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

M342956930

FACILITY: WHITE CHAPEL MEMORIAL PARK CEMETERY		**SRN / ID:** M3429
LOCATION: 621 W LONG LAKE ROAD, TROY		**DISTRICT:** Warren
CITY: TROY		**COUNTY:** OAKLAND
CONTACT: David R. Krall , Vice President & Corporate Council		**ACTIVITY DATE:** 01/27/2021
STAFF: Adam Bognar	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MINOR
SUBJECT: Scheduled Inspection		
RESOLVED COMPLAINTS:		

On January 27, 2021, Michigan Department of Environment, Great Lakes, and Energy– Air Quality Division (EGLE-AQD) Staff, I, Adam Bognar conducted a scheduled inspection at White Chapel Memorial Park Cemetery (the "facility"), located at 621 West Long Lake Road, Troy, MI. 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) No. 62-12.

I arrived at the facility at around 9 am. I met with Mr. David R. Krall, Vice President (drkrall@whitechapelcemetery.com, Cell: 248-362-7693). I identified myself and stated the purpose of the inspection. I began the inspection by reviewing the required records and discussing current operations. After the record review Mr. Krall gave me a tour of the facility.

This facility operates two crematory furnaces used to cremate human remains (no animals). The crematory facility is operated from 8 am to 5:30 pm by 2-3 full time employees. Both crematory furnaces were installed at this facility around 1930. They are both custom furnaces manufactured by Morse Boulger. Both have a maximum charge of 750 lbs/hour and a maximum burn rate of 150 lbs/hour. The two furnaces share a common exhaust stack.

Prior to cremation, remains are kept in cardboard boxes (cremation containers). Sometimes wood caskets are used. The cremation containers are inserted into the furnace along with the remains. After the cremation, the cremated remains (cremains) are transferred to a grinding station where they are cooled, screened for metals using a magnet, ground to a fine dust, then boxed into an urn/box for the family to pick up. Any metals collected such as hip replacements and staples are disposed of.

PTI No. 62-12

PTI No. 62-12 was issued on July 30, 2012 for a two natural gas fired cremation furnaces. Both furnaces are operated in the same way. Before the remains are charged to the furnace, the secondary combustion chamber is pre-heated until it reaches 1600+°F. Remains are charged into the primary combustion chamber of the furnace through a steel door at the front of the furnace. As the cremation proceeds, the combustion gases travel out of the primary combustion chamber into the secondary combustion chamber where they are further combusted. The secondary combustion chamber is located below the primary combustion chamber. The furnace design where the secondary combustion chamber is located below the primary combustion chamber is known as a "retort" furnace.

As the cremation proceeds, the secondary combustion chamber temperature continues to rise until reaching approximately 2100°F. The goal of the secondary combustion chamber is to ensure complete combustion. Incomplete combustion of remains can lead to fallout, odors, hazardous emissions, and heavy smoke; all of which can be upsetting to neighbors of the facility and/or relatives of the deceased. Neither furnace is equipped with an opacity alarm.

FG-FURNACES

Section I - Special Condition (SC) 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 proper operation of the

furnace. Proper operation includes maintaining a minimum temperature of 1600 °F and a minimum retention time of 1.0 seconds in the secondary combustion chamber. This furnace was not operating during this inspection. Based on the records I reviewed the secondary combustion chamber appears to be maintained above 1600°F during cremation.

Section I – SC 2: Limits visible emissions from these furnaces to 20% opacity over a 6-minute average. I did not notice any opacity during this inspection. Both furnaces were off. AQD has not received any recent complaints about opacity from this facility.

Section II – SC 1: States that the permittee shall only burn pathological wastes in the incinerators. Only pathological wastes are burned. Mr. Krall stated that 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. All records that I reviewed appear to indicate human cremations only.

Section II – SC 2: Limits the weight of each individual furnace charge to 750 lbs. Mr. Krall stated that nothing larger than 500 lbs (remains + cremation container weight) is accepted at this facility. I did not observe any cases larger than 500 lbs in the records I reviewed.

Section II – SC 3: States that only natural gas shall be used to fire these furnaces. Both furnaces utilize only natural gas.

