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(with markup)

OTC Model Rule for Solvent ~~Cleaning~~ Degreasing 2011

This model rule was developed by the Ozone Transport Commission (OTC) as part of a regional effort to attain and maintain the one-hour ozone standard, address emission reduction shortfalls that were identified by the U.S. Environmental Protection Agency in specific State's plans to attain the one-hour ozone standard, and reduce eight-hour ozone levels. ~~A June 1, 2000 Memorandum of Understanding (MOU) designated the list of control measures evaluated as part of this effort. This model rule is being reviewed by the OTC at its March 6, 2001 Winter Meeting.~~ This is an amendment to the OTC Model Rule for Solvent Cleaning that was developed in 2000 and approved by the OTC Commissioners in 2001. Revisions are shown by strike-out for deleting prior rule material and underline to show new material.

This 2011 OTC Model Rule for Solvent Degreasing was based on an amalgam of two California air district rules; Rule 1122 of the South Coast Air Quality Management District (SCAQMD)as amended May1, 2009 and Santa Barbara County Air Pollution Control District Rule 321(for Remote Reservoir Cleaner only) as amended September 18, 1997.

The compliance date for this 2011 OTC Model rule shall be January 1, 2014.

Please note that States opting to promulgate rules based on this model rule must comply with State specific administrative requirements and procedures.

Because the 2001 model rule did not provide for exemptions and certain users whose in-process parts or products may not be cleaned properly using the cleaning agents required in this 2014 model rule and may thus require exemptions, the 2001 model rule will remain in effect so those users now under a state version of the 2001 model rule who are granted specific exemptions under the 2014 model rule may continue to operate under the 2001 state version thus avoiding SIP "backsliding". Exemptions should be determined on a case-by-case basis and all solvent degreasing operations at a given facility may not qualify for exemption. Exemptions found worthy by SCAQMD have been included in this model rule principally in section 7.0. No exemptions granted exempt sources from Subpart T.

Also, each state will need to adjust their new rule wording to handle the transition from their old rule (reflecting the 2001 OTC model rule) to the new rule (reflecting the 2011 model rule with a January 1, 2014 compliance date) as well as provide for those "exempted" sources which may stay regulated by the old rule.

Please note the 2001 OTC model rule was specific for only metal parts [see Env-Axxx.02 (a), (b) and (d); although (c) for in-line vapor cleaning machines does not specify the type of parts cleaned] and the 2011 OTC model rule regulates the cleaning (degreasing) of all types of parts.

Unlike the basic model used for this model rule (SCAQMD rule 1122), there are no provisions in this 2011 OTC model rule for the use of NESHAP solvents as covered in 40 CFR Part 63 Subpart T "National Emission Standards for Halogenated Solvent Cleaning" Section 63.461 which regulates the following solvents; carbon tetrachloride, chloroform, perchloroethylene, 1,1,1-trichloroethane, trichloroethylene and methylene chloride. Note that perchloroethylene, 1,1,1-trichloroethane and methylene chloride are not considered VOC under federal guidelines. OTC States may adjust the 2011 OTC Model Rule provisions to include coverage of NESHAP solvent cleaning activities in their state solvent cleaning regulation if so desired. Also, unlike Part 63 NESHAP operations, a cold cleaning machine in this 2011 OTC Model Rule allows cleaning solvent to be heated to below the boiling point.

