

P0348
MAWILA

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

P034843286

FACILITY: SERENITY CREMATION SERVICES		SRN / ID: P0348
LOCATION: 12613 UNIVERSAL DRIVE, TAYLOR		DISTRICT: Detroit
CITY: TAYLOR		COUNTY: WAYNE
CONTACT: David Chupac , President		ACTIVITY DATE: 01/26/2018
STAFF: Terseer Hemben	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MINOR
SUBJECT: Crematory, PM regulation		
RESOLVED COMPLAINTS:		

INSPECTED BY : Terseer Hemben, MDEQ
 PERSONNEL PRESENT : David Chupac (Owner/President)
 FACILITY PHONE NUMBER : (734)-946-5222
 FACILITY FAX :
 DATES OF INSPECTION : 1/26/2018
 Serenity Cremation Services
 12613 Universal Drive, Taylor, MI 48180
 SRN: P0348; Permit# 66-12C

FACILITY BACKGROUND:

Serenity Cremation Services, Inc. (SCS) provides after life cremation services for third parties. Operations are conducted during normal business hours: Monday through Friday. At the time of inspection, SCS had three employees working at the facility. The facility has been in operation since 2012. SCS operates 3 Matthews Cremation Division Power Pak II Plus type incinerators. The facility is permitted under AQD Permit No. 66-12C. The permit covers the three crematory units.

INSPECTION NARRATIVE

I arrived at the premises of the SCS on January 26, 2018 at 1040 hours. The purpose of visit was to conduct a scheduled regulatory compliance inspection of the cremation facility according to the state and federal rules. Temperature at the hour was 41 F. Wind speed was 10 mph coming from the SW, and humidity was 65%. I met with Mr. Chupac, the President and owner of the business. Mr. Chupac and I went over the pre-inspection agenda and discussed the state of the incinerator operation. We inspected the three incinerators, a metal separation machine, natural gas fuel type supply network, two weight scales, and the stacks system inside and outside the building. We concluded the inspection with post-inspection conference. I left the area at 1205 hours.

COMPLAINT/COMPLIANCE HISTORY:

SCS has not been a source of citizen air quality complaints.

OUTSTANDING CONSENT ORDERS:

None

OUTSTANDING LOV'S:

None

OPERATING SCHEDULE/PRODUCTION RATE:

The facility operates a regular 8-hour shift, 5-6 days a week.

PROCESS DESCRIPTION PROCESS EQUIPMENT:

The SCS operates the crematory process under the Natural Resources and Environmental Protection Act (NREPA), Act 451, Part 55, Permit to Install (PTI) 66-12C covering Matthews Cremation Division Power Pak II Plus type crematories. The equipment is automated and self-regulated during operations.

EQUIPMENT AND PROCESS CONTROLS:

The SCS equipment control is built in equipment and the crematory process. The equipment and process are remotely controlled, as well as manually via process logic control (PLC) system, the PYRE 2.0. Per the permit conditions (PTI# 66-12C), the weight of the deceased body is logged using a scale on site and the weight is programmed into the PLC algorithm using a drop-down menu. Cremation temperature is set above 1600 F with air retention of 1.0 for the secondary combustion burner. The PYRE 2.0 system records the temperature profiles in both the primary and secondary combustion chamber along with the duration of burn. Attached paper chart recorders print out the profile for visual monitoring and record keeping. The crematory unit door automatically unlocks for charging the weighed body into the incinerator only after the secondary combustion attains the temperature above 1600 F. The SCS crematories are equipped with opacity meter. After-burn ashes are transferred to the processing unit for cooling and metal removals where items not combusted during the burn process are removed. The units are supposed to be serviced monthly and quarterly calibrated for maximum efficiency. The full automation of the crematories supports compliance achievement consistent with applicable requirements of the federal and state rules.

APPLICABLE RULES AND CONDITIONS:

1. There was no modification in CREMATORY unit 1 and CREMATORY unit 2. The CREMATORY unit 3 went through modifications as approved in the November 2017 dated permit# 66-12C consistent with Rule 336.1201.
2. SC. I.1: The SCS is yet to demonstrate the maximum PM emitted from the EUCREMATORY1 and EUCREMATORY2 did not exceed 0.20 lb. /1,000 lbs. of gas, corrected to 50% excess air based on Test Protocol using averaging time (R 336.1331) [SC. I.1]. Staff requested SCS to test the 3 CREMATORY units after the third crematory has been commissioned.
3. SC. II.1: Staff inspected the facility's storage inventory. All materials identified in the storage for burning in EU-CREMATORY1, EUCREMATORY2, and the newly installed EUCREMATORY3 were pathological human wastes as defined in the federal Standards of Performance for New Stationary Sources, 40 CFR 60.51c. Pathological waste means waste materials consisting of only human or animal remains, anatomical parts, and/or tissue; the bags/containers used to collect and transport the waste material; and animal bedding. Note: This permit applies to human pathological waste and associated materials [40 CFR 60.51c].
4. SC. II.2: SCS did not charge more than 750 pounds per charge in the EU-CREMATORY units 1 and 2. (R 336.1301, R 336.1331) [SC. II.2]. Records of charged weights for the last 12 months indicated the highest charge that went into the 2 operating units was 746 lbs. and was made on November 4, 2017 compared less to 750 lbs. [Attachment E, Pg. 47].
5. SC. II.3: SCS facility was not designed to burn any fuel in the 3 CREMATORY units other than natural gas. (R 336.1224, R 336.1225, R 336.1702). Staff inspected gas piping supplying the 3 CREMATORY units and confirmed there was no other fuel supply source connected to the incinerators.
6. SC. III.1: SCS did not combust waste in the CREMATORY units 1 and 2 unless a minimum temperature of 1600°F and a minimum retention time of 1.0 seconds in each secondary combustion chamber were maintained. (R 336.1301, R 336.1331, R 336.1910). Staff observed the CREMATORY units 1, 2 and 3 control logic programs designed with set point 1635 F for the equipment to automatically start up the combustion processes. The PYRE 2.0 data summary snap shot indicated the temperature range in the secondary chamber is 95 F -1944 F. When the unit is not operational (idle), the pilot burner supplies heat to keep the chamber temperature at a minimum reading 95 F for automating the startup ignition and eliminating cold start conditions (Attachment B, Avg. Chamber Temperature). Copies of charts showing temperature profiles are also attached for confirmation of temperature profiles during actual burn cycles [Attachment A2].
7. SC. III.2: SCS demonstrated the incinerators were installed, maintained, and operated in a satisfactory manner to control emissions from the CREMATORY units 1 and 2 units. A list of recommended operating and maintenance procedures specified in Appendix A was followed: (R 336.1301, R 336.1331, R 336.1910).
 - a) SCS trained two operators for supervising the units' performance. The persons were responsible for the operation compliance with the air pollution control requirements. One is the owner; and the other is the operation technician.
 - b) Grates were cleaned before each operation (more often when necessary), and ashes were packed, parceled and returned to the customers properly.

- c) SCS did not combust waste until the secondary combustion chamber (afterburner) attained the above minimum required temperature (1600 F). This temperature must be maintained for the duration of the burn cycle. Random temperature charts for three days attached confirm the minimum operation temperatures above 1600 F [attachment A2]. Attachment B presents average combustion chamber temperature range to be 95 F to 1944 F. The lower boundary temperature indicates the chamber is auto-maintained at 95 F when the unit is idle. Once the chamber is ignited, the temperature rises above 1600F as required.
 - d) SCS did not overload the incinerator. Operation stayed within the given loading rates and followed the manufacturer's instructions [Attachment E]. Logs of charged loads are listed in the attachment.
 - e) SCS scheduled charges to minimize opening the charging door as infrequently as possible. Opening the charging door lets cold air inside the crematory units and quenches the fire causing smoke. The CREMATORY units 1 and 2 were automated and the doors were not opened until a programmed burn time cycle was completed and cooled to the set temperature.
 - f) The CREMATORY units 1 and 2 burned only the type of wastes that the incinerators had been approved to burn. The manufacturer's instructions designed to maximize the efficiency of the unit, and to properly burn the waste(s) was followed via automated PLC programming.
 - g) The combustion air ratio was kept adjusted according to the manufacturer's instructions using auto pyre controls via PLC [Attachment B].
 - h) SCS observed the stack frequently and adjusted the operation as necessary to eliminate smoke and fly ash. The equipment was equipped with opacity meter that automatically sounded the alarm when the emission limit was approaching exceedance. The module would automatically ramp up temperature profiles in the chambers.
 - i) SCS posted a copy of the manufacturer's manual and guidelines near the incinerator. Staff confirmed the posts.
 - j) SCS made quarterly inspections to check and service all the equipment. If a qualified person is not available for proper inspections, a service contract with a reputable manufacturer is advisable. Attachment D1 indicated the service rendered as required.
 - k) SCS followed manufacturer's operation and maintenance guidelines.
8. SC. IV.1: The SCS installed, calibrated, maintained and operated in a satisfactory manner a device to monitor and record the temperature in the secondary combustion chamber of CREMATORY units 1, 2, and 3 on a continuous basis. (R 336.1301, R 336.1331). Recording charts, maintenance records for the hearth and chambers depicting compliance are attached [Attachments A2, B, & D1].
9. SC. IV.2: Staff verified the permittee maintained 2 calibrated scales at the facility for verifying the charge weight as required by SC II.2. (R 336.1301, R 336.1331).
10. SC. VI.1: SCS monitored and recorded the temperature in the secondary combustion chambers of CREMATORY units 1 and 2 on a continuous basis. (R 336.1301, R 336.1331), Temperature recording chart samples are attached [Attachment A1].
11. SC. VI.2: SCS kept, in a satisfactory manner, daily records of the time (duration of burn), description and weight of waste combusted in CREMATORY units 1 and 2, as required by SC II.1 and SC II.2. The permittee kept all records on file and made them available to the Department upon request. (R 336.1301, R 336.1331, 40 CFR 60.50c(b)). Burn times were recorded on charts as real-time data from start to end of burn times [attachment A2]. Additionally, the burn time data was logged in the PYRE 2.0 system computation program [Attachments, A2 and B and F].
12. SC. VI.3: SCS kept, in a satisfactory manner, secondary combustion chamber temperature records for CREMATORY units 1 and 2, as required by SC IV.1. The permittee kept all records on file and made them available to the Department upon request. (R 336.1301, R 336.1331).

