REGULATION III – CONTROL OF AIR CONTAMINANTS

RULE 313
INCINERATORS, BURN-OFF OVENS, AND CREMATORIES

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MARICOPA COUNTY
AIR POLLUTION CONTROL REGULATIONS
REGULATION III – CONTROL OF AIR CONTAMINANTS

RULE 313
INCINERATORS, BURN-OFF OVENS AND CREMATORIES

SECTION 100 – GENERAL

101 **PURPOSE:** To limit particulate emissions from incinerators, burn-off ovens and crematories.

102 **APPLICABILITY:** This rule applies to the following types of equipment and activities:

102.1 All incinerators except those subject to:

a. Resource Conservation and Recovery Act (RCRA) Subtitle C; or

b. Maricopa County Rule 317 (Hospital/Medical/Infectious Waste Incinerators) and Standards of Performance for Hospital/Medical/Infectious Waste Incinerators for Which Construction Is Commenced After June 20, 1996 (40 CFR Part 60, Subpart Ec); or

c. Standards of Performance for Commercial and Industrial Solid Waste Incineration Units for Which Construction Is Commenced After November 30, 1999 or for Which Modification or Reconstruction Is Commenced on or After June 1, 2001(40 CFR Part 60, Subpart CCCC); or

d. Emissions Guidelines and Compliance Times for Commercial and Industrial Solid Waste Incineration Units that Commenced Construction On or Before November 30, 1999 (40 CFR Part 60, Subpart DDDD).

102.2 Burn-off ovens used in metal salvage operations or used to remove nonmetallic coatings from metal parts by the application of heat and meet one of the following conditions:

a. Charge combustion capacity of greater than 25 lbs per hour; or

b. Internal oven volume greater than one (1) cubic yard; or

c. Fuel burning capacity of primary chamber greater than 200,000 Btu per hour.

102.3 Crematories.

103 **EXEMPTIONS:** The following types of equipment and activities are exempt from this rule:

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103.1 Laboratory ovens;

103.2 Environmental test chambers;

103.3 Ovens used in research facilities;

103.4 Flares;

103.5 Curing or drying ovens that are operated at temperatures lower than 600 °F;

103.6 Electric induction furnaces; and

103.7 Burning-off of pre-cleaned items consisting entirely of metal and containing no debris visible to the naked eye. Pre-cleaning shall be done by flushing with water, solvent and/or mechanical means.

SECTION 200 – DEFINITIONS: For the purpose of this rule, the following definitions shall apply, in addition to those definitions found in Rule 100 (General Provisions and Definition) of these rules. In the event of any inconsistency between any of the Maricopa County air pollution control rules, the definitions in this rule take precedence.

201 **AFTERBURNER** – A heating device associated with an incinerator, burn-off oven or crematory that is designed to provide excess air and heat for complete combustion of the gases in the primary chamber so as to control particulate emissions.

202 **BURN-OFF OVEN** – A heating device intended to remove materials such as oils, greases, paints, coatings, rubber, lacquers, and insulation from other materials or parts by combustion or charring.

203 **COMBUSTIBLE REFUSE** – Any solid or liquid combustible waste material containing carbon in a free or combined state.

204 **CONTINUOUS OPACITY MONITORING SYSTEM (COMS)** – The total equipment necessary for the determination of opacity of emissions which provides a permanent, uninterrupted record of opacity readings.

205 **CREMATION** – The process of reducing human or animal remains to bone fragments and ashes in a controlled retort or furnace using heat and/or flame. The reduction takes place through heat and evaporation. Cremation shall also include the processing and pulverization of the bone fragments.

206 **CREMATORY** – A retort used for the cremation of remains (human or animal), body parts, and associated wrappings. This term may also be used to refer to an establishment wherein these remains are cremated. A crematory may be considered existing or new, dependent upon the date it was constructed. If it was constructed, modified, or commenced operation, including the contractual obligation to undertake and complete an order for a crematory, prior to September 22, 2004, then it is an existing crematory.