NESHAP solvents, which include; carbon tetrachloride, chloroform, perchloroethylene, 1,1,1-trichloroethane, trichloroethylene and methylene chloride are regulated under 40 CFR Part 63 Subpart T "National Emissions Standards for Halogenated Solvent Cleaning" Section 63.461 (usually referred to as "SubpartT) . Note that only carbon tetrachloride, chloroform and trichloroethylene are currently considered VOC under federal guidelines and most state guidelines. Any NESHAP halogenated solvent that is considered a VOC must meet the requirements of this OTC model rule as well as Subpart T. In particular this means that these particular solvents cannot exceed 25 g/l when used in a batch-loaded cold cleaner, open-top vapor degreaser (or conveyorized versions) and are then not subject to Subpart T as Subpart T exempts solvent use below 5%. In order to use these NESHAP VOC in a solvent degreaser at greater than 25 g/l, an airless/air-tight cleaning system must be used. If concentrations of 5% or greater are used, then all other provisions of Subpart T may apply if the NESHAP VOC solvent concentration is 5% or above. The other NESHAP solvents regulated under Subpart T (perchloroethylene, 1,1,1-trichloroethane and methylene chloride) are exempt compounds under federal and most state guidelines and are not considered VOC and are not regulated under the OTC Solvent Degreaser Model Rule. However, any person using these Subpart T exempt compounds in solvent degreasing equipment otherwise subject to this solvent degreasing model rule will still be subject to Subpart T if the exempt halogenated compound is used in a concentration equal to or greater than 5%.

NOTE: "XXXX" is a place holder for State-specific section numbers, title numbers, or State names.

~~PART Env-A xxxx SOLVENT CLEANING~~

~~01 Definitions~~
~~02 Standards~~

1.0 Applicability This rule applies to all persons who own or operate batch-loaded cold cleaners, open-top vapor degreasers, all types of conveyorized degreasers, and air-tight and airless cleaning systems that carryout solvent degreasing operations with a solvent containing volatile organic compounds (VOC). Solvent degreasing operations that are regulated by this rule include, but are not limited to, the removal of contaminants from parts, products, tools,and machinery and equipment.

~~**Env-A xxxx.01**~~ **2.0 Definitions.** The following words, terms, and abbreviations used in this~~ part (subchapter)~~ rule shall have the following meanings:

~~(a) **Airless cleaning system** A solvent cleaning machine that is automatically operated and seals at a differential pressure of 0.50 pounds per square inch gauge (psig) or less, prior to the introduction of solvent or solvent vapor into the cleaning chamber and maintains differential pressure under vacuum during all cleaning and drying cycles.~~

(b) ~~**Air-tight cleaning system** – A solvent cleaning machine that is automatically operated and seals at a differential pressure no greater than 0.50 psig, prior to the introduction of solvent or solvent vapor into the cleaning chamber and during all cleaning and drying cycles~~.

a. "Air-solvent Interface" means the point of contact between the exposed solvent and air.

b. "Air-vapor Interface" means the point of contact between the exposed solvent vapor and air.

c. "Air-vapor Interface Surface Area" means (1) the geometric surface area of the open-top of the degreaser for open-top vapor degreasers; or (2) the combined geometric surface areas of the projected plane surfaces of all degreaser openings for conveyorized vapor degreasers and conveyorized cold cleaners.

d. "Airless/Air-tight Cleaning System" means a sealed cleaning system that has no open air/vapor or air/solvent interface, and is designed and automatically operated in such a manner as 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.

~~e. **Batch vapor cleaning machine**A vapor cleaning machine in which individual parts or a set of parts move through the entire cleaning cycle before new parts are introduced into the cleaning machine. The term includes solvent cleaning machines, such as ferris wheel cleaners or cross rod machines, that clean multiple loads simultaneously and are manually loaded. The term does not include machines which do not have a solvent/air interface, such as airless and air-tight cleaning systems.~~

a. "Carbon Adsorber" means ~~A~~ a bed of activated carbon into which an air/solvent

gas-vapor stream is routed and which adsorbs the solvent on the carbon.

b. "Circumferential Trough" means a receptacle located below the primary condenser that conveys condensed solvent to a water separator.

c. "Cold Cleaning Machine" ~~A.~~ means a device or piece of equipment, containing and/or using a non-boiling solvent ~~an unheated liquid which contains greater than 5% volatile organic compound or 5 percent hazardous air pollutant (hap) by weight~~, where parts are placed to remove dirt, grease, oil or other contaminants and coatings, from the surfaces of the parts or to dry the parts. The term does not include machines which do not have a solvent/air interface, such as airless and air-tight cleaning systems.

