

**REGULATION IX  
TOXIC AIR CONTAMINANTS**

**RULE 901**

**AIRBORNE CHROMIUM CONTROL MEASURE  
HEXA VALENT CHROMIUM FROM CHROME PLATING  
AND  
CHROMIC ACID ANODIZING OPERATIONS**

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**RULE 901** **Airborne Chromium Control Measure** Emissions of Hexavalent Chromium from Chrome Plating and Chromic Acid Anodizing Operations.

**PART 1** **General**

1.1 **Purpose**

To comply with Health and Safety Code Section 39666 by reducing hexavalent chromium emissions from plating and acid anodizing operations.

1.2 **Applicability**

This regulation shall apply to any new or existing chrome plating or chromic acid anodizing operation located in the Northern Sierra Air Quality Management District.

**PART 2** **Definitions**

- A. **Ampere-Hours**: The integral of electrical current applied to a plating tank (amperes) over a period of time (hours).
- B. **Anti-Mist Additive**: A chemical which reduces the emission rate from the tank when added to and maintained in the plating tank.
- C. **Chrome**: Metallic chrome.
- D. **Chrome Plating**: Either hard or decorative chrome plating.
- E. **Chromic Acid**: An aqueous solution of chromium trioxide (CrO<sub>3</sub>) or a commercial solution containing chromic acid, dichromic acid (H<sub>2</sub>CrO<sub>7</sub>) or trichromic acid (H<sub>2</sub>Cr<sub>3</sub>O<sub>10</sub>).
- F. **Chromic Acid Anodizing**: The electrolytic process by which a metal surface is converted to an oxide surface coating in a solution containing chromic acid.

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- G. **Chromium**: Hexavalent chromium.
- H. **Control Equipment**: Any device which reduces emissions from the emissions collection system.
- I. **Decorative Chrome Plating**: The process by which chromium is electrodeposited from a solution containing compounds of chromium onto an object resulting in a chrome layer 1 micron (0.04 mil.) thick or less.
- J. **Emission Factor**: The mass of chromium emitted during a test conducted in the emissions collection system in accordance with ARB Test Method 425 divided by the ampere-hours consumed by the tanks in the tested emissions collection system, expressed as the mass of chromium emitted per ampere-hour of electrical current consumed.
- K. **Emissions Collection System**: A device or apparatus used to gather chromium emissions from the surface of a chrome plating or chromic acid anodizing tank or tanks.
- L. **Facility**: A business or businesses engaged in chrome plating or chromic acid anodizing which are owned or operated by the same person or persons and are located on the same parcel or on contiguous parcels.
- M. **Facility-wide Emissions from Hard Chrome Plating or Chromic Acid Anodizing**: The total emissions from all chrome plating or chromic acid anodizing at the facility over a calendar year. Emissions shall be calculated as the sum of emissions from the emissions collection system at the facility. The emissions from an emissions collection system shall be calculated by multiplying the emission factor for that emissions collection system by the sum of ampere-hours consumed during that year for all of the tanks served by the emissions collection system.
- N. **Hard Chrome Plating**: The process by which chromium is electrodeposited from a solution containing compounds of chromium onto an object resulting in a chrome layer thicker than 1 micron (0.04 mil).
- O. **Plating Tank**: Any container used to hold a chromium or chromic acid solution for the purposes of chrome plating or chromic acid anodizing.

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- P. **Uncontrolled Chromium Emissions from the Hard Chrome Plating or Chromic Acid Anodizing Facility**: The chromium emissions from the emissions collection systems at the facility calculated as if no control equipment is in use. For the purpose of determining compliance with this rule, the uncontrolled chromium emissions shall be calculated using an emission factor based on tests conducted in accordance with ARB test method 425 or 14 mg/ampere-hour, whichever is less.

**PART 3**      **STANDARDS**

- 3.1 **Requirements for Decorative Chrome Plating Facilities**
- A. No person shall operate a decorative chrome plating tank unless an anti-mist additive is continuously maintained in the plating tank, or control equipment is installed and used in a manner which has been demonstrated to and approved by the District Air Pollution Control Officer as reducing chromium emissions by 95 percent or more relative to chromium emissions when an anti-mist additive is not maintained or control equipment is not installed and used.
- 3.2 **Requirements for Hard Chrome Plating and Chromic Acid Anodizing Facilities**
- A. The owner or operators of all hard chrome plating and chromic acid anodizing facilities shall maintain a continuous record of current integrated over time (ampere-hours) for all plating tanks for each collection system used in the hard chrome plating or chromic acid anodizing operations and shall, within six months after District adoption of regulations enacting this control measure (10/27/90), and upon request thereafter, submit the information to the District Air Pollution Control Officer.
- B. No person shall operate a plating tank for hard chrome plating or chromic acid anodizing unless the tank has an emissions collection system.
- C. No person shall operate a hard chrome plating or chromic acid anodizing tank unless:
1. The chromium emissions from the emissions collection system serving the plating tank have been reduced by 95 percent or more of the uncontrolled chromium emissions, or;

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2. The chromium emissions from the emissions collection system serving the plating tank have been reduced to less than 0.15 milligrams (mg) of chromium per ampere-hour of electrical charge applied to the plating tank.
- D. No person shall operate a hard chrome plating tank or chromic acid anodizing tank at a facility, if facility-wide chromium emissions from hard chrome plating or chromic acid anodizing are greater than 2 pounds per year but less than 10 pounds per year, unless:
1. The chromium emissions from the emissions collection systems serving the plating tanks have been reduced by at least 99 percent of the uncontrolled chromium emissions from the hard chrome plating or chromic acid anodizing facility, or;
  2. The chromium emissions from the emissions collection systems are reduced to less than 0.03 mg of chromium per ampere-hour of electrical charge applied to the tanks.
- E. No person shall operate a hard chrome plating tank or chromic acid anodizing tank at a facility, if facility-wide chromium emissions from hard chrome plating or chromic acid anodizing are 10 pounds per year or greater, unless:
1. The chromium emissions from the emissions collection systems serving the plating tanks have been reduced by at least 99.8 percent of the uncontrolled chromium emissions from the hard chrome plating or chromic acid anodizing facility, or;
  2. The chromium emissions from the emissions collection systems are reduced to less than 0.006 mg of chromium per ampere-hour of electrical charge applied to the tanks.

**PART 4**      **Administrative Requirements**

4.1      **Compliance Schedule - Decorative Chrome Plating Facilities**

- A. No later than six months after District adoption of regulations enacting this control measure (10/27/90), the owners or operators of existing decorative chrome plating tanks must comply with the provisions of Section 3.1.A.

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4.2 **Compliance Schedule - Hard Chrome Plating and Chromic Acid Anodizing Facilities**

- A. No later than twelve months after District adoption of regulations enacting this control measure (04/27/91), the owner or operator of a hard chrome plating or chromic acid anodizing facility subject to section of 3.2.C. shall submit to the District Air Pollution Control Officer an application for an Authority to Construct the equipment necessary to meet the requirements of 3.2.C.1 or 3.2.C.2, and no later than eighteen months after District adoption of regulations on enacting this control measure (10/27/91), the facility shall be in compliance with the requirements of 3.2.C.1 or 3.2.C.2.
  
- B. No later than eighteen months after District adoption of regulations enacting this control measure (10/27/91), the owner or operator of a hard chrome plating or chromic acid anodizing facility subject to sections of 3.2.D.1 shall submit to the District Air Pollution Control Officer an application for an Authority to Construct the equipment necessary to meet the requirements of 3.2.B. or 3.2.D., and no later than twenty-four months after District adoption of regulations enacting this control measure (04/27/92), the facility shall be in compliance with the requirements of 3.2.B or 3.2.D.
  
- C. No later than thirty months after District adoption of regulations enacting this control measure (10/25/92), the owner or operator of a hard chrome plating or chromic acid anodizing facility subject to sections of 3.2.E. shall submit to the District Air Pollution Control Officer, an application for an Authority to Construct the equipment necessary to meet the requirements of 3.2.E., and no later than forty-eight months after District adoption of regulations on enacting this control enacting this control measure (04/27/94), the facility shall be in compliance with the requirements of 3.2.E.

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**RULE 902**

**AIRBORNE TOXIC CONTROL MEASURE  
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**RULE 902    HEXAVALENT CHROMIUM EMISSIONS FROM COOLING TOWERS**

**PART 1        GENERAL**

1.1    **Purpose**

The purpose of this rule is to reduce emissions of hexavalent chromium from cooling towers by eliminating chromium based circulating water treatment processes, pursuant to Title 17, California Code of Regulations, Section 93103. Hexavalent chromium containing compounds may be ingredients of cooling tower circulating water treatment chemicals.

1.2    **Applicability**

This rule shall apply to any person who owns or operates, or who plans to build, own, or operate, a cooling tower located in the Northern Sierra Air Quality Management District.

1.3    **Exemption, Discontinued Chromate Treatment**

Section 5.2 does not apply to cooling tower operators who have not used hexavalent chromium for water treatment since September 23, 1990 or cooling tower circulating water was never treated with hexavalent chromium containing compounds, and who have met all petition for exemption requirements of Section 4.4.

1.4    **Exemption, Wooden Cooling Towers**

Operators of cooling towers having wooden components exposed to circulating water may petition for a temporary exemption from the Section 3.2 hexavalent chromium concentration limitation for the period from the compliance date, September 23, 1991, up to March 23, 1992, providing that the petition for exemption requirements of Section 4.3 are met.

**PART 2        DEFINITIONS**

A.    **Cooling Tower**

Any device which evaporates circulating water to remove heat from a process, a building, or a refrigerator, and puts the heat into the ambient air.



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**B. Hexavalent Chromium/Chromate**

Hexavalent chromium and chromate are identified toxic air contaminants and are a cancer-causing (toxic) substance existing as part of various inorganic chromate compounds, for example, sodium dichromate or lead chromate.

**C. Water Treatment Chemicals**

Any combination of chemicals added to cooling tower water including tracers, corrosion inhibitors, antiscalants, dispersants, biocides.

**PART 3      STANDARDS**

**3.1 Prohibition On Hexavalent Chromium/Chromate Use**

Effective September 23, 1991, hexavalent chromium containing compounds shall not be added to cooling tower circulating water, and

**3.2 Limitation On Circulating Water Hexavalent Chromium Concentrations**

Effective September 23, 1991, a cooling tower shall not be operated with a circulating water hexavalent chromium concentration greater than or equal to **0.15 milligrams per liter**.

**PART 4      ADMINISTRATIVE REQUIREMENTS**

**4.1 Existing Cooling Towers, General Requirements**

For cooling towers existing on March 27, 1991, the owner or operator shall notify the District in accordance with Section 4.2, and no later than September 23, 1991, each cooling tower shall comply with Section 3.1 and Section 3.2 requirements. Owners or operators of cooling towers with wooden components exposed to circulating water shall comply with the limitation of Section 3.2, unless a temporary exemption has been granted in accordance with Section 4.3.

**4.2 Existing Cooling Towers, Notification**

No later than June 25, 1991, each person who owns or operates a cooling tower shall submit the following information, in writing, to the District for each cooling tower:

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- A. A declaration that a cooling tower is owned or operated; and
- B. The location of the cooling tower; and
- C. A statement as to whether or not hexavalent chromium or hexavalent chromium containing compounds is used or was used in the cooling tower; and
- D. If hexavalent chromium or hexavalent chromium containing compounds are used, the date by which such use will cease.

4.3 **Petition for Exemption, Wooden Cooling Towers**

Owners or operators of cooling towers existing on March 27, 1991, with wooden components that are exposed to circulating water may petition the APCO for exemption from the Section 3.2 hexavalent chromium concentration limit of 0.15 milligrams per liter of circulating water for a period of up to six months from the compliance date of September 23, 1991. The following requirements must be met for the temporary exemption to be granted:

- A. The District must be notified in writing that the cooling tower has wooden components exposed to circulating water; and
- B. The owner or operator complies with all other requirements of this rule; and
- C. The circulating water of the cooling tower is tested in accordance with Section 5.2 monthly and results are reported to the District; and
- D. Testing shows a decrease in the hexavalent chromium concentrations in circulating water each month; and
- E. Hexavalent chromium concentrations in circulating water shall not exceed 8 milligrams hexavalent chromium per liter of circulating water.

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4.4 **Petition for Exemption From Test Requirements, Discontinued Chromate Treatment**

The requirements of Section 5.2 apply to any person who owns or operates a cooling tower existing on or prior to March 27, 1991, with the following exception:

- A. Hexavalent chromium has not been used in the cooling tower water treatment since September 23, 1990; or
- B. Hexavalent chromium has never been used in water treatment for the cooling tower; and
- C. Such hexavalent chromium cessation of use or non-use is demonstrated by written certification, signed by a company officer, that hexavalent chromium containing compounds have not been used in the year immediately before the compliance date.

4.5 **New Cooling Tower Construction, Notification**

No later than 90 days prior to operation of a newly constructed cooling tower, the owner or operator shall provide the following information in writing for each cooling tower:

- A. The name and address of the owner or operator of the cooling tower; and
- B. The location of the new cooling tower; and
- C. The date that operation of the cooling tower is planned to commence.

**PART 5**      **MONITORING AND RECORDS**

5.1 **Determination of Hexavalent Chromium In Circulating Water**

Samples of circulating water shall be analyzed for hexavalent chromium as prescribed by American Public Health Method 312B or an equivalent method, as approved by the APCO, and the results reported to the District within 30 days of the date testing is conducted.

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5.2 **Testing Requirements**

Unless a petition for exemption from testing has been made to, and granted by, the APCO in accordance with Section 4.3 prior to September 23, 1991, testing of the cooling tower circulating water shall be conducted and reported as specified in Section 5.1:

- A. **Frequency of Testing:** At least one test of cooling tower circulating water hexavalent chromium concentration shall be conducted and the results reported to the District prior to September 23, 1991:
1. Additional tests shall be conducted and the results reported every six months thereafter.
  2. If a temporary exemption from Section 3.2 limitation has been granted, then testing shall be conducted and reported monthly in accordance with Section 4.3 and Section 1.4.
- B. **Termination of Testing:** The testing requirements of this rule for a cooling tower end when two consecutive required tests have results showing concentrations of hexavalent chromium to be less than 0.15 milligrams per liter of circulating water. Testing may be required at any time by the District, if the District has information that the circulating water may contain hexavalent chromium.

5.3 **Record Keeping**

Any person subject to Sections 5.1 and 5.2 shall maintain records of the results of all required tests of circulating water for two (2) years and submit them to the District when requested.

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**RULE 903**

**AIRBORNE ETHYLENE OXIDE CONTROL MEASURE  
FOR STERILIZERS AND AERATORS**

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**RULE 903 AIRBORNE ETHYLENE OXIDE CONTROL MEASURE FOR STERILIZERS AND AERATORS**

**PART 1 GENERAL**

1.1 **Purpose**

The purpose of this rule is to reduce ethylene oxide emissions to the atmosphere.

1.2 **Applicability**

Any person who owns or operates a sterilizer or an aerator must comply with this regulation.

1.3 **Exemption, Small User**

The requirements set forth in Part 3.0 - Standards do not apply to any facility which treats materials in a sterilizer and which uses a total of 25 pounds or less of ethylene oxide per calendar year.

1.4 **Exemption, Emergency**

The District Hearing Board may grant an emergency variance from Items (a) and (c) in Table 1 of Part 3.0-Standards, to a person who owns or operates an acute care facility if response to a local medical emergency requires increased operation of a sterilizer or aerator such that the requirements cannot be met. The demonstrated need for such increased operation shall constitute "good cause" pursuant to Health and Safety Code Section 42359.5.

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The emergency variance shall be granted in accordance with this part and any applicable District rule regarding the issuance of emergency variances for such occurrences, including the requirement that the emergency variance shall not remain in effect longer than 30 days. However, the emergency variance shall be granted only for the period of time during which increased operation of a sterilizer or aerator is necessary to respond to the local medical emergency.

**PART 2**      **DEFINITIONS**

2.1      **Acute Care Facility**

Any facility currently licensed by the California Department of Health Services as a general acute care hospital (as defined in Title 22, CCR, Section 70005), or any military hospital.

2.2      **Aeration**

The process during which residual ethylene oxide dissipates, whether under forced air flow, natural or mechanically assisted convection, or other means, from previously sterilized materials after the sterilizer cycle is complete.

2.3      **Aeration-only Facility**

A facility which performs aeration on materials which have been sterilized with ethylene oxide at another facility.

2.4      **Aerator**

Any equipment or space in which materials previously sterilized with ethylene oxide are placed or remain for the purpose of aeration. An aerator is not any equipment or space in which materials that have previously undergone ethylene oxide sterilization and aeration can be handled, stored, and transported in the same manner as similar materials that have not been sterilized with ethylene oxide.

2.5      **Aerator Exhaust Stream**

All ethylene oxide-contaminated air which is emitted from an aerator.

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**2.6 Back-draft Valve Exhaust Stream**

The air stream which results from collection of ethylene oxide-contaminated air which may be removed from the sterilizer through a back-draft valve or rear chamber exhaust system during unloading of the sterilized materials.

**2.7 Control Device**

An article, machine, equipment, or contrivance which reduces the amount of ethylene oxide between its inlet and outlet and which is sized, installed, operated, and maintained according to good engineering practices, as determined by the District.

**2.8 Control Efficiency**

The ethylene oxide (EtO) mass or concentration reduction efficiency of a control device, as measured with ARB Test Method 431 (Title 17, CCR, Section 94143) according to the source testing requirements herein, and expressed as a percentage calculated across the control device as follows:

$$\frac{\Sigma \text{EtO}_{\text{in}} - \Sigma \text{EtO}_{\text{out}}}{\Sigma \text{EtO}_{\text{in}}} \times 100 = \% \text{ Control Efficiency}$$

**2.9 Date of Compliance**

The time from District adoption of regulations enacting this control measure until a facility must be in compliance with specific requirements of this rule.

**2.10 District**

The Northern Sierra Air Quality Management District.

**2.11 Ethylene Oxide (EtO)**

A substance identified as a toxic air contaminant by the Air Resources Board in 17 CCR, Section 93000.



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2.12 **Facility**

Any entity or entities that own or operate a sterilizer or aerator, are owned or operated by the same person or persons, and are located on the same parcel or contiguous parcels.

2.13 **Facility-Wide Pounds of Ethylene Oxide Used Per Year**

The total pounds of ethylene oxide used in all of the sterilizers at the facility during a one-year period.

2.14 **Leak Free**

That state which exists when the concentration of sterilant gas measured 1 cm away from any portion of the exhaust system of a sterilizer or aerator, during conditions of maximum sterilant gas mass flow, is less than:

- A. 30 ppm for sterilant gas composed of 12% ethylene oxide and 88% chlorofluorocarbon-12, by weight, and
- B. 10 ppm for other compositions of sterilant gas, as determined by ARB Test Method 21 (Title 17,CCR, Section 94124) using a portable flame ionization detector, or a non-dispersive infrared analyzer, calibrated with methane, or an acceptable alternative method or analytical instrument approved by the District. A chlorofluorocarbon-12 specific audible detector using a metal oxide semiconductor sensor shall be considered an acceptable alternative for exhaust systems carrying a sterilant gas mixture of ethylene oxide and chlorofluorocarbon-12.

2.15 **Local Medical Emergency**

An unexpected occurrence in the area served by the acute care facility resulting in a sudden increase in the amount of medical treatments which require a significant increase in the operation of a sterilizer or aerator.

2.16 **Sterilant Gas**

Ethylene oxide or any combination of ethylene oxide and (an)other gas(es) used in a sterilizer.

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2.17 **Sterilizer**

Any equipment in which ethylene oxide is used as a biocide to destroy bacteria, viruses, fungi, and other unwanted organisms on materials. Equipment in which ethylene oxide is used to fumigate foodstuffs is considered a sterilizer.

2.18 **Sterilizer Cycle**

The process which begins when ethylene oxide is introduced into the sterilizer, includes the initial purge or evacuation after sterilization and subsequent air washes, and ends after evacuation of the final air wash.

2.19 **Sterilizer Door Hood Exhaust Stream**

The air stream which results from collection of fugitive ethylene oxide emissions, by means of an existing hood over the sterilizer door, during the time that the sterilizer door is open after the sterilizer cycle has been completed.

2.20 **Sterilizer Exhaust Stream**

All ethylene oxide-contaminated air which is intentionally removed from the sterilizer during the sterilizer cycle.

2.21 **Sterilizer Exhaust Vacuum Pump**

A device used to evacuate the sterilant gas during the sterilizer cycle, including any associated heat exchanger. A sterilizer exhaust vacuum pump is not a device used solely to evacuate a sterilizer prior to the introduction of ethylene oxide.

**PART 3**      **STANDARDS**

3.1 **General Requirements**

No person shall operate a sterilizer or aerator after the applicable date shown in column (d), Table 1, unless all of the following requirements are satisfied:

- A.      There is no discharge of sterilizer exhaust vacuum pump working fluid to wastewater streams, and

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- B. The exhaust systems including, but not limited to, any piping, ducting, fittings, valves, or flanges, through which ethylene oxide-contaminated air is conveyed from the sterilizer and aerator to the outlet of the control device are leak-free, and
- C. All of the control requirements shown in Table 1 below for the applicable control category are met; and
- D. For facilities using more than 600 pounds of ethylene oxide per year, the back-draft valve is ducted to the control device used to control the sterilizer exhaust stream or the aerator exhaust stream; and
- E. For facilities using more than 5,000 pounds of ethylene oxide per year, the sterilizer door hood exhaust stream is ducted to the control device used to control the aerator exhaust stream.

**Table 1  
Control and Compliance Requirements**

CONTROL CATEGORY	REQUIREMENTS			
Facility-wide Ethylene Oxide used (lbs/year)	Exhaust Streams to be Controlled	Exhaust Streams to be Tested	Control Efficiency (%)	Date of Compliance (months)
≤ 25 lbs/year	None	None	None	None
> 25 and ≤ 600 lbs/year	Sterilizer	Sterilizer	99.0	24
> 600 and ≤ 5000 lbs/year	Sterilizer Aerator Back-draft Valve	Sterilizer Aerator	99.9 95.0 n/a*	18
> 5000 lbs/year	Sterilizer Aerator Sterilizer Door Hood Back-draft Valve	Sterilizer Aerator	99.9 99.0 n/a* n/a*	12
Aeration-only Facilities	Aerator	Aerator	95.0	18

\* not applicable

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**PART 4**      **ADMINISTRATIVE REQUIREMENTS**

The facility shall be in compliance with all provisions specified in Part 3.0, Standards, no later than the date specified in column (d) of Table 1.

4.1      **Compliance of Ethylene Oxide Concentrations Below Detection**

For the purpose of determining compliance with the control efficiency requirement shown in column (c) of Table 1, Part 3.0, if a reduction in the amount of ethylene oxide across the control device is demonstrated, but the control efficiency cannot be affirmatively demonstrated because the concentration of ethylene oxide measured in the outlet of the control device is below 0.2 parts per million ethylene oxide, the facility shall be considered to be in compliance with this requirement.

4.2      **Alternate Compliance Date**

The owner or operator of any facility which uses more than 600 pounds of ethylene oxide per year may choose this alternate compliance option which addresses the date for compliance with the requirements of section C. If this compliance option is chosen, the owner or operator shall:

- A.      Within 3 months of the date of District adoption of regulations enacting this control measure, comply with the requirements shown in subparts 3.1 A and 3.1 B and demonstrate a control efficiency of 99.9% for the sterilizer exhaust stream, in accordance with the source testing requirements set forth in Part 5.3; and
- B.      Within 6 months of the date of District adoption of regulations enacting this control measure, submit to the District a plan to discontinue operation of all sterilizers and aerators or comply with the District requirements to submit a plan to comply with the requirements of Subparts 3.1 C, 3.1 D; and 3.1 E, and
- C.      Within 18 months of the date of District adoption of regulations enacting this control measure, do one of the following:

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1. Demonstrate to the satisfaction of the District that operation of all sterilizers and aerators at the facility has been permanently discontinued; or
2. Demonstrate compliance with the requirements of Subparts 3.1 C, 3.1 D and 3.1 E, in accordance with the source testing provisions set forth in Part 5.3.

**PART 5      MONITORING AND RECORDS**

**5.1      Notification**

Any person subject to this regulation must provide the District with the following information, in writing, within 30 days of the date of District adoption:

- A. The name(s) of the owner and operator of the facility, and
- B. The location of the facility, and
- C. The number of sterilizers and aerators at the facility, and
- D. An estimate of the total pounds of ethylene oxide and sterilant gas used by the facility, in all sterilizers, during the previous calendar year, as determined by a method approved by the District.

The District may exempt a source from this requirement if the District maintains current equivalent information on the source.

**5.2      Reporting**

Any person who owns or operates a sterilizer shall furnish a written report to the District annually on the date specified by the District, or, at the District's discretion, shall maintain such a report and make it available to the District upon request. This report shall include one of the following, as determined by the District:

- A. The number of sterilizer cycles and the pounds of ethylene oxide used per cycle for each sterilizer during the reporting period, as determined by a method approved by the District; or

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- B. The total pounds of sterilant gas and the total pounds of ethylene oxide purchased, used, and returned in the previous calendar year, as determined by a method approved by the District.

5.3 **Source Testing**

Source testing shall be conducted according to ARB Test Method 431 (Title 17, CCR, Section 94143) and the method evaluations cited therein or an acceptable source test method approved by the Executive Officer of the Air Resources Board. Specific requirements for application are given below:

- A. The test on a control device for a sterilizer exhaust stream shall be run with a typical load, as approved by the District, in the sterilizer.
- B. The test on a control device for an aerator exhaust stream shall be run with a typical load, as approved by the District, in the aerator.
- C. The inlet and outlet of the control device shall be sampled simultaneously during testing to measure the control efficiency.
- D. The efficiency of each control device shall be determined under conditions of maximum ethylene oxide mass flow to the device, under normal operating conditions. To measure the control efficiency of the control device on the sterilizer exhaust stream, sampling shall be done during the entire duration of the first sterilizer evacuation after ethylene oxide has been introduced. To measure the control efficiency of the control device on an aerator exhaust stream with a constant air flow, sampling shall be done during a period of at least 60 minutes, starting 15 minutes after aeration begins. To measure the control efficiency of the control device on an aerator exhaust stream with a non-constant air flow, sampling shall be done during the entire duration of the first aerator evacuation after aeration begins.
- E. There shall be no dilution of the air stream between the inlet and outlet test points during testing.

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**RULE 904**

**ASBESTOS AIRBORNE TOXIC CONTROL MEASURE  
ASBESTOS-CONTAINING-SERPENTINE**

**CONTENTS**

**PART 1.0 GENERAL**

By reference, Title 17, section 93106, of the California Code of Regulations shall apply in its entirety.





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TOXIC AIR CONTAMINANTS**

**RULE 905**

**DIOXINS AIRBORNE TOXIC CONTROL MEASURE  
MEDICAL WASTE INCINERATORS**

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**RULE 905     DIOXIN EMISSIONS FROM MEDICAL WASTE INCINERATORS**

**PART 1.0     GENERAL**

1.1     **Purpose**

The purpose of this rule is to control emissions of dioxin from medical waste incinerators.

1.2     **Applicability**

This rule shall apply to any person who owns or operates, or who plans to build, own, or operate, a medical waste incinerator located in the Northern Sierra Air Quality Management District.

1.3     **Exemptions, Crematoria**

The provisions of this rule do not apply to those incinerators which are exclusively crematoria of human or animal remains.

**PART 2.0     DEFINITIONS**

2.1     **ARB Test Method 2**

The test method specified in Title 17, of the California Code of Regulations, Section 94102.

2.2     **ARB Test Method 428**

The test method specified in Title 17, of the California Code of Regulations, Section 94139.

2.3     **Control Equipment**

Any device which reduces emissions from medical waste incinerators.

2.4     **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 expressed as 2,3,7,8, tetrachlorinated dibenzo-para-dioxin equivalents using current California Department of Health Services toxic equivalency factors.

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**2.5 Medical Facilities**

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

**2.6 Medical Waste Incinerators**

Furnaces or other closed fire chambers that are located at a facility and used to dispose of waste generated at medical facilities by burning.

**2.7 Uncontrolled Emissions**

The dioxin emissions measured from the incinerator at a location downstream of the last combustion chamber, but prior to the air pollution control equipment.

**2.8 Waste**

All discarded putrescible and non-putrescible solid, semisolid, and liquid materials, including garbage, trash, refuse, paper, rubbish, food, ashes, plastics, industrial waste, demolition and construction waste, equipment, instruments, utensils, appliances, manure, and human or animal solid and semi-solid wastes.

**PART 3.0 OPERATING REQUIREMENTS**

**3.1 Facilities Burning More Than 25 Tons/Year Of Waste**

The following requirements shall apply only to medical waste incinerators that incinerate more than 25 tons of waste per year.

- A. No person shall operate a medical waste incinerator unless:
1. The dioxin emissions have been reduced by 99 percent or more of the uncontrolled emissions; or
  2. The dioxin emissions have been reduced to 10 nanograms or less per kilogram of waste burned.

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- B. 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:
1. The flue gas temperature at the outlet of the air pollution control equipment shall not exceed 300°F, unless it has been demonstrated to, and approved in writing by, both the ARB, and the APCO that lower emissions of dioxin are achieved at a higher outlet temperature.
  2. For a single chamber incinerator, the combustion chamber shall be maintained at no less than 1,800°F ( $\pm 200^\circ\text{F}$ ) primary combustion chamber shall be maintained at no less than 1,400°F and the secondary combustion chamber shall be maintained at no less than 1,800°F ( $\pm 200^\circ\text{F}$ ). 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:

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.

$Q_c$  = means the combustion gas flow through  $V$ , expressed in actual cubic feet per second, which is the measured ARB Test Method 2, corrected to the maximum combustion chamber temperature ( $T_c$ ) by using  $T_c$  instead of  $T^{\text{std}}$ .

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

The volumetric flow rate measured at the sampling points must be adjusted to chamber pressures.

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Alternative methods may be used if conditions for determining the combustion gas flow rate by ARB Test Method 2 are unacceptable. The determination shall be equivalent to and within the guidelines of ARB Test Method 2 and at the discretion of the Air Pollution Control Officer.

3. The bottom ash, fly ash and air pollution control equipment residuals shall be handled and stored in a manner that prevents entrainment into ambient air.
4. The owner or operator of a medical waste incinerator shall maintain the following:
  - a. 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 APCO; the hourly waste charging rates; and the opacity of stack emissions or other indicator of particulate matter which is approved by the APCO.
  - b. Maintenance records for the incinerator, control equipment, and monitoring equipment, and calibration records for the monitoring equipment.
  - c. Equipment for determining and recording the weight of waste charged to the incinerator. A recordkeeping log which includes the following information: date, load time, number of bags, total weight of bags charged into the incinerator and signature of personnel weighing and charging the incinerator.
5. For purposes of demonstrating compliance with subsection (3.1)(A) 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 this method shall be used since it offers better selectivity and lower detection limits when compared to low resolution mass spectrometry.

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Annual source tests shall be conducted until at least two consecutive tests demonstrate compliance, at which time source tests shall be conducted every three years to assure continued compliance.

- a. For purposes of determining compliance with subsection (3.1)(A)(1) 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.
  - b. For purposes of determining compliance with subsection (3.1)(A)(2) of this rule, the source testing shall be conducted at the stack.
  - c. Prior to source testing, the APCO shall review the waste log for the last 12 months to determine what type of waste sample would be most representative of "worst case" operations. 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 APCO can require additional information regarding the composition of the waste.
  - d. Source testing shall be conducted at the maximum waste firing capacity ( $\pm$  10 percent) allowed by the District's Permit to Operate. A copy of all source test results conducted for purposes of demonstrating compliance with this rule shall be provided to the ARB at the same time that it is provided to the local Air Quality Management District.
6. Any violation, malfunction, or upset conditions on the incinerator, the air pollution control equipment, or the continuous data recording system shall be reported to the District within 1 hour of occurrence or by 9:00 AM the next business day if the malfunction occurs outside normal business hours.

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7. 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 APCO. Copies of the training certificates for the operators shall be submitted to the District and the original certificates shall be made available for inspection at the facility.

**3.2 Facilities Burning Less Than 25 Tons/Year Of Waste**

The following requirements shall apply to incinerators that incinerate 25 tons or less of waste per year;

- A. No person shall operate a medical waste incinerator that incinerates 25 tons or less of waste per year unless the requirements specified in subsections (3.1)(B)(3), (3.1)(B)(4)(c), and (3.1)(B)(7) are met.
- B. 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 subsection (3.1)(B)(5)(b)(c)(d).

**PART 4.0 ADMINISTRATIVE REQUIREMENTS**

**4.1 Compliance Schedule**

- A. No later than July 4, 1992, the owner or operator of a medical waste incinerator that incinerates more than 25 tons of waste per year shall submit to the APCO an application for an Authority to Construct for the Construction or modification of any equipment necessary to meet the requirements of Parts (3.1)(A)(1) and (3.1)(A)(2) and no later than September 8, 1992, the owner or operator of a medical waste incinerator shall be in compliance with this regulation.
- B. The owner or operator of a medical waste incinerator that incinerates 25 tons or less of waste per year who intends to remain in operation shall notify the District by July 4, 1992 and be in compliance with this regulation by September 8, 1993.

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TOXIC AIR CONTAMINANTS**

4.2 **Shutdown Notification**

Any person who intends to permanently cease operation of their medical waste incinerator shall notify the APCO of the shutdown date by July 4, 1992. The shutdown date shall be no later than October 8, 1992.



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TOXIC AIR CONTAMINANTS**

**RULE 906**

**AERATION OF CONTAMINATED SOIL**

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**REGULATION IX  
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**RULE 906    AERATION OF CONTAMINATED SOIL**

**Part 1.0    GENERAL**

1.1    **Purpose**

The purpose of this Rule is to limit the emission of organic compounds from soil that has been contaminated by organic chemical leaks, petroleum chemical leaks or spills, to describe an acceptable soil aeration procedure, and to reduce public exposure to emissions for toxic compounds.

1.2    **Applicability**

This rule shall apply to any person who proposed to aerate contaminated soil located in the Northern Sierra Air Quality Management District.

1.3    **Exemption, Emergency Soil Decontamination**

The requirements of Section 3.0, shall not apply to the following, emergency soil decontamination may be performed by, under the jurisdiction of, or pursuant to the requirements of, an authorized health officer, agricultural commissioner, fire protection officer, or other authorized agency officer. Whenever possible, the APCO shall be notified prior to commencing such excavation.

1.4    **Exemption, One Cubic Yard of Contaminated Soil**

The treatment of less than one (1) cubic yard of contaminated soil is exempt from the requirements of this Regulation as long as it is not located within 1000' of a school, hospital, health care facility or sensitive area.

1.5    **Exemption, Sampling**

Contaminated soil exposed for the sole purpose of sampling shall not be considered to be aerated. Removal of soil for sampling shall not qualify a pile as "active."

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**Part 2.0**      **DEFINITIONS**

2.1      **Active Storage Pile**

A pile of contaminated soil to which soil is currently being added or from which soil is currently being removed. Activity must have occurred or be anticipated to occur within one hour to be current.

2.2      **Aeration**

Exposure of contaminated soil to the air.

2.3      **Aeration Depth**

The smaller of the following: the actual average depth of contaminated soil; or 0.15 meters (0.5 feet) multiplied by the daily frequency with which soil is turned.

2.4      **Aeration Volume**

The volume of soil being aerated shall be calculated as follows: the exposed surface area (in square feet or square meters) shall be multiplied by the aeration depth. The exposed surface area includes the pile of excavated soil unless the pile is covered per Part 3.0, Section 3.3.

2.5      **Contaminated Soil**

Soil which has an organic content, as measured using the procedure in Part 5.0, Section 5.2, exceeding 50 ppm(wt).

