

M4185
M4185

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

M418535375

FACILITY: Meadowcrest Memorial Association		SRN / ID: M4185
LOCATION: 5800 E Davison, DETROIT		DISTRICT: Detroit
CITY: DETROIT		COUNTY: WAYNE
CONTACT: John Topolie, Owner		ACTIVITY DATE: 06/28/2016
STAFF: Terseer Hemben	COMPLIANCE STATUS: Non Compliance	SOURCE CLASS: Minor
SUBJECT: PM, odors and record keeping		
RESOLVED COMPLAINTS:		

Scheduled Compliance Inspection

Meadowcrest Memorial Cemetery and Crematorium Association

5800 East Davison, Detroit, MI 48212 Phone: 313-891-2429

SRN: M4185

Permit#: WC C-6668, C-8703, C-10085

Responsible Official: Mr. John Topolie

Date: June 28, 2016

BACKGROUND

The Meadowcrest Memorial Cemetery and Crematorium Association (MMCC) is a full-service company that addresses human's afterlife needs. MMCC facilitates handling and transportation of deceased humans. The Company offers an option to return human's remains to clients of choice.

Cremation of deceased humans involves the reduction of deceased human body to cremains (ashes). The cremation process takes place in a digitally automated and custom-designed cinerarium constructed to accommodate human body to meet aftercare needs. The facility is permitted to operate three crematory incinerators covered under the Wayne County permits C-6668 (permitted in 1984), C-8703 (permitted in 1990), C-10085 (permitted in 1993).

The MMCC operates human cremation process using Pyra crematory incinerators. Typically, a crematory incinerator consists of componential technical parts: the health, cremation chamber, loading chamber, timer, gas/fuel supply actuator, opacity damper, electronic transmitter and receiver or reflector, and data/chart recorder. The two MMCC crematories in operation are custom-built equipment using the technology named after J. A. R. Pyra Crematory Retort with outstanding features. Technically, the J. A. R. Pyra's heavy steel door opens from the side for easy loading. Product literature states the manufacturer's claim emphasizes the loading roller is completely maintenance free; the roller drops down away from the chamber heat. The flame is delivered over the casket for faster consumption. One simplified blower in the side of the firing unit eliminates pressure back-up problems. The Pyra Crematory retort design with overhead flame and single blower allows heat to circulate below the flat hearth rendering faster pre-heat cycle. Program timers recycle the heat as needed without personal involvement of the staff. The cycled option shuts off automatically when the job is complete. The units were designed for clean burning and efficient performance. The draft element keeps ash inside the retort, rather than send it up the stack.

The Pyra Crematory Retort refractories are built with hard brick as illustrated in the attached engineering drawings [Article A]. Each stack is constructed with hard brick lined, backed with 2 inches of insulation and featuring a 14-gauge steel casing. The hearth is built flat and eliminates the possibility of fluid build-up. Ash is removed from the flat surface. There are no curved areas in which ash collection would contribute to inefficient operation. The crematory

has three large clean-out doors for easy and safe access. Each door is sealed with fire retardant gasket.

Temperature controls for both the primary chamber and stack regulate heat independently in each area. Manual control of heat output in the chamber and stack economizes burning. The first crematorium referred to as C-10058 and second crematorium (C-8073) were custom built in accordance with Pyra model technology. MMCC was registered as New Source, and regulated as minor source utilizing BACT with stacks for effective plume dispersion.

Process Flow Description

The Pyra Cremator (# 5) permitted under C-10085 is a multi-chambered unit rated up to 100 lbs. of human remains charge per hour. The cremator consists of (a) primary chamber, (b) afterburner, and (c) settling chamber. The afterburner chamber is preheated properly before main burner is ignited to begin cremation process. The primary chamber design allows for efficient mixing of combustion gases to enter the afterburner/mixing chamber. The second crematorium permitted under C-8703 is designed and operated using the procedures established for the Pyra model, except the design has a larger capacity to process higher charge. The C-8703 crematory (# A) designed similarly like Unit# 5 is rated at 200 pounds per hour maximum charge.

Flue gases are drawn into the afterburner/mixing chamber from the initial combustion process using fan-draft from the primary chamber in both crematoriums. Gases flowing into afterburner pass through and mix turbulently with the afterburner flame. Temperature inside the chamber is increased to continue the combustion process and consumes the residual gases. Gases entering the settling chamber expand and slow down. After the combustion process is completed, the design allows particulate matter the time to settle out of the airstream.

The refractory lined flue receives hot air exhaust from the settling chamber. The air passes through flue sections and exits through the top most section into the ambient air. Details of the MMCC cremator design are attached.

Inspection Narrative

I arrived at the facility premises on June 28, 2016 at 1000 hours. Temperature at the hour was 67 F and wind speed 8.1 mph coming from the NNW. Humidity was 59%. The purpose of visit was to conduct an annual scheduled inspection for compliance with emissions of Particulate Matter and odor around the crematory premises. I met the CEO and Owner, John Topolie outside the facility. We entered the building and proceeded to the reception area of facility. John and I went through a pre-inspection conference session. The CEO informed the facility had been operating satisfactorily in terms of ensuring there was no visible opacity for long, *when it occurred*, and detectable noxious odor from the crematory stack was minimized. We inspected the 2 cinerarium that looked compact and well maintained. The process was technically organized. The facility kept records manually in practice. We held a post - inspection conference after the walk-through. The Owner answered all questions posed during the interview and inspection satisfactorily. I left the area at 1240 hours.

COMPLAINT/COMPLIANCE HISTORY:

None

OUTSTANDING LOV'S:

None

PROCESS DESCRIPTION:

The Crematory process installed at the MMCC facility is a dry combustion process that utilizes a crematorium fired with natural gas as fuel, and directed with digital process control equipment. Procedurally, a deceased human remain is weighed and introduced into the crematory via roller or loading table. The crematory chamber is ignited using the hearth firing procedure under programmed preset timing sequence of activities. Timings are manually set to correlate with the weight of charge. Cremains are removed from the chamber, packaged and dressed for delivery to the customer based on request or buried in the cemetery and tomb-stoned.

EQUIPMENT AND PROCESS CONTROLS:

The essential equipment in controlling the cremation process is the air/fuel ratio actuator. Actuators are equipped with sensors set at detecting oxygen limits for maintaining minimum desired stoichiometry in combustion reaction. Operating personnel manually observes opacity and controls by the adjusting air fuel ratio control while combustion is in progress. The facility uses visual and smell technique for inspection to establish compliance with odor. The operator takes positions at an appropriate angle to the sun to observe opacity of stack effluent.

Regulatory Summary

The WC permit # C-6668 issued in 1984 did not set a defined limit for opacity for the crematory. WC permit# C- 8703 issued in 1990 set the opacity limit requirement as "There shall be no visible emissions from crematory stack". The WC permit# C-10085 issued in 1993 set opacity limit requirement as "Visible emissions from the crematory furnace shall not exceed a 6-minute average of 5 percent opacity". According to the facility owner, the Pyra crematory has been operating under the C-10085 permit since 1998 when ownership was acquired. The facility had contact with the DEQ last in November 2008 following a violation notice issued to the MMCC for an opacity violation. The violation was resolved when MMCC submitted an abatement plan for opacity control.

OPERATING SCHEDULE/PRODUCTION RATE:

The MMCC is set to operate 24 hrs. a day, 7 days a week, and 365 days in the year. However, the facility currently operates one 8 hour shift per day.

APPLICABLE RULES/PERMITS

WC Permits# C-6668 (1984); C-8703 (1990), and 10085 (1993)

State: R 201, R 205, R 224, R 225, R 301, R 331, R 901 considerations apply

Based on the above permit rules guiding regulation of human cremation, Staff observed the following:

1. In compliance – MMCC stated there has not been any modification to any system, and/ or process at the above referenced facility since the 1993 permitting (Rule 201) consistent with TOC pg. 1, Item# 1; A1-11).

Per WC: C-6668 Incinerator/Crematory:

2. This permit was issued on August 1, 1984 for installation of a Cremator for human remains. The permit was no longer valid when the process was upgraded in 1990. According to Mr. Topolie, the equipment was removed from the facility. The permit is void.

Per WC: C-8703 Crematory:

3. This permit was issued in 1990 for construction of the cremator # A50 (# A) and referred

to as Unit A. The equipment is operational at the site. The permit is active.

4. Non-compliance-Records submitted by MMCC covering the period from April 19, 2016 through July 18, 2016 showed the Unit A (C-8073) discharged 'smoking' emissions into the ambient air in 39 instances [SC. 16]. See Appendix attached.

5. Undetermined-MMCC did not demonstrate particulate emissions from the crematory did not exceed 0.095 pounds per hour nor 0.10 tons per year. There were no stack records to verify emissions compliance from the Crematorium unit A consistent with SC. 17.

6. In compliance-MMCC demonstrated exhaust gases from the crematory were discharged unobstructed vertically upwards to the ambient air from a stack with maximum diameter of 18 inches at an exit point not less than 21 feet above ground level [SC. 18]. MMCC submitted corresponding schematic diagrams of the operating stack for verification.

7. In compliance-Staff observed there was no unusual odor from the crematory stack at the time of inspection [SC. 19].

8. Non compliance- Records submitted by the MMCC covering operating period from April 19, 2016 through July 18, 2016 showed the Unit A exceeded the cremation rate of 200 pounds per hour by 212 pounds per hour on June 18, 2016 [SC. 20].

9. In compliance - Analysis of Log of operation hours provided by the MMCC showed, at an average, the facility operated the Crematory furnaces A for 1,840 hours per year counted from 2014 through 2015 and compared less than the limit set in permit# C-8703 at 2080 hours per year [SC. 21].

10. Undetermined-MMCC provided emissions records from the crematory Unit A that showed frequent smoking emissions. The unit burners might not be properly installed and operated properly [SC. 22][Appendix].

11. In compliance-MMCC demonstrated the charging door of the crematory unit remained closed, except during charging, while the crematory is in operation [SC. 23]. Staff observed the crematory unit charging door remained closed while the crematory was in operation.

Per WC Permit# C-10085-Crematory Furnace:

This permit was issued in 1993. The permit was installed under C-10085 and referred to as Unit #5. The current owner of the facility gained ownership in 1998, and has been operating the equipment under the same permit. The inspection evaluated emissions compliance at the facility using the conditions listed in permit# C-10085.

12. Undetermined- MMCC did not demonstrate the particulate matter (PM) emission rate in the crematory furnace did not exceed 0.20 pounds per 1000 pounds of exhaust gases; neither 0.055 pounds per hour nor 0.12 tons per year consistent with permit C-10085 [SC.17], and 0.095 pounds per hour nor 0.10 tons per year per permit C-8703 [SC. 17]. MMCC did not verify the emission compliance in the Crematory unit # 5.

13. Undetermined – MMCC did not demonstrate visible emissions from the crematory furnace did not exceed a 6-minute average of 5% opacity per permit C-10085 [SC.

18]. However, there was no opacity from stacks at the time of inspection for AQD to apply Method 9 for opacity evaluation [Article B; Article C, Appendix E]. Records submitted by the MMCC showed there were unquantified visible opacity occurrences recorded by MMCC in

Unit #5. Reviewed data indicated there appears to be 19 instances of smoking from Unit #5 from April 19, 2016 through July 18, 2016 [Appendix A]. However, there is no evidence to evaluate whether the visible emissions exceeded the permit limit.

14. In compliance - MMCC demonstrated the permittee operated each crematory furnace with a gauge which measured the temperature in the secondary chamber and adjusted the flow of gas to the burner in order to maintain a minimum temperature of 1600 F [SC. 19]. Staff observed the temperature gauge was working in a satisfactory manner at the time of crematory run, however records of temperature profiles were not required C-10085 [SC. 19]. The maintenance records for gauge covering the last 24 months were made available [Article D1-D13].

15. In compliance – MMCC did not need to demonstrate after preheating the furnace to a minimum temperature of 800 F, the permittee did not operate the crematory furnace unless a minimum temperature of 1,600 F and a minimum retention time of 0.6 second in the secondary chamber was maintained per permit C-10085 [SC. 20]. Operating temperature and retention time recordings were not required in the permit to be made available to AQD.

16. In compliance - MMCC demonstrated the disposal of ash collected from the crematory furnace was performed in a manner which minimized the introduction of contaminants to the ambient air per permit C-10085 [SC. 21]. Staff observed the removal of cremains and preparation for disposal while at the site. Cremains were removed, and packaged in containers for return to customers or burial at the Cemetery.

17. In compliance -MMCC demonstrated the permittee did not operate the crematory furnace for more than 4,368 hours per year [SC. 22]. A written log of the hours of operation of the crematory furnace was kept on file for a period of at least two years following the date of such record and made available to the Division upon request. Records submitted by MMCC showed the Unit# 5 was operated for 1, 118 hours per year in 2014 [Article B].

18. Non-compliance - MMCC did not comply with the weight rate for furnace Unit #5 of 100 pounds per hour. A written log of process weight kept on file for a period of at least two years following the date of such record and made available to the Division upon request indicated instances of exceedance [SC. 23]. Data reviewed from the period April 19, 2016 through July 18, 2016 showed 74 instances of weight exceedance over 100 pounds per hour from the unit #5 [Article B]. Appendix A shows the details of charge weight rate distribution with dates.

19. In compliance - MMCC demonstrated the exhaust air from crematory furnace was discharged unobstructed vertically upwards to the ambient air from a stack with a maximum diameter of 20 inches at an exit point not less than 18 feet above ground level for C-10085 [SC. 24]. Records provided by MMCC showed the stack schematic drawings met the permits condition.

20. In compliance-MMCC did not need to demonstrate after determination by and written notification from the Division Director that emissions from the crematory furnace were causing unreasonable interference with common public right to live free from foul or noxious odors the permittee took immediate action to abate the source of odors [SC. 25]. Response received from the facility Owner indicated the company had never received a written notice from AQD regarding noxious or foul odors [TOC pg. 2]. AQD concurred with the response.

21. In compliance – MMCC confirmed AQD has never requested verification of particulate matter (PM) emission rate from the crematory furnace at owner's expense in accordance with Department's air pollution rules [SC. 26], [TOC pg. 2, Item# 19]. The AQD shall request verification in the near future.

Discussion

Rule 201(1) -The Crematory was permitted according to rule 201. No change or modification had been made since the current management assumed ownership in 1998.

Rule 301- the disposal of possible contaminants (ashes, etc.) was conducted according to compliance requirements of Rule 301 at the time of inspection. Cremation was carried out following standard operational procedures recommended by the equipment manufacturer and permit conditions. All cremains were returned to the owner or buried in the cemetery. The Unit# A was cited in 2008 for opacity violation under a conditions noted in C-10085 (SC. 18).

Calculations of weight of human remains cremated were recorded accordingly. Importantly, 40 CFR 60, subparts 4C, 4D, 4E, and 4F...notably exempt human cremation process because human body is not defined as hazardous material.

Rule 331 - No combustion was carried out until the secondary combustion chamber (afterburner) was at above the minimum required temperature –though the temperature profiles were not kept on records. MMCC did not produce stack test PM emissions rates data, hence AQD was unable to determine compliance with this rule.

Rule 901- the burning of only approved waste and consistently following manufacturer's operating instructions to maximize efficiency of cremator resulted to elimination of odor emission. AQD has not received odor complaints from this facility.

Determination

In determination, MMCC facility located at 5800 E. Davison, Detroit did not operate crematory A50, and unit# 5 in compliance with Wayne County permit C-10085 and C-8703 conditions; There were no odors at the facility or surrounding premises at the time of inspection. The company kept records in hardcopy paper and electronic formats. MMCC requested in writing the AQD to void the permit# C-6668. The permit is void. AQD will issue a violation notice to the MMCC for the identified violations to be corrected.

NAME flr

DATE 4/10/2017 SUPERVISOR JK