d. "Condenser Water Flow Switch" means a safety switch that turns off the sump heat if the condenser water fails to circulate or the temperature of the condenser water rises above the design operating temperature.

e. "Conveyorized (In-line) Cold Degreaser" means any degreaser which uses an integral, continuous mechanical system for moving materials or parts to be cleaned into and out of a solvent liquid cleaning zone.

f. "Conveyorized (In-line) Vapor Degreaser" means any degreaser which uses an integral, continuous mechanical system for moving materials or parts to be cleaned into and out of a vapor cleaning zone.

g. "Degreaser" means any equipment designed and used for holding a solvent to carry out solvent cleaning operations including, but not limited to, batch-loaded cold cleaners, open-top vapor degreasers, conveyorized (in-line) degreasers and airless and air-tight cleaning systems.

h. "Drag-out" means the solvent carried out of a degreaser that adheres to or is entrapped in the part being removed.

i. "Drying Tunnel" means an add-on enclosure extending from the exit area of a conveyorized degreaser which reduces drag-out losses by containing evaporating solvent.

j. “Dwell” means h ~~H~~olding parts within the freeboard area of a solvent degreaser ~~cleaning machine~~ but above the solvent vapor zone. Dwell occurs after cleaning to allow solvent to drain from the parts or parts baskets back into the solvent ~~cleaning machine~~ degreaser.

k. “Dwell Time” means t~~T~~he period of time between when a parts basket is placed in the vapor zone of a batch vapor or in-line vapor cleaning machine and when solvent dripping ceases. Dwell time is determined by placing a basket of parts in the vapor zone and measuring the amount of time between when the parts are placed in the vapor zone and dripping ceases.

l. “Freeboard Ratio” means f ~~F~~or a cold cleaning machine, the distance from the liquid solvent to the top edge of the cold cleaning machine divided by the smaller of the inside length or inside width of the cold cleaning machine; for an operating batch vapor ~~cleaning machine~~ degreaser or an in-line vapor ~~cleaning machine~~ degreaser, the distance from the top of the solvent vapor layer to the top edge of the vapor ~~cleaning machine~~ degreaser divided by the smaller of the inside length or inside width of the vapor ~~cleaning machine~~ degreaser.

m. “Freeboard Refrigeration Device” means a ~~A~~ set of secondary coils mounted in the freeboard area of a solvent ~~cleaning machine~~ degreaser that carries a refrigerant or other chilled substance to provide a chilled air blanket above the solvent vapor. A solvent ~~cleaning machine~~ degreaser primary condenser which is capable of maintaining a temperature in the center of the chilled air blanket at not more than 30 percent of the solvent boiling point is both a primary condenser and a freeboard refrigeration device.

n. “High Precision Optic” means an optical element used in an electro-optical device and is designed to sense, detect or transmit light energy, including specific wavelengths of light energy.

o. “Idling Mode” means the time period when a solvent degreaser is turned on but is not actively cleaning parts.

p. "Immersion Cold Cleaning Machine" ~~A~~ means a cold cleaning machine in which the parts are immersed in the solvent when being cleaned.

q. **"**In-line Vapor Cleaning Machine" ~~A~~ means a vapor cleaning machine that uses an automated parts handling system, typically a conveyor, to automatically provide a supply of parts to be cleaned. In-line vapor cleaning machines are fully enclosed except for the conveyor inlet and exit portals.

r. "Medical Device" means an instrument, apparatus, implement, machine, contrivance, implant, in-vitro reagent or other similar article including any component or accessory that meets one of the following conditions:

(1) it is intended for use in the diagnosis of disease or other conditions or in the cure, mitigation, treatment, or prevention of disease; or
(2) it is intended to affect the structure or any function of the body; or
(3) it is defined in the National Formulary or the United States Pharmacopeia, or any supplement to them.

