

YOLO-SOLANO AIR QUALITY MANAGEMENT DISTRICT

RULE 9.5 - MEDICAL WASTE INCINERATORS

(Adopted June 9, 1993)

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100 GENERAL

101 PURPOSE: The purpose of this rule is to control the emissions of dioxins from medical waste incinerators in compliance with the Airborne Toxic Control Measure adopted by the California Air Resources Board (Titles 17 and 26, California Code of Regulations, Section 93104).

102 APPLICABILITY: This rule applies to any person who owns or operates a medical waste incinerator.

110 EXEMPTION, CREMATORIA: This rule shall not apply to those incinerators which are exclusively crematoria of human or animal remains.

200 DEFINITIONS

201 ARB: State of California Air Resources Board

202 ARB TEST METHOD 2: The test method specified in Title 17, California Code of Regulations, Section 94102.

203 ARB TEST METHOD 428: The test method specified in Title 17, California Code of Regulations, Section 94139.

204 CONTROL EQUIPMENT: Any device which reduces emissions from medical waste incinerators.

205 DIOXINS: Dibenzo-p-dioxins and dibenzofurans chlorinated in the 2,3,7, and 8 positions and containing 4,5,6, or 7 chlorine atoms and is expressed as 2,3,7,8-tetrachlorinated dibenzo-para-dioxin equivalents using current California Department of Health Services toxic equivalency factors.

206 FACILITY: Every building, structure, appurtenance, installation, or improvement located on land which is under the same or common ownership or operation, and is on one or more contiguous or adjacent properties.

207 MEDICAL FACILITIES: Medical, dental, and veterinary offices, clinics and hospitals, skilled nursing facilities, research facilities, research laboratories, clinical laboratories, all unlicensed and licensed medical facilities, clinics and hospitals, surgery centers, diagnostic laboratories, and other providers of health care.

208 MEDICAL WASTE INCINERATORS: All of the furnaces or other closed fire chambers that are located at a facility and used to dispose of wastes generated at medical facilities by burning.

209 UNCONTROLLED EMISSIONS: The dioxins emissions measured from the incinerator at a location downstream of the last combustion chamber, but prior to the air pollution control equipment.

210 WASTE: All discarded putrescible and nonputrescible solid, semi-solid, and liquid materials, including garbage, trash, refuse, paper, rubbish, food, ashes, plastics, industrial wastes, equipment, instruments, utensils, appliances, manure, and human or animal solid and semi-solid wastes.

300 STANDARDS

301 MEDICAL WASTE INCINERATORS, GREATER THAN 25 TONS PER YEAR: The following requirements apply only to medical waste incinerators that incinerate more than 25 tons of waste per year:

301.1 No person shall operate a medical waste incinerator unless:

- a. The dioxins emissions have been reduced by 99 percent or more of the uncontrolled emissions; or
- b. The dioxins emissions have been reduced to ten (10) nanograms or less per kilogram of waste burned.

301.2 No person shall operate a medical waste incinerator unless the control equipment is installed and used in a manner which has been demonstrated to and approved by the Air Pollution Control Officer to meet the following requirements:

- a. The flue gas temperature at the outlet of the control equipment shall not exceed 300 degrees Fahrenheit (149°C), unless it has been demonstrated to, and approved in writing by, both the ARB and the Air Pollution Control Officer that lower emissions are achieved at a higher outlet temperature; and
- b. For a single chamber incinerator, the combustion chamber shall be maintained at no less than 1800 degrees (± 200 degrees) Fahrenheit ($982 \pm 93^\circ\text{C}$). For a multiple chamber incinerator, the primary combustion shall be maintained at no less than 1400 degrees Fahrenheit (760°C), and the secondary chamber shall be maintained at no less than 1800 (± 200) degrees Fahrenheit ($982 \pm 93^\circ\text{C}$). The furnace design shall provide for a residence time for combustion gas of at least one second. Residence time shall be calculated using the following equation:

$$\text{Residence Time} = V/Q_c$$

where:

V means the volume, as expressed in cubic feet, from the point in the incinerator where the maximum temperature has been reached until the point where the temperature has dropped to 1600° F (871°C).

Q_c means the combustion gas flow through V, as expressed in actual cubic feet per second, which is measured according to ARB Test Method 2, after adjusting the measured flow rate to the maximum combustion chamber temperature (T_c) by using T_c instead of T_{std} in the Method 2 calculation for Q_c . The volumetric flow rate at the sampling points shall be adjusted to chamber pressures. Alternative methods may be used if conditions for determining the combustion gas flow rate by Method 2 are unacceptable. The alternative determination shall be within the guidelines of Method 2 and be approved by the Air Pollution Control Officer.

The gas flow rate may also be calculated using the combustion stoichiometry equation for Q_c . If this alternative is selected then Q_c shall be calculated as follows:

$$Q_c = \frac{Q_{\text{stoiwf}}(1 + EA_{\text{wf}}/100)}{528} + \frac{Q_{\text{stoiwf}}(1 + EA_{\text{af}}/100)}{528} \times \frac{(T_c + 460)}{528} \times \frac{(T_c + 460)}{60 \text{ sec}}$$

Where:

$$Q_{\text{stoiwf}} = \frac{\text{lb-mole O}_2 \times \text{lb waste} \times \text{SCF O}_2 \times \text{SCF air}}{\text{lb-mole O}_2 \times \text{SCF O}_2}$$

$$Q_{\text{stoiwf}} = \frac{\text{lb-mole O}_2 \times \text{lb aux. fuel} \times \text{SCF O}_2 \times \text{SCF air}}{\text{lb-mole O}_2 \times \text{SCF O}_2}$$

EA_{wf} = The excess air ratio (lbs excess air per lb theoretical air) for the waste feed expressed as a percentage.

