

# **RULE 216 ORGANIC SOLVENT CLEANING AND DEGREASING OPERATIONS**

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## 100 GENERAL

**101 PURPOSE:** To limit the emission of volatile organic compounds from degreasers.

### 102 APPLICABILITY:

102.1 Geographic: The provisions of this rule apply to all of Placer County.

102.2 Operations: This rule applies to solvent degreasing operations performed in non-vapor degreasers and vapor degreasers.

**103 SEVERABILITY:** If a court of competent jurisdiction issues an order that any provision of this rule is invalid, it is the intent of the Board of Directors of the District that other provisions of this rule remain in full force and effect, to the extent allowed by law.

### 104 EXEMPTIONS

104.1 The provisions of this rule shall not apply to solvent degreasing operations using exempt compounds mixed with volatile organic compounds provided that the mixture does not contain more than two (2) percent volatile organic compounds by weight.

104.2 The provisions in Section 302 of this rule shall not apply to non-vapor degreasers which have an air-solvent interface area less than or equal to 1.0 ft<sup>2</sup>, except for requirements that cleaners shall be covered when work is not being processed, or to remote reservoir degreasers using a non-volatile solvent spray which is drained into the remote reservoir concurrently with the degreasing operation.

104.3 The provisions of this rule shall not apply to non-vapor degreasers, which use solvents that contain 50 grams per liter or less VOCs including water and exempt compounds.

104.4 The provisions of Section 307.8 of this rule do not apply to open-top vapor degreasers where solvent flow complies with Section 307.11.2 and liquid solvent does not splash above the air vapor interface.

104.5 The provisions of this rule shall not apply to solvent degreasing operations that are subject to the NESHAP requirements of 40 CFR Part 63 Subpart T – Halogenated Solvents Emissions from Solvent Cleaning.

104.6 The 50 grams VOC per liter limit in Section 302.2 does not apply to a non-vapor degreaser or to a remote reservoir degreaser that uses a solvent that complies with the VOC limit specified for the cleaning activity listed in Section 301 of Rule 240, Surface Preparation and Cleanup. Any non-vapor degreaser exempt under this section shall comply with other requirements of this rule.

104.7 The provisions of this rule shall not apply to products subject to the California Air Resources Board Consumer Products Regulations as set forth in Subchapter 8.5, Article 2, Section 94507-94517 of Title 17 of the California Code of Regulations.

104.8 The provisions of this rule shall not apply to wipe cleaning. Wipe cleaning requirements are specified in Rule 240 - Surface Preparation And Cleanup.

## 200 DEFINITIONS

- 201 AIRTIGHT/AIRLESS CLEANING SYSTEM:** A sealed cleaning system that has no open air/vapor or air/solvent interface, and is designed and automatically operated to minimize the discharge or leakage of solvent vapor emissions to the atmosphere during all cleaning and vacuum drying operations. The system consists of devices to condense and recover solvent and solvent vapor, and control devices to remove solvent vapors from all gas streams that vent to the atmosphere.
- 202 CIRCUMFERENTIAL TROUGH:** A receptacle located below the primary condenser that conveys condensed solvent and atmospheric moisture to a water separator.
- 203 CLOSED CONTAINER:** A container, which has a nonabsorbent cover where the cover meets with the main body of the container without any visible gaps between the cover and the main body of the container.
- 204 CONVEYORIZED DEGREASER:** Any continually loaded, conveyORIZED degreaser, using solvent that is maintained either above or below the initial boiling point temperature of the solvent.
- 205 DEGREASER:** A tank, tray, drum, or other container in which objects to be cleaned are exposed to a degreasing solvent or degreasing solvent matter.
- 206 EXEMPT COMPOUNDS:** For the purpose of this rule, "Exempt Compounds" has the same meaning as in Rule 102, Definitions.
- 207 FREEBOARD HEIGHT:**
- 207.1 For non-vapor degreasers, freeboard height means the distance from the top of the solvent, or the solvent drain of a remote reservoir cold cleaner, to the top of the tank.
  - 207.2 For vapor degreasers, freeboard height means the distance from the solvent vapor-air interface to the top of the degreaser.
  - 207.3 For conveyORIZED degreasers, freeboard height means the vertical distance from the top of the solvent (non-vapor solvent) or the top of the vapor-air interface (vapor degreaser), to the bottom of the lowest opening where solvent vapors can escape.
- 208 FREEBOARD RATIO:** The freeboard height divided by the smaller of the inside length or the inside width of the degreaser's evaporative surface area.
- 209 KEY SYSTEM OPERATING PARAMETER:**
- 209.1 A variable that is critical to the operation of an emission control system and that ensures:
    - 209.1.1 Operation of the system within the system manufacturer's specifications, and
    - 209.1.2 Compliance with the overall system efficiency standard required by Section 310.

209.2 Variables described in Section 209.1 may include, but are not limited to:

209.2.1 Hours of operation,

209.2.2 Temperature,

209.2.3 Flow rate, and

209.2.4 Pressure.

**210 LEAK:** A leak is:

210.1 The dripping of liquid volatile organic compounds in excess of three drops per minute; or

210.2 The appearance of a visible mist.

**211 LIP EXHAUST:** A system, which collects solvent vapors escaping from the top of a degreaser and directs them away from operating personnel.

**212 LOW VOLATILITY SOLVENT:** Any solvent with an initial boiling point, which is greater than 248°F (120°C).

**213 MAKEUP SOLVENT:** The solvent added to the degreaser to replace solvent lost through evaporation or other means.

**214 NESHAP:** National Emission Standards for Hazardous Air Pollutants.

**215 NON-VAPOR DEGREASER:** Any degreaser using solvent, which, if heated, is maintained, below the initial boiling point temperature of the solvent.

**216 OPEN-TOP VAPOR DEGREASER:** Any batch-loaded degreaser using solvent which is maintained above the initial boiling point temperature of the solvent. Degreasing occurs through the condensation of the resultant solvent vapor onto the surface of the workload.

**217 OSHA:** Occupational Safety and Health Administration.

**218 REFRIGERATED FREEBOARD CHILLER:** A secondary cooling coil mounted above the primary condenser which provides a chilled air blanket above the solvent vapor-air interface to cause the condensation of additional solvent vapor, thereby increasing vapor control efficiency.

**219 REMOTE RESERVOIR DEGREASER:** A non-vapor degreaser with a tank that is completely enclosed except for a solvent return opening no larger than 15.50 square inches (100 square centimeters) which allows used solvent to drain into it from a separate solvent sink or work area and which is not accessible for soaking workloads.

**220 SOLVENT:** Any liquid containing volatile organic compounds, which is used to perform solvent degreasing.

**221 SOLVENT DEGREASING:** The removal of contaminants with solvents from parts, products, tools, machinery, and equipment, including the subsequent drying of the items.

**222 STATIONARY SOURCE (SOURCE OR FACILITY):** Any building, structure, facility, or emissions unit, which emits or may emit any affected pollutant directly or as fugitive emissions.

- 222.1 Building, structure, facility, or emissions unit includes all pollutant emitting activities which:
- 222.1.1 belong to the same industrial grouping, and;
  - 222.1.2 are located on one property or on two or more contiguous properties, and;
  - 222.1.3 are under the same or common ownership, operation, or control or which are owned or operated by entities, which are under common control.
- 222.2 Pollutant emitting activities shall be considered as part of the same industrial grouping if:
- 222.2.1 they belong to the same two-digit standard industrial classification code under the system described in the 1987 Standard Industrial Classification Manual, or;
  - 222.2.2 they are part of a common production process. (Common production process includes industrial processes, manufacturing processes and any connected processes involving a common material.)
- 223 SUPERHEATED VAPOR ZONE:** A region located within the vapor zone of a degreaser whereby solvent vapors are heated above the solvent's boiling point.
- 224 VOLATILE ORGANIC COMPOUND (VOC):** For purpose of this rule, "volatile organic compound" has the same meaning as in Rule 102, Definitions.
- 225 VOLATILE SOLVENT:** Any solvent, which is not defined as a low volatility solvent pursuant to Section 212.
- 226 WIPE CLEANING:** A method of cleaning which utilizes a material such as a rag wetted with a solvent, coupled with a physical rubbing process to remove contaminants from surfaces.
- 227 WORKLOAD:** The objects put in a degreaser for the purpose of removing oil, grease, soil, coating, dirt or other undesirable matter from the surface of the objects.

### 300 STANDARDS

- 301 GENERAL EQUIPMENT REQUIREMENTS:** Any person who uses a degreaser shall utilize the following equipment:
- 301.1 An apparatus or cover, which prevents the solvent from evaporating when not processing work in the degreaser.
    - 301.1.1 For non-vapor degreasers using volatile solvent, or solvent that is agitated, the cover shall be a sliding, rolling or guillotine (bi-parting) type which can be opened and closed easily with one hand.
    - 301.1.2 For open-top vapor degreasers, the cover shall be a sliding, rolling or guillotine (bi-parting) type, which can be opened and closed easily without disturbing the vapor zone.
    - 301.1.3 For conveyORIZED degreasers, a cover shall be provided for closing off the entrance and exit when not in use.

- 301.2 A facility for draining cleaned parts such that the drained solvent is returned to the container.
- 301.3 A permanent, conspicuous label which summarizes operating requirements contained in Sections 303, through 307, of this rule.
- 301.4 Use only solvent containers free of all liquid leaks, visible tears, or cracks. Pumps, pipelines, or flanges, shall not have any liquid leaks, visible tears, or cracks.

**302 NON-VAPOR DEGREASERS; EQUIPMENT REQUIREMENTS:**

- 302.1 A person shall only operate non-vapor degreasers, including remote reservoir degreasers (except as noted in Section 104.2), using one of the following control devices:
  - 302.1.1 Non-vapor degreasers with a freeboard ratio equal to or greater than 0.75 if using solvents which are:
    - 302.1.1.1 Agitated, or
    - 302.1.1.2 Heated above 122°F (50°C), or
    - 302.1.1.3 Volatile.
  - 302.1.2 Non-vapor degreasers using only low volatility solvents, which are not agitated, and which have a freeboard height of at least 6 inches.
  - 302.1.3 A water cover may be used as an acceptable alternative to Sections 302.1.1 and 302.1.2 only if the solvent is insoluble in water and has a specific gravity greater than 1.
- 302.2 Effective December 11, 2004, a person owning or operating a non-vapor degreaser shall use solvents with a VOC content of 50 grams per liter or less.

**303 VAPOR DEGREASERS; EQUIPMENT REQUIREMENTS:** In addition to the applicable requirements in Section 301, a person operating a vapor degreaser shall also comply with the following requirements.

- 303.1 Until December 11, 2004, a person shall operate only vapor degreasers, which have all of the following control devices:
  - 303.1.1 A freeboard ratio greater than or equal to 0.75.
  - 303.1.2 Cleaners with an evaporative surface area greater than or equal to 1 square meter, shall be equipped with a refrigerated freeboard chiller for which the chilled air blanket temperature (°F) at the coldest point on the vertical axis in the center of the air-vapor interface shall be no greater than 30% of the initial boiling point (°F) of the fresh solvent used or no greater than 40°F. If the chiller operates below the freezing temperature of water, it shall be equipped with an automatic defrost.
  - 303.1.3 A primary condenser.

303.2 Effective December 11, 2004, a person shall not operate a vapor degreaser unless the vapor degreaser is equipped with all of the following:

303.2.1 An automated parts handling system;

303.2.2 Circumferential primary condensing coils;

303.2.3 A circumferential trough;

303.2.4 A water separator;

303.2.5 A freeboard ratio of at least 1.0;

303.2.6 A superheated vapor zone; and

303.2.7 A refrigerated freeboard chiller that is operated such that the chilled air blanket temperature measured at the center of the air blanket is no greater than 40 percent of the boiling point of the solvent, measured in degrees Fahrenheit.

**304 REMOTE RESERVOIR DEGREASER:** Effective December 11, 2004, in addition to Section 302, a person owning or operating a remote reservoir degreaser shall comply with the following requirements:

304.1 Prevent solvent vapors from escaping from the solvent container by using such devices as a cover or a valve when the remote reservoir is not being used, cleaned, or repaired;

304.2 Direct solvent flow in to prevent liquid solvent from splashing outside of the remote reservoir degreaser;

304.3 Use only solvent containers free of all liquid leaks. Auxiliary equipment such as pumps, pipelines, or flanges, shall not have any liquid leaks, visible tears, or cracks.

**305 VAPOR DEGREASERS; SAFETY SWITCHES:** If a vapor degreaser is used, then the following equipment shall be utilized:

305.1 A device that shuts off the sump heater if the condenser coolant stops circulating or becomes warmer than specified.

305.2 For degreasers of the spray type, a device that prevents spray pump operation unless the solvent vapor level is at the designed operating level.

305.3 A manual reset that shuts off the sump heater if the solvent vapor level rises above the designed operating level.

**306 CONVEYORIZED DEGREASERS:** In addition to the requirements of Sections 302, and 303, a person shall not operate a conveyORIZED degreaser unless it is equipped with the following control devices:

306.1 Either a drying tunnel or other means such as a rotating basket, sufficient to prevent cleaned parts from carrying out solvent liquid or vapor.



- 306.2 Minimized opening: entrances and exits should silhouette workloads so that the average clearance between parts and the edge of the degreaser opening is either less than 4 inches (10 cm) or less than 10 percent of the width of the opening.

**307 GENERAL OPERATING REQUIREMENTS:** Any person who uses a degreaser must conform to the following operating requirements:

- 307.1 Operate and maintain the degreaser and emission control equipment in proper working order.
- 307.2 Do not allow any solvent to leak from any portion of the degreaser.
- 307.3 Do not store or dispose of any solvent from the degreaser, including waste solvent, in a manner that causes or allows any volatile organic compounds emissions.
- 307.4 If distillation recovery of waste solvent is performed, solvent residues shall not contain more than 10 percent solvent by volume after distillation.
- 307.5 Waste solvent and waste solvent residues, shall be disposed of by one of the following methods:
- 307.5.1 A commercial waste solvent reclamation service licensed by the State of California.
  - 307.5.2 At a facility that is federally or state licensed to treat, store, or dispose of such waste.
  - 307.5.3 Recycling in conformance with Section 25143.2 of the California Health and Safety Code.
- 307.6 Do not remove or open any device designed to cover the solvent unless processing work in the degreaser or performing maintenance on the degreaser.
- 307.7 Drain cleaned parts after cleaning until dripping ceases (non-vapor degreaser only).
- 307.8 If using a solvent flow, use only a continuous, fluid stream (not a fine, atomized, or shower type spray) at a pressure that does not cause liquid solvent to splash outside of the degreaser.
- 307.9 Perform solvent agitation, where necessary, by means other than air agitation.
- 307.10 Do not degrease porous or absorbent materials such as cloth, leather, wood, or rope.
- 307.11 For vapor degreasers:
- 307.11.1 Workloads shall not occupy more than half of the degreaser's evaporative surface area.
  - 307.11.2 Solvent spray shall be kept at least 4 inches below the air-vapor interface.

- 307.11.3 When starting the degreaser, the cooling system shall be turned on before, or simultaneously with, the sump heater.
- 307.11.4 When shutting down the degreaser, the sump heater shall be turned off before, or simultaneously with, the cooling system.
- 307.11.5 The degreaser shall be covered whenever the cooling system is off.
- 307.12 Minimize solvent carry-out by the following measures, as applicable:
  - 307.12.1 Rack workload to facilitate drainage;
  - 307.12.2 Move workload in and out of the degreaser at less than 3.3 m/min (11 ft/min);
  - 307.12.3 Degrease the workload in the vapor zone until condensation ceases;
  - 307.12.4 Allow workload to dry within the degreaser until visually dry;
  - 307.12.5 For manual operation, tip out any pools of solvent remaining on the workload before removing it from the degreaser.
- 307.13 A cleaner shall not be located where drafts are directed across the cleaner.
- 307.14 For those cleaners equipped with water separators, no solvent shall be visually detectable in the water exiting the water separator.
- 307.15 Wipe cleaning materials containing solvent shall be kept in closed containers at all times, except during use.
- 307.16 All waste solvent shall be stored in properly identified and closed containers;
- 307.17 All associated pressure relief devices shall not allow liquid solvents to drain out; and
- 307.18 Spills during solvent transfer shall be wiped up immediately and the used wipe rags shall be stored in closed containers.
- 308 LIP EXHAUST SYSTEM:** A lip exhaust system shall not be added to any degreaser, unless it is vented to an emission control system, pursuant to Section 310. The lip exhaust shall be turned off when the degreaser is covered.
- 309 ALTERNATIVE AIRTIGHT/AIRLESS CLEANING SYSTEM REQUIREMENTS:** In lieu of complying with the applicable requirements in Sections 302, 303, and 306, a person may use an airtight/airless cleaning system that complies with the following requirements.
  - 309.1 The airtight/airless cleaning system shall be operated in accordance with the manufacturer's specifications and operated with a door or other pressure sealing apparatus that is in place during all cleaning and drying cycles.
  - 309.2 The airtight/airless cleaning system shall not have a vapor leak of more than 50 parts per million measured as methane at the outlet of the airtight/airless cleaning system as indicated by a portable analyzer pursuant to Section 502.8.

- 309.3. All waste solvent shall be stored in properly identified and closed containers.
- 309.4 All associated pressure relief devices shall not allow liquid solvents to drain out.
- 309.5 Spills during solvent transfer shall be wiped up immediately and the used wipe rags shall be stored in closed containers.

**310 EMISSIONS CONTROL EQUIPMENT:** As an alternative to complying with the applicable requirements of Sections 302, 303, and 306, a person may use an emissions control equipment, subject to the approval of the Air Pollution Control Officer, provided that the emissions control equipment satisfies the following requirements:

- 310.1 The emissions control equipment is approved by the Air Pollution Control Officer pursuant to Rule 501 – GENERAL PERMIT REQUIREMENTS, and
- 310.2 The emissions control equipment is designed and operated with an overall collection and control device efficiency (the collection efficiency multiplied by the control efficiency) of at least 85 percent on a mass basis, as determined pursuant to Sections 402, 502.2 and 502.3.
- 310.3 The emission collection system shall have a ventilation rate not greater than 20 cubic meters per minute per square meter over the total area of the degreaser's evaporative surface area, unless the rate must be changed to meet Federal and State OSHA requirements.

#### 400 ADMINISTRATIVE REQUIREMENTS

**401 CALCULATION FOR DETERMINING VOC CONTENT OF SOLVENTS INCLUDING WATER AND EXEMPT COMPOUNDS:** For the VOC content as applied, the volume of solvent is defined as the volume of the original solvent, plus any material added to the original solvent (e.g., thinners or reducers). For the VOC content as supplied, the volume of solvent is defined as the volume of the original solvent. The weight of VOC per total volume of solvent shall be calculated by the following equation:

$$G_2 = \frac{W_v - W_w - W_{ec}}{V_m}$$

Where: $G_2$	=	Weight of VOC per total volume of solvent, in grams per liter
$W_v$	=	Weight of all volatile compounds, in grams
$W_w$	=	Weight of water, in grams
$W_{ec}$	=	Weight of exempt compounds, in grams
$V_m$	=	Volume of solvent, in liters

- 402 CALCULATION FOR DETERMINING PERCENT CONTROL EFFICIENCY AND VOC MASS EMISSION RATE:** The VOC mass emission rate shall be calculated both upstream and downstream of the emissions control equipment based on the VOC mass concentration and volumetric flowrate, pursuant to Sections 502.3, 502.4 and the following equations:

**402.1 VOC Mass Emission Rate:**

$$M = (Q) * (C) * (60 \frac{m}{hr}) \text{ (calculated upstream and downstream)}$$

Where: M = VOC mass emission rate  
(upstream/downstream), in lb/hr.  
Q = the volumetric flowrate at the inlet (upstream) or  
exhaust stack outlet (downstream), in standard cubic  
feet per minute as determined by Section 502.4.  
C = the VOC mass concentration at the inlet (upstream) or  
outlet (downstream), in pounds per standard cubic feet,  
as determined pursuant to Section 502.3.

**402.2** The percent control efficiency is calculated as follows:

$$\%CE = \left( \frac{M_u - M_d}{M_u} \right) * 100$$

Where: CE = control efficiency.  
M<sub>u</sub> = the upstream VOC mass emission rate, in lb/hr.  
M<sub>d</sub> = the downstream VOC mass emission rate, in lb/hr.

- 403 OPERATION AND MAINTENANCE PLAN:** Any person using an approved emission control equipment pursuant to Section 310 must submit an Operation and Maintenance plan for the emissions control equipment to the Air Pollution Control Officer for approval. The plan shall specify operation and maintenance procedures that demonstrate continuous operation and compliance of the emissions control equipment during periods of emissions-producing operations. The plan shall specify key system operating parameters such as temperatures, pressures, and flow rates, necessary to determine compliance with this rule and shall describe in detail procedures to maintain the approved control device. The plan shall specify which records must be kept to document these operations and maintenance procedures. The records shall comply with the requirements of Section 501. The plan shall be implemented upon approval by the Air Pollution Control Officer.

**500 MONITORING AND RECORDS**

- 501 RECORDKEEPING:** In addition to any existing permit conditions issued pursuant to Rule 501, General Permit Requirements, any person subject to this rule shall comply with the following requirements:

**501.1 List of Materials:** A list shall be maintained of all solvents currently used and/or stored at the site. The list shall include the following information:

501.1.1 Cleaning material type by name/code/manufacturer.

501.1.2 The actual VOC content of cleaning material as applied including water and exempt compounds.

501.1.3 The actual mixing ratio for the cleaning material as applied.

501.2 Usage Records: Any person within the District using cleaning materials regulated by this rule shall update and maintain the records as required by this rule as follows:

501.2.1 Monthly:

501.2.1.1 Records of total applied volume in gallons for each cleaning material used.

501.2.1.2 Record of solvent cleaning activity associated with each solvent used.

501.2.1.3 Records of each time waste solvent or waste residue is removed from the facility for disposal.

501.3 Emissions Control Equipment: Any person using an emission control equipment pursuant to Section 310 shall maintain such records on a daily basis, of key system operating parameters for emission control equipment, including, but not limited to:

501.3.1 Hours of operation;

501.3.2 Routine and non-routine maintenance; and

501.3.3 The records required by Section 403 as part of the Operation and Maintenance Plan.

501.3.4 Records of test reports conducted pursuant to Section 502.

501.4 Duration of Records: Such records shall be maintained on-site for two years, (five years for sources subject to Rule 507, FEDERAL OPERATING PERMIT PROGRAM,) and made available for review by the Air Pollution Control Officer upon request.

## **502 TEST METHODS**

502.1 Determination of Boiling Point: The initial boiling point of solvents shall be determined in accordance with ASTM D 1078-01.

502.2 Determination of Control Efficiency: Control efficiency of control equipment shall be determined in accordance with United States Environmental Protection Agency Method 18, 25, or 25A (whichever is applicable).

502.3 Determination of Collection Efficiency: Efficiency of the collection system shall be determined in accordance with the United States Environmental Protection Agency's *Guidelines for Determining Capture Efficiency, January 9, 1995*. Individual capture efficiency test runs subject to United States Environmental Protection Agency technical guidelines shall be determined by:

502.3.1 Applicable United States Environmental Protection Agency Methods 204, 204A, 204B, 204C, 204D, 204E, and/or 204F; or

502.3.2 Any other method approved by United States Environmental Protection Agency, the California Air Resources Board, and the Air Pollution Control Officer.

- 502.4 Determination of Volumetric Flowrate: Volumetric flowrate shall be determined in accordance with United States Environmental Protection Agency Methods 2, 2A, 2C, or 2D (whichever is applicable).
- 502.5 Determination of VOC Content: VOC content of solvents shall be determined in accordance with United States Environmental Protection Agency Method 24 and Sections 401, and 502.6, of this rule.
- 502.6 Determination of Compounds Exempt From VOC Definition: Compounds exempted from the VOC definition, as listed in Section 206 of this rule, shall be determined in accordance with ASTM D 4457-85 or California Air Resources Board Method 432. If any of the perfluorocarbons or volatile cyclic and linear methyl siloxanes are being claimed as exempt compounds, the person making the claim must state in advance which compounds are present, and the United States Environmental Protection Agency approved test method used to make the determination of these compounds.
- 502.7 Test Method Updates: Future U.S. EPA-approved revisions of any test methods referenced in Section 502 shall then become the applicable versions with respect to this rule.
- 502.8 Determination of VOC Leaks: Vapor VOC leaks shall be determined in accordance with United States Environmental Protection Agency Method 21.