~~s. **Reduced room draft** – Decreasing the flow or movement of air across the top of the freeboard area of a solvent cleaning machine to less than 50 feet per minute (15.2 meters per minute) by methods including redirecting fans and/or air vents, moving a machine to a corner where there is less room draft, or constructing a partial or complete enclosure.~~

~~t. **Remote reservoir cold cleaning machine** – A machine in which liquid solvent is pumped to a sink-like work area that immediately drains solvent back into an enclosed container while parts are being cleaned, allowing no solvent to pool in the work area.~~

~~u. **Solvent/air interface** – The location of contact between the concentrated solvent vapor layer and the air. This location of contact is defined as the mid-line height of the primary condenser coils. For a cold cleaning machine, it is the location of contact between the liquid solvent and the air.~~

v. **Solvent cleaning machine** – A device or piece of equipment that uses solvent liquid or vapor to remove contaminants, such as dirt, grease, oil, and coatings, from the surfaces of materials. Types of solvent cleaning machines include batch vapor cleaning machines, in-line vapor cleaning machines, immersion cold cleaning machines, remote reservoir cold cleaning machines, airless cleaning systems and air-tight cleaning systems.

w. **Solvent cleaning machine automated parts handling system** – A mechanical device that carries all parts and parts baskets at a controlled speed from the initial loading of soiled or wet parts through the removal of the cleaned or dried parts.

x. **Solvent cleaning machine down time** – The period when a solvent cleaning machine is not cleaning parts and the sump heating coils, if present, are turned off.

y. **Solvent cleaning machine idle time** – The period when a solvent cleaning machine is not actively cleaning parts and the sump heating coil, if present, is turned on.

z. **Superheated vapor system** – A system that heats the solvent vapor to a temperature 10^{0}f above the solvent's boiling point. Parts are held in the superheated vapor before exiting the machine to evaporate the liquid solvent on the parts.

aa. **Vapor cleaning machine** – A solvent cleaning machine that boils liquid solvent, generating a vapor, or that heats liquid solvent that is used as part of the cleaning or drying cycle. The term does not include machines which do not have a solvent/air interface, such as airless and air-tight cleaning systems.

bb. **Vapor cleaning machine primary condenser** – A series of circumferential cooling coils on a vapor cleaning machine through which a chilled substance is circulated or recirculated to provide continuous condensation of rising solvent vapors, and thereby, create a concentrated vapor zone.

~~cc. **Vapor up control switch** – A thermostatically controlled switch which shuts off or prevents condensate from being sprayed when there is no vapor. On in-line vapor cleaning machines the switch also prevents the conveyor from operating when there is no vapor.~~

~~dd. **Working mode cover** – Any cover or solvent cleaning machine design that allows the cover to shield the cleaning machine openings from outside air disturbances while parts are being cleaned in the cleaning machine. A cover that is used during the working mode is opened only during parts entry and removal.~~

s. "NESHAP Halogenated Solvent" means a solvent that contains five percent or more by weight of any one or combination of halogenated hazardous air pollutant solvent as defined in the most recent version of 40 CFR Part 63, Subpart T "National Emission Standards for Halogenated Solvent Cleaning" (Section 63.461), including, but not limited to, the following compounds: carbon tetrachloride, chloroform, perchloroethylene, 1,1,1-trichloroethane, trichloroethylene and methylene chloride.

t. "Open-top Vapor Degreaser" means any batch-loaded, boiling solvent degreaser.

u. "Primary Condenser" means a series of circumfrential cooling coils on the inside walls of a vapor degreaser through which a chilled substance is circulated or recirculated to provide continuous condensation of rinsing solvent vapors thereby creating a concentrated vapor zone.

v. "Spray Pump Control Switch" means a safety switch that prevents the spray pump from operating without an adequate vapor level.