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207 **ELECTRIC INDUCTION FURNACE** – A furnace or oven that is used to melt metals by use of electricity as the source of power or an alternating current electric furnace in which primary conductor is coiled and generates by electromagnetic induction a secondary current that develops within the metal charge.

208 **FLUE** – A duct or passage, such as a stack or chimney, for air contaminants.

209 **HOSPITAL WASTE** – Discards generated at a hospital or clinic, except unused items returned to the manufacturer. The definition of hospital waste does not include human corpses, remains, and anatomical parts that are intended for interment or cremation.

210 **INCINERATION** – The process of combustion or pyrolysis involving the chemical reaction of combustible waste materials with air in which the primary purpose is the destruction and reduction in size and mass of the combustible material.

211 **INCINERATOR** – Any equipment used for the purpose of reducing the volume and mass by removing combustible matter by direct combustion or the combustion of waste gases from pyrolysis or gasification. Incinerator designs include single chamber and two-chamber. A two-chamber incinerator consists of two or more refractory lined combustion chambers in series, physically separated by refractory walls, interconnected by gas passage ports or ducts designed for maximum combustion of the material to be burned. An "incinerator" does not include devices such as open or screened barrels, drums, or process boilers.

211.1 **Primary Chamber** – The initial compartment of an incinerator wherein the majority of waste volume reduction or heat treatment occurs by combustion. Primary chambers are normally operated at lower temperatures than are secondary chambers or afterburners.

211.2 **Secondary Chamber** – The compartment of an incinerator that operates at excess air conditions wherein destruction of gas-phase combustion products occurs. Passage ports, ducts, flues, chimneys, or stacks with burners shall not be considered controlled secondary chambers unless (1) the combustion zone exhibits design measures for the retention of the gas stream in the chamber, turbulence or mixing, and (2) there is an availability of excess air as determined by engineering analysis.

212 **MEDICAL WASTE** – Any non-gaseous waste, including infectious wastes, which is generated in the diagnosis, treatment, or immunization of human beings or animals, in research pertaining thereto, or in production or testing of biological agents and substances. Medical waste does not include any wastes identified under subtitle C of the Resource Conservation and Recovery Act (RCRA) as hazardous or as household waste, but includes those pharmaceuticals which are not identified as hazardous by subtitle C of RCRA. Medical waste does not include human or animal remains, caskets, containers, clothing or wrappings from crematories. An expanded definition of medical waste is found in 40 CFR 60, Subpart Ec. The definition of "medical waste" includes, but is not limited to:

212.1 Cultures and stocks of infectious agents and human pathological waste;

212.2 Human blood and blood products, ;

212.3 Sharps, needles and broken glass that were in contact with infectious wastes;

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212.4 Animal wastes exposed to infectious wastes,;

212.5 Isolation wastes; and

212.6 Unused sharps, needles and syringes.

213 **METAL SALVAGE OPERATIONS** – Any source operation in which combustion or pyrolysis is carried on for the principal purpose, or with the principal result, of recovering metals which are introduced into the operation as essentially pure metals, or alloys thereof, by oxidation of physically intermingled combustible material. Operations, in which there is a complete fusion of all such metals such as in an electric induction furnace, are not considered "metal salvage operations" for the purpose of this rule.

214 **NIGHTTIME COMBUSTION** – Combustion that occurs after sundown and before the following sunrise.

215 **PARTS RECLAMATION UNIT** – A burn-off oven that combusts only paints, lacquers, and varnishes off of items (e.g., tools and equipment) so that these items can be reconditioned and reused. A burn-off oven used to remove plastic, insulation or rubber from items shall not be considered a parts reclamation unit for the purpose of this rule.

216 **PATHOLOGICAL WASTE** – Waste material that consists 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 (if applicable).

217 **PYROLYSIS/COMBUSTION UNIT** – A combustion unit that produces gases, liquids, or solids through the heating of waste, and the gases, liquids, or solids produced are combusted and emissions vented to the atmosphere.

218 **RESIDENCE TIME** – The average time that gases spend in a defined space, also known as "bulk gas average residence time".