Section III – SC 1: States that the permittee shall not combust waste in the incinerators unless a minimum temperature of 1600 °F and a minimum retention time of 1.0 seconds in the secondary combustion chamber are maintained. The furnaces were not operated during this inspection. Mr. Krall stated that the secondary combustion chamber is always heated to above 1600°F before the primary combustion chamber is turned on. The temperature records I reviewed showed that the furnace is always operated with the secondary combustion chamber above 1600°F while the incinerator is in operation. Generally, the secondary combustion chamber is above 2000°F during a cremation.

Section III – SC 2: States that the incinerators shall be installed, maintained, and operated in a satisfactory manner to control emissions. Based on my record review and observations during this inspection, the furnace appears to be installed, maintained, and operated correctly. A list of best recommended incinerator operation and maintenance guidelines is included in PTI No. 62-12. Mr. Krall stated the following information with regard to these best practices/guidelines.

- A trained operator, Mr. Kennith Kitson, is responsible for doing basic maintenance checks on the incinerators such as cleaning spark plugs, replacing thermocouples, and greasing bearings.
- Grates are cleaned before each cremation
- Waste is only combusted after the secondary combustion chamber reaches the minimum temperature.
- The charge doors are only opened towards the end of the cremation to check and make sure the remains are fully burned.
- Only human remains are combusted in these furnaces.
- Mr. Krall stated that staff periodically observe the stack to watch for signs of opacity. Measuring opacity at White Chapel is difficult since the stack exit point is nearly 100 feet above ground level.
- There is no manufacturers manual for these furnaces. They are very old and may not have come with a manual.
- The furnace operator inspects the furnace before each cremation. A contractor, Mechanical System Services, performs a more thorough inspection of these furnaces approximately once per year.
- There is no monitor for excess oxygen in the exhaust gas.
- Mr. Krall stated that the combustion chamber has not been damaged by exploding pacemakers.

Section IV – SC 1: Requires that the permittee install, calibrate, maintain, and operate a device to monitor and record the secondary combustion chamber temperatures. Both cremation furnaces have a thermocouple that monitors the secondary combustion chamber temperature. This thermocouple reports to a datalogger that

creates a data point every 15 seconds while the furnace is operating. Both furnaces were off during my inspection and the thermocouples both read around 65°F.

Section VI – SC 1,2,3,4: Specifies recordkeeping requirements for the incinerators. The facility must keep records of the time period, description, and weight of waste combusted in the incinerator. The facility must also keep continuous temperature data for the secondary combustion chamber during each of these combustions. Additionally, the facility must maintain records of any maintenance on these furnaces.

Mr. Krall provided me with these records during this inspection. I reviewed records from January 2020 through January 2021. The facility notes the name of the deceased, the weight of the body, and the start/end time of each cremation. The facility also maintains continuous temperature data for the secondary combustion chamber. One temperature data point is taken every 15 seconds. The records indicate that the secondary combustion chamber is always maintained above 1600°F during cremation. I noticed that the secondary combustion temperatures often reach up to 2300°F, which is quite high compared to how other crematory furnaces operate. Critical components of the crematory furnace, including the thermocouples, are inspected by Mechanical System Services annually.

Maintenance records are maintained. Mr. Krall showed me records of the most recent maintenance. Mechanical System Services repaired the refractory on the #2 unit in November 2019. There is currently a problem with the primary burner in unit #1. Furnace #1 will not be used until the primary burner is repaired and a new thermocouple is installed.

Section VIII – SC 1: Specifies stack dimension requirements. I did not verify stack dimensions during this inspection. The furnace stack appears to be exhausted unobstructed vertically upwards to the ambient air. The stack at this crematory is exhausted unusually high compared to other crematories.

Secondary Processing

Once combustion is complete the ashes/bones from the furnace, known as “cremains”, are swept out of the furnace and transferred to a grinding station. 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 pulverizes the cremains to a dust. This dust is transferred from the grinder to a box where it can be collected by the family. Dust generated from this workstation is captured by a duct fan and exhausted through a furnace filter out to the ambient air.
There is no laser engraving performed at this facility.

Compliance Determination

White Chapel Memorial Park Cemetery appears to be in compliance 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) No. 62-12.

NAME Adam Bogros DATE 3/1/2021 SUPERVISOR K. Kelly