w. "Superheated Vapor Zone" means the region located within the vapor zone of degreaser whereby solvent vapors are heated above the solvent boiling point.

x. "Vapor Level Control Switch" means the safety switch that turns off the sump heat when the solvent vapor level rises above the design operating level.

y "Volatile Organic Compound"

OPTION 1: Develop a state specific definition
OPTION 2: Reference federal list at 40 CFR 51.100 (s)
OPTION 3: Reference CARB
Note: CARB does NOT include TBAC and some other compounds as exempt.

z. "Water Separator" means a device that isolates water from an organic solvent or a mixture of organic solvents by a variety of means including, but not limited to, extraction, evaporation, distillation, drying, adsorption and filtration.

aa "Workload Area means (1) the plane geometric surface area of the top of the submerged parts basket, or (2) the combined plane geometric surface or surfaces displaced by the submerged part or parts, if no parts basket is used.

3.0 Standards

a. Batch-Loaded and Conveyorized (In-Line) Cold Cleaners

Any person owning or operating a batch-loaded cold cleaner or a conveyorized (in-line) cold cleaner with a VOC-containing solvent shall meet all of the following applicable requirements:

(1) Batch-Loaded Cold Cleaners

(A) Cleaning materials shall have a VOC content of 25 g/l or less, as used.
(B) A device for draining cleaned parts shall be used such that drained or drag-out solvent is returned.

(2) Conveyorized (In-Line) Cold Cleaners

Cleaning materials shall have a VOC content of 25 g/l or less, as used.

b. Open-Top and Conveyorized (In-Line) Vapor Degreasers

Vapor degreasing operations shall be performed using a solvent with a VOC content of no more than 25 g/l, as used.

c. Airless/Air-tight Degreasers

In lieu of meeting the requirements of (3) (a) or (b), any person may use an airless/air-tight batch cleaning system, or a [OTC STATE AGENCY] and USEPA approved alternative cleaning system that achieves equivalent emission reductions, provided that all of the following applicable requirements are met:

(1) The equipment is 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.

(2) All waste solvents are stored in properly identified and sealed containers. All associated pressure relief devices shall not allow liquid solvents to drain out.

(3) Spills during solvent transfer shall be wiped up immediately, and the used wipe rags shall be stored in closed containers that are handled in accordance with (3)(c)(2) of this regulation.

(4) The equipment is maintained in a vapor-tight, leak-free condition and any leak is a violation.

4.0 **Equipment Design and Work Practice Requirements**

a. Batch-Loaded Cold Cleaners

(1) The degreaser shall be operated in accordance with the manufacturer's specifications, and be used with tightly fitting covers that are free of cracks, holes or other defects. In addition, the cover shall be closed at all times when the degreaser contains solvent, except during parts entry and removal or performing maintenance or monitoring that requires the removal of the cover.

(2) The parts to be cleaned shall be racked in a manner that will minimize the drag-out losses.

(3) Parts shall be drained immediately after the cleaning, until (i) at least 15 seconds have elapsed; or (ii) dripping of solvent ceases; or (iii) the parts become visibly dry. Parts with blind holes or cavities shall be tipped or rotated before being removed from a degreaser, such that the solvents in the blind holes or cavities are drained in accordance with the above requirements.

(4) The solvent container shall be free of all liquid leaks. Auxiliary degreaser equipment, such as pumps, water separators, steam traps, or distillation units, shall not have any liquid leaks, visible tears, or cracks. In addition, any liquid leak, visible tear, or crack detected shall be repaired within 48 hours, or the degreaser shall be drained of all solvent and shut down until replaced or repaired.

(5) Draining or filling of solvent containers shall be performed beneath the liquid solvent surface.

(6) All waste solvents shall be stored in properly identified and sealed containers. All associated pressure relief devices shall not allow liquid solvents to drain out.