2.6      **Organic Compound**

Any compound of carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonate and ammonium carbonate.

2.7      **Organic Content**

The concentration of organic compounds measured in the composite sample collected and analyzed using the procedures in Part 5.0, Sections 5.1 and 5.2.

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**2.8 Sensitive Area**

Any area where there are substantial concentrations of people for an extended period of time. These areas include but are not limited to a park, a shopping center, a library, a government center, or a residential neighborhood.

**Part 3.0      STANDARDS**

**3.1 Uncontrolled Aeration**

Based on the specific level of contamination, a person shall not aerate contaminated soil at a rate in excess of that specified in Table 1. The limitations in Table 1 apply to the entire facility, and indicate the volume of contaminated soil that may be added, on any one day, to soil that is already aerating.

TABLE 1  
Allowable Rate of Uncontrolled Aeration

<u>Organic Content</u> <u>ppm(weight)</u>	<u>Rate Of Uncontrolled Aeration</u>	
	<u>Cubic meters/day</u>	<u>Cubic yards/day</u>
<50	Exempt	Exempt
50 - 99	459.0	600
100 - 499	91.8	120
500 - 999	45.9	60
1000 - 1999	22.9	30
2000 - 2999	11.5	15
3000 - 3999	7.6	10
4000 - 4999	5.7	8
>5000	0.08	0.1

**3.2 Controlled Aeration**

Soil may be aerated at rates exceeding the limitation of Part 3.0, Section 3.1, provided emissions of organic compounds to the atmosphere are reduced by at least 90% by weight.

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**3.3 Storage Piles**

Contaminated soil which is not being aerated shall be covered except when soil is being added or removed. Any uncovered contaminated soil will be considered to be aerated. The soil may be covered with a tarp or other covering, provided no head space where vapors may accumulate is formed and provided the covering is in good condition and is secured adequately so as to minimize emissions to the atmosphere.

**Part 4.0      ADMINISTRATIVE REQUIREMENTS**

**4.1 Notification**

The person responsible for the aeration of any contaminated soil shall provide the following information in a format approved by the District:

- A. Estimated total quantity of soil to be aerated.
- B. Estimated quantity of soil to be aerated per day.
- C. Estimated average degree of contamination, or total organic content of soil.
- D. Chemical composition of contaminating organic compounds (i.e., gasoline, methylene chloride, etc.). A description of the basis on which these estimate were derived (soil analysis test reports, etc.).

**4.2 Aeration Authorization**

Following the receipt of the information required in Section 4.1, the APCO or his designee shall review the information for compliance with the provisions of this rule. After determining compliance a permit shall be issued.

**4.3 Notification Requirements**

- A. After a permit to aerate is issued, the person responsible for the project shall notify the District at least 24 hours prior to the commencement of aeration.
- B. The District shall be notified within 24 hours of any change in the information listed in Section 4.1.

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4.4 **Aeration of Contaminated Soils within 1000' Feet of a School, Hospital, Health Care Facility or Other Sensitive Areas**

At the discretion of the APCO, any aeration project within 1000' feet of a school, hospital, health care facility, or other sensitive area where there are significant numbers of people potentially exposed, shall not occur until a screening level risk assessment is completed and submitted to the APCO and a permit is granted.

**Part 5.0**      **MONITORING AND RECORDS**

5.1 **Soil Sampling**

One composite sample shall be collected and analyzed for every 50 cubic yards of excavated contaminated soil to be aerated. At least one composite sample shall be collected from each inactive, uncovered storage pile within 24 hours of excavation. Samples are not required if the soil is uncontaminated.

A. Each 50 cubic yard pile for which a composite sample is required shall be considered to have four equal sectors. One sample shall be taken from the center of each sector. Samples shall be taken at least three inches below the surface of the pile. Samples shall be taken using one of the following methods:

1. Samples shall be taken using a driven-tube type sampler, capped and sealed with inert materials, and extruded in the laboratory in order to reduce the loss of volatile materials; or,
2. Samples shall be taken using a clean brass tube (at least three inches long) driven into the soil with a suitable instrument. The ends of the brass tube shall then be covered with aluminum foil, then plastic end caps, and finally wrapped with a suitable tape. The samples shall then be immediately placed on ice, or dry ice for transport to a laboratory.

5.2 **Measurement Of Organic Content**

Organic content of soil shall be determined by the Regional Water Quality Control Board's Revised Analytical Methods, EPA Reference Method 8010 or 8015, or any other method approved by the APCO.

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TOXIC AIR CONTAMINANTS**

**RULE 907**

**AIRBORNE TOXIC CONTROL MEASURE FOR EMISSIONS  
FROM NON-FERROUS METAL MELTING**

**CONTENTS**

**PART 1.0 GENERAL**

By reference, Title 17, section 93107, of the California Code of Regulations shall apply in its entirety.





**REGULATION IX  
TOXIC AIR CONTAMINANTS**

**RULE 908**

**AIRBORNE TOXIC CONTROL MEASURE FOR EMISSIONS  
OF PERCHLOROETHYLENE FROM DRY CLEANING OPERATIONS**

**CONTENTS**

**PART 1.0    GENERAL**

By reference, Title 17, section 93109, of the California Code of Regulations shall apply in its entirety.