- Temperature profile charts provided by SCS had time, temperature and burn duration recorded and kept at the facility [Attachment A2 and F].
13. SC. VI.4: SCS kept, in a satisfactory manner, a record of all service, maintenance and equipment inspections for CREMATORY units 1 and 2. The record included the description, reason, date and time of the service, maintenance or inspection. The permittee kept all records on file and made them available to the Department upon request. (R 336.1301, R 336.1331, R 336.1910). Records of maintenance confirmed compliance with this condition [Attachment D2].
 14. SC. VIII.1: Staff verified exhaust gases from the stack of 20-inch diameter and min. height 25 feet were discharged unobstructed vertically upwards to the ambient air (40 CFR 52.21 (c) & (d)).
 15. The EU-CREMATORY3 was installed but was yet to be commissioned.

RULES AND REGULATIONS

The Crematory units 1, 2, and 3 installations were approved based on control of particulate matter emissions and VOCs. The following regulations were considered:

Rule 301- Opacity:

The exhaust gases from the crematory units shall not exceed 20% as specified in general Condition 11. Visible emissions test data was submitted and evaluated in the approval of the units. For compliance purpose, the SCS installed opacity monitors on each crematory unit. The monitors were programmed to alarm the operation and automatically increase the temperature profile to the target set point.

Rule 331-Emission of particulate matter:

The rule lists incinerators that are assigned emission limits of 0.2 lbs./1000 lbs. gas, corrected to 50% excess air and the requirement to use an afterburner or other approved equipment. The process met compliance with limit through test data submitted to the AQD for use during consideration for permit for approval. Second, the permit condition limiting emissions is enforceable. Third, the 3 crematory units are equipped with a secondary combustion chamber and afterburner. Each unit is programmed to operate at 1600 F and retention time of 1.0 sec for achieving compliance with the permit limits.

Rule 702- New Source of VOC:

The rule limits VOC emissions to levels that should not exceed the lowest maximum allowable emission rate specified by BACT, NSPS, permit conditions and applicable part 6 rules. The application of BACT requires no further control to be added. SCS complied with Rule 702.

40 CFR 52.21(c) & (d)-NAAQS and PSD

The SCS's process met this federal requirement because the facility is a minor source for pollutants, hence no demonstration of compliance is required.

40 CFR 60: NSPS

The SCS facility met compliance with this rule because pathological incinerators are considered exempt from the federal NSPS for incinerators of any type provided the incinerators burn 90% or more of pathological waste. The 90% limit is included as a permit to install condition for the facility.

40 CFR 60 Subparts 61 and 63-NESHAP:

The SCS process met compliance with this rule because federal rules regulate HAPs, certain types of equipment installed, and status of the facility such as major source in emissions of HAP pollutants. SCS is an area source of HAP emission. The source is exempt from regulations under 40 CFR 63, Subpart EEE for hazardous waste combustors. The 3 crematory units are not permitted to burn hazardous waste. Human and animal wastes burned in the crematories are not classified as hazardous wastes. Therefore, crematory units are not subject to this NESHAP.

Permit Conditions: Explanation

The PTI 66-12C contains conditions for 3 human waste crematory units. The only differences in the conditions regulating the 3 crematory units lies in the equipment specifications. The Matthews Cremation Division Super Power Pak II unit number 3 is specified to charge maximum weight 700 lbs, while the number 1 and 2 units are specified to charge maximum weight 750 lbs.

APPLICABLE FUGITIVE DUST CONTROL PLAN CONDITIONS:

This facility does not have nor needs a fugitive dust plan.

FINAL COMPLIANCE DETERMINATION:

The SCS commissioned two out of three crematory equipment permitted by the Air Quality Division. The facility management maintained satisfactory recordkeeping requirement of the federal and SIP regulations. There have been no complaints or concerns from the neighbors. The inspection determined the facility operated the two crematory units in compliance with permit requirements. Staff verbally requested the facility to test for emission performance when the Crematory 3 is commissioned.

NAME jh DATE 2/28/2018 SUPERVISOR JK