(7) Solvent flow cleaning shall be done within the freeboard area, and shall be done by a liquid stream rather than a fine, atomized, or shower-type spray. Solvent flow shall be directed downward to avoid turbulence at the

air-solvent interface and to prevent liquid solvent from splashing outside of the degreaser.

(8) Degreasing of porous or absorbent materials, such as cloth, leather, wood, or rope, is prohibited.

(9) Solvent agitation, where necessary, shall be carried out only by pump recirculation, ultrasonics, a mixer, or by air agitation. Air agitation shall be accomplished under the following conditions:(i) the air agitation unit shall be equipped with a gauge and a device that limits air pressure into the degreaser to less than two pounds per square inch gauge;(ii) the cover must remain closed while the air agitation system is in operation; and (iii) pump circulation shall be performed without causing splashing.

(10)The average draft rate in the work room, as measured parallel to the plane of the degreaser opening, shall not exceed 9.1 meters per minute (30 feet per minute).

(11)Ventilation fans shall not be positioned in such a way as to direct airflow near the degreaser openings.

(12)Spills during solvent transfer shall be wiped up immediately and the used wipe rags shall be stored in closed containers that are handled in accordance with (4)(a)(6) of this regulation.

(13)Solvent levels shall not exceed the fill line.

b. **Conveyorized (In-line) Cold Cleaners**

All conveyorized cold cleaners shall be equipped with the following;

(1) A rotating basket, tumbling basket, drying tunnel, or other means that prevents cleaned parts from carrying out solvent liquid or vapor.

(2) The average clearance between workload material and the edges of the cleaner entrance and exit openings shall be less than 10 centimeters (3.9 inches) or less than 10 percent of the opening width, whichever is less.

(3) Down-time covers for closing off the entrance and exit during shutdown hours, or an equivalent device that cover at least 90 percent of the opening.

(4) A freeboard ratio of 0.75 or greater that is physically verifiable.

(c) **Remote Reservoir Cold Cleaners**

Remote reservoir cold cleaners shall meet the following requirements;

(1) The sink or work area shall be sloped sufficiently towards the drain to prevent pooling of solvent.

(2) There shall be a single drain hole, not larger than 100 square centimeters

(15.5 square inches) in area, for the solvent to flow from the sink into the enclosed reservoir.

(3) Except for remote reservoir cold cleaners using low volatility solvents, the solvent vapor shall be prevented from escaping from the solvent container by means of closing a cover or a device, such as a valve or a drain plug, when the remote reservoir is not being used, cleaned, or repaired.

(4) The freeboard height shall be 6 inches or higher.

(5) The unit shall have a freeboard ratio of 0.75 or greater, if the solvent is heated above 50 degrees Celsius (122 degrees Fahrenheit), agitated, or a high volatility solvent is used.

d. Open-top and Conveyorized (In-line) Vapor Degreasers

(1) The degreaser shall be operated in accordance with the manufacturer's specifications and be used with a tightly-fitting cover that is free of cracks, holes or other defects, except as provided in (4)(e)(2)(B) of this regulation. In addition, the cover shall be closed during idling and downtime modes, except while performing maintenance or monitoring that requires the removal of the cover.

(2) The solvent container shall be free of all liquid leaks. Auxiliary degreaser equipment, such as pumps, water separators, steam traps, or distillation units, shall not have any liquid leaks, visible tears, or cracks. In addition, any liquid leak, visible tear, or crack detected pursuant to the provisions of this regulation shall be repaired within 48 hours, or the degreaser shall be drained of all solvents and shut down until replaced or repaired.

(3) Degreasing of porous or absorbent materials, such as cloth, leather, wood, or rope, is prohibited.

(4) Transfer of solvent into or out of solvent containers shall be performed with leak-proof couplings, and the end of the pipe in the solvent sump shall be located beneath the liquid solvent surface.

(5) The vertical speed of the powered hoist or conveyor shