipped with thermocouples that report temperature data to a circular chart recorder. The thermocouples are inspected annually and replaced as needed. The thermocouples were inspected in October 2019 and marked as "good" condition. The circular chart recorder only operates once the furnace is turned on and stop turning once the furnace is off.

Special Condition 1.6, 1.7, 1.8: Specifies recordkeeping requirements for the incinerators. The facility must keep records of the time, description, and weight of waste combusted in the incinerator. Additionally, the facility must keep continuous temperature data for the secondary combustion chamber during each of these combustions.

These records are maintained. Ms. Sullivan showed me the binder containing these records while I was on-site. These records have been kept in this manner since the facility began operation. These records are not kept digitally. The facility maintains hand-written logs of each cremation. I randomly reviewed records from October 2020 and June 2020. The facility notes the name of the diseased, the weight of the body, and the start and end time of each cremation.

The circular chart recorder readings were also made available to me during my inspection. Circular chart data is maintained going back to when the facility began operating. I looked at several charts randomly from October 2020 and June 2020. Based on these charts it appears that the secondary combustion chamber temperature readings are regularly kept above 1600°F. I did not notice any instance where the combustion chamber temperature fell below 1600°F in the records I reviewed. The temperature appeared to be consistent during combustion with no large fluctuations.

Special Condition 1.9: Specifies stack dimension requirements. I did not verify stack dimensions during this inspection. Both furnace stacks appear to be exhausted unobstructed vertically upwards to the ambient air.

Secondary Processing

Once combustion is complete the ashes/bones from the furnace, known as "cremains", are swept out of the furnace into a bucket. A magnet is run through these cremains to remove any metal implants/staples that may have been in the body (so they don't damage the grinder). The cremains are then run through a grinder that processes all of the cremains to a dust. The grinder is around 1-2 gallons in size and is covered while in operation. This dust is transferred from the grinder to a bag inside a box where it can be collected by the family or disposed of. This workstation is equipped with a blower that draws air through two furnace filters and exhaust the air back into the general in-plant environment. These furnace filters serve to collect some of the dust generated from the grinding and transferring processes. Another purpose of this blower system is to cool the cremains.

Emergency Generator

There is a "Winco 35000" 35 kW diesel internal combustion engine on-site used for emergency power generation. This is located directly outside the facility. Mr. Zimmerman stated that the generator has only been used 1 or 2 times. The unit is tested once per year by turning it on for about 30 minutes.

Ms. Sullivan showed me a purchase order indicating that the engine was installed on May 16, 2006. The unit is subject to 40 CFR Part 63, Subpart ZZZZ – National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (MACT ZZZZ). The only requirement of MACT ZZZZ is to comply with 40 CFR Part 60, Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (NSPS IIII). Since the engine was manufactured before April 1, 2006, the engine does not appear to be subject to NSPS IIII.

The diesel emergency generator appears to be exempt from Rule 201 requirements pursuant to Rule 285 (2)(g) since it has less than 10,000,000 BTU/hr maximum heat input (actual max heat input = 119,425 BTU/hr = 35 kW)

Compliance Determination

At the time of this inspection, Lincoln Memorial Crematorium was not operating in compliance with conditions 1.3 and 1.4 of Permit to Install (PTI) No. 281-05 and EGLE-AQD Rule 910.

Lincoln Memorial Crematorium operated the M1 crematory furnace while the secondary combustion chamber temperature was below 1600°F. A violation notice was sent to Lincoln Memorial Crematorium seeking compliance with these requirements.

NAME Adam Bogros DATE 12/9/2020 SUPERVISOR K. Kelly