SECTION 300 – STANDARDS

301 **CONTROLS REQUIRED**: An owner or operator shall comply with the following:

301.1 **Incinerators:** Combustion of all types of combustible refuse in an incinerator shall be performed in a multiple-chamber incinerator that operates at least at a minimum temperature of 1600 °F in the secondary chamber or afterburner, with a residence time of at least one (1) second in the secondary chamber or afterburner during the period of combustion in order to destroy the combustion products.

301.2 **Burn-Off Ovens:** Metal salvage operations or removal of materials utilizing a burn-off oven shall employ an oven with at least two chambers. The secondary compartment or afterburner shall operate at a minimum temperature of at least 1400 F with a residence time of at least one-half (½) second during the period of combustion in order to destruct the combustion products.

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301.3 Crematories: A crematory shall consist of an incinerator comprised of at least two chambers and that complies with the following conditions:

a. For an existing crematory the burner in the primary chamber shall not be ignited until the secondary chamber combustion zone temperature is equal to or greater than 800 F. The secondary compartment or afterburner shall operate at a minimum temperature of at least 1400 F with a residence time of at least one (1) second during the period of combustion in order to destruct the combustion products.

b. For a new crematory, the burner in the primary chamber shall not be ignited until the secondary chamber combustion zone temperature is equal to or greater than 1000 F. The secondary compartment or afterburner shall operate at a minimum temperature of at least 1600 F with a residence time of at least one (1) second during the period of combustion in order to destruct the combustion products.

c. Alternate Operating Conditions: If the manufacturer's optimum design specifications for the minimum temperature or residence time of a secondary chamber or afterburner at existing crematories are different from the temperatures or residence times set forth in Section 301.3 (a) of this rule, the manufacturer's specifications may be used instead, providing that the owner or operator demonstrates compliance with the test methods listed in Section 507 of this rule.

d. Additional Operating Conditions for Cremating Large Bodies: Alternate operating temperatures and special procedures may be required for cremation of large bodies (over 300 lbs.) that are different from the temperatures or residence times in the afterburner set forth in Section 301.3 of this rule. These alternate times and temperatures may be followed when cremating large bodies, provided that the owner or operator demonstrates compliance with the test methods listed in Section 507 of this rule.

302 EMISSIONS STANDARD – OPACITY: An owner or operator shall not cause, allow or permit emissions into the atmosphere from any incinerator, burn-off oven, or crematory, for an aggregate of more than 30 seconds in any 60 minutes, for any air contaminant that exceeds 20 percent opacity (Section 507.3 of this rule).

303 EMISSIONS STANDARD – PARTICULATES: An owner or operator shall not cause, allow, or permit particulate matter emissions into the atmosphere from any incinerator, burn-off oven, or crematory, which exceed 0.080 grain per cubic foot of dry flue gas at standard conditions adjusted to 7% oxygen (O_2) in the exhaust gases and calculated as if no auxiliary fuel had been used.

304 NIGHTTIME COMBUSTION: An owner or operator who chooses to conduct combustion operations shall comply with the following conditions:

304.1 Incinerator, Crematory, or Burn-Off Oven Other than a Parts Reclamation Unit: A Continuous Opacity Monitoring System (COMS) shall be operated at all times during nighttime combustion operations and shall comply with the following conditions:

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a. The COMS shall be calibrated and maintained in accordance with EPA Performance Specification # 1, described in Section 507.2 of this rule and shall be calibrated at least once per day. The COMS shall be located downstream from all particulate control equipment, where condensed water is not present, free of interference from ambient light (applicable only if transmissometer is responsive to ambient light) and accessible in order to permit routine maintenance in accordance with the test method described in Section 507.2 of this rule.

b. A properly trained COMS operator shall be present at all times during nighttime combustion operations. The operator shall be trained in the proper operation and maintenance of the COMS as well as the shutdown procedures of the incinerator, burn-off oven, or crematory. Therefore if the COMS registers opacity readings that are higher than the opacity limitations in Section 302 of this rule, then the operator has the authority and capability to shut down the operation.

304.2 **Parts Reclamation Unit:** An owner or operator of a parts reclamation unit who chooses to conduct nighttime combustion operations without the installation and operation of a COMS shall:

a. Not cause, allow or permit any visible emissions during combustion during the nighttime; and

b. Conduct visible emissions observations in compliance with the test method described in Section 507.4 of this rule at least once per hour during each nighttime combustion cycle; and

c. Operate and maintain the parts reclamation unit in accordance with the manufacturer's operations and maintenance manual or other similar written materials supplied by the manufacturer or distributor of the unit to ensure the unit remains in proper operating condition.

d. Operate exclusively with parts reclamation units with an inside stack diameter less than 10 inches.

305 **OPERATION AND MAINTENANCE (O&M) PLAN REQUIREMENTS FOR AIR POLLUTION CONTROL EQUIPMENT AND APPROVED EMISSION CONTROL SYSTEM (ECS):** An owner or operator subject to this rule operating an ECS shall provide, properly install and maintain in calibration, in good working order and in operation the air pollution control equipment required by this rule. This includes the following:

305.1 Provide and maintain devices that indicate temperatures, pressures, rates of flow, or other operating conditions necessary to determine if the air pollution control equipment is functioning properly and is properly maintained.

305.2 Keep records according to Section 501 of this rule that demonstrate the air pollution control equipment meets the control standards required in Section 300 of this rule.

305.3 Submit an Operation and Maintenance (O&M) Plan if the air pollution control equipment consists of additional equipment other than an afterburner, such as a baghouse or

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venturi scrubber according to the following O&M Plan requirements for an Emission Control System (ECS):

a. An owner or operator subject to this rule shall provide and maintain readily available on-site at all times the O&M Plan(s) for any ECS and any ECS monitoring devices that are used under this rule or an air pollution control permit.

b. An owner or operator subject to this rule shall submit to the Control Officer for review the O&M Plan(s) for any ECS including an ECS monitoring device that is required by this rule or required under an air pollution control permit.

c. An owner or operator subject to this rule operating an ECS shall install, maintain and accurately calibrate monitoring devices listed in the O&M Plan(s) including, but not limited to, monitoring devices that measure pressure differentials and other operating conditions necessary to determine if control devices are functioning properly.

d. An owner or operator who is required to have O&M Plan(s) for any ECS including any ECS monitoring devices must fully comply with all elements of the O&M Plan(s) including, but not limited to, every action, schedule, and condition identified in each O&M Plan.

e. An O&M Plan for any ECS including any ECS monitoring devices shall include all of the following information:

(1) ECS equipment manufacturer;

(2) ECS equipment model;

(3) ECS equipment identification number or identifier that owner or operator subject to this rule assigns to such ECS equipment when the manufacturer's equipment identification number is unknown; and

(4) Any other information required by Section 501 of this rule.

f. The owner or operator subject to this rule, who receives a written notice from the Control Officer that an O&M Plan for any ECS including any ECS monitoring devices is deficient or inadequate, must make written revisions to the O&M Plan. The revised O&M Plan must be submitted to the Control Officer within five working days of receipt of the Control Officer's written notice, Such time period can be extended by the Control Officer, upon written request and for good cause. During the time that such owner or operator subject to this rule is preparing revisions to the O&M Plan, such owner or operator shall still comply with all requirement of this rule.

SECTION 400 – ADMINISTRATIVE REQUIREMENTS (NOT APPLICABLE)

SECTION 500 – MONITORING AND RECORDS

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501 **RECORDKEEPING**: An owner or operator subject to this rule shall maintain the records listed below and shall retain these records for five years. These records shall be kept on-site in written or electronic format, in a complete and consistent manner. Written or electronic copies shall be made available to the Control Officer upon request. An owner or operator shall keep the following daily records:

501.1 Times of operation;

501.2 **Chamber temperatures:** Chamber temperatures shall include operating temperatures for the secondary chamber as well as secondary chamber temperature at the time of the ignition of the primary chamber.