EA_{af} = The excess air ratio (lbs excess air per lb theoretical air) for the auxiliary fuel expressed as a percentage.

T_c = The maximum temperature, in degrees Fahrenheit, that has been reached in the incinerator.

In order to estimate Q_{stoiwf} and EA_{wf} , a representative sample of the waste shall be characterized by chemical analysis.

301.3 No person shall operate a medical waste incinerator unless the bottom ash, fly ash, and scrubber residuals are handled and stored in a manner that prevents entrainment into ambient air.

302 MEDICAL WASTE INCINERATORS, 25 TONS PER YEAR OR LESS: The following requirements shall apply to medical waste incinerators that incinerate 25 tons or less of waste per year:

302.1 No person shall operate a medical waste incinerator that incinerates 25 tons or less of waste per year unless the requirements specified in Sections 301.3, 402, and 501.3 are met.

302.2 The owner or operator of a medical waste incinerator that incinerates more than 10 but less than 25 tons of waste per year shall conduct one initial source test at the incinerator stack as specified in Section 401.

400 ADMINISTRATIVE REQUIREMENTS

401 COMPLIANCE SCHEDULE:

401.1 No later than 90 days from June 9, 1993, the owner or operator of a medical waste incinerator that incinerates more than 25 tons of waste per year shall submit to the Air Pollution Control Officer an application for Authority to Construct for the equipment necessary to meet the requirements of Sections 301.1 or 301.2, and no later than 15 months from June 9, 1993, the owner or operator of a medical waste incinerator shall be in compliance with this rule.

401.2 The owner or operator of a medical waste incinerator who intends to permanently shut down operation of the incinerator shall notify the Air Pollution Control Officer in writing of the shutdown date within 90 days after June 9, 1993. The shutdown date shall be no later than six months after June 9, 1993.

401.3 The owner or operator of a medical waste incinerator that incinerates 25 tons or less per year who intends to remain in operation shall notify the Air Pollution Control Officer in writing within 90 days after June 9, 1993. The owner or operator of a medical waste incinerator shall be in compliance with this rule no later than 15 months after June 9, 1993.

402 TRAINING CERTIFICATES: No person shall operate a medical waste incinerator unless each individual who operates or maintains the incinerator obtains either a certificate of training in medical waste incineration issued by The American Society of Mechanical Engineers within nine months of the commencement of the training program, or equivalent training as determined by the Air Pollution Control Officer. Copies of the training certificates for the operators and maintenance engineers shall be submitted to the Air Pollution Control Officer and the original certificates shall be available for inspection at the facility with the Permit to Operate.

500 MONITORING AND RECORDS

501 MAINTENANCE AND CALIBRATION RECORDS: The owner or operator of a medical waste incinerator shall maintain the following:

501.1 A continuous data recording system which provides for each day of operation continuous recording of the primary and secondary combustion chamber temperatures; carbon monoxide emissions; the key operating parameters of the air pollution control equipment, as specified by the Air Pollution Control Officer; the hourly waste charging rates; and the opacity of stack emissions or other indicator of particulate matter which is approved by the Air Pollution Control Officer; and

501.2 Maintenance record for the incinerator, control equipment, and monitoring equipment; and calibration records for the monitoring equipment; and

501.3 Equipment for determining and recording the weight of waste charged to the incinerator.

502 SOURCE TESTING: For the purpose of demonstrating compliance with Section 301.1 of this rule, the owner or operator of a medical waste incinerator shall conduct a minimum of two annual

source tests for the dioxins stack emissions using ARB Test Method 428. The high resolution mass spectrometry option of ARB Test Method 428 may be used to determine compliance with this rule. For purposes of determining compliance with Section 301.1.a of this rule, emissions shall be sampled simultaneously from the flue at a location downstream of the last combustion chamber, but prior to the control equipment, and from the stack during source testing. For purposes of determining compliance with Section 301.1.b of this rule, the source testing shall be conducted at the stack. The information regarding the composition (moisture content, and amount of the total waste that is infectious, pathological, hazardous, or radioactive) and feed rate of the fuel charged during the source test shall be provided with the test results. The Air Pollution Control Officer may require additional necessary information regarding the composition of the waste. In those cases where incinerator operators are required to submit information in the permit application on the type and quantity of the waste burned, the composition and representativeness of the waste for the compliance testing will be determined by inspection and comparison with the permit application. When this comparison is not possible, the determination of composition and representativeness will be based on source generation data and inspection. Source testing shall be conducted at the maximum waste firing capacity (± 10 percent) as allowed by the District's permit. A copy of all source test results conducted for demonstrating compliance with this rule shall be submitted to the ARB at the same time that it is submitted to the Air Pollution Control Officer.

503 VIOLATIONS, MALFUNCTIONS, AND UPSET CONDITIONS: Any violation, malfunction, or upset condition on the incinerator, the air pollution control equipment, or the continuous data recording system shall be reported to the District office within one hour of occurrence or by no later than 9 A.M. the next business day if the malfunction occurs outside of normal District business hours.