501.3 Weight of the materials incinerated shall be determined as follows:

a. **Incinerators:** Total weight charged.

b. **Crematories:**

(1) **Human Crematories:** Account for the numbers of bodies cremated; or

(2) **Animal Crematories:** Account for either the number and type of remains charged or the weight of the animal(s) charged; or

(3) **Large Bodies:** If a human or animal crematory combusts a large body (over 300 lbs.), the approximate weight of the body and any alternative operating conditions shall be recorded.

502 **OPACITY OBSERVATIONS**: An owner or operator shall keep records of opacity observations used to measure visible emissions from activities regulated by this rule. The records shall be compiled, maintained, and retained for each day or night that any activity capable of generating emissions is conducted. These written records shall include the following information:

502.1 Date, time, and location of all opacity observations; and

502.2 Results of all opacity observations; and

502.3 Corrective action(s) taken, if any.

503 **NIGHTTIME COMBUSTION**: An owner or operator conducting nighttime combustion operations shall comply with the following requirements:

503.1 **Nighttime Combustion With a COMS:**

a. Maintain a continuous record of opacity readings generated by the COMS. Records shall include all times that the meter is running properly. Records shall also indicate when the instrument is inoperative or has been adjusted or repaired.

b. Record the date and time identifying each period during which the COMS was inoperative, except for zero and span checks, and the nature of system repair or

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adjustment shall be reported. The Control Officer may request proof of COMS performance whenever system repairs or adjustments, other than routine maintenance, have been made.

c. Maintain a file of all data collected by the COMS and as necessary to convert monitoring data to the units of the applicable standard as described for compliance with Section 507.3 of this rule.

503.2 **Nighttime Combustion Without a COMS – Parts Reclamation Unit:** Maintain records of the visible emissions observations taken at night during each combustion cycle for each parts reclamation unit as required by Section 507.4 of this rule. These records shall include the following:

a. Date, time, and location of all visible emission observations; and

b. Results of all visible emission observations; and

c. Corrective action(s) taken, if any.

504 **PREVENTATIVE MAINTENANCE LOG:** Maintain a log of equipment preventive maintenance activities performed on all equipment or ECS subject to this rule.

505 **ALTERNATE OPERATING CONDITIONS:** An owner or operator shall keep records of any alternate operating conditions including temperatures and residence times, as required by Sections 301.3(c) and 301.3(d) of this rule.

506 **PERFORMANCE TEST RESULTS:** An owner or operator shall maintain records of all exhaust stack performance tests. Such written records shall include the following information:

506.1 Date, start and end times, and location of all performance tests;

506.2 Results of all tests; and

506.3 Corrective action(s) taken, if necessary.

507 **COMPLIANCE DETERMINATION – TEST METHODS:** When more than one test method is permitted for determining an exceedance of the limits established in this rule, then any exceedance determined using any one of the following applicable test methods shall constitute a violation of this rule.

507.1 Determination of total particulate matter, EPA Methods 1 through 5, or the EPA equivalent methods listed in Sections 507.3 and 507.4 of this rule approved by the Control Officer, shall be used. Both carbon dioxide and oxygen measurements shall be obtained simultaneously with each Method 5 run.

507.2 Determination of visible emissions compliance shall be made by a certified emissions observer or by a continuous emission monitor which is maintained and calibrated in accordance with EPA Performance Specification #1 (40 CFR, Part 60, Appendix B). The observer shall be qualified as an expert visible emissions evaluator and so certified

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by the Arizona Department of Environmental Quality or by any other agency that is acceptable to the Control Officer.

507.3 Opacity shall be determined by observations of visible emissions conducted in accordance with EPA Reference Method 9 as modified by EPA Reference Method 203 B.

507.4 The presence or absence of visible emissions shall be detected using EPA Reference Method 22.

508 **TEST METHODS INCORPORATED BY REFERENCE:** The EPA test methods as they exist in the Code of Federal Regulations (CFR) are incorporated by reference in Appendix G of the Maricopa County Air Pollution Control Rules and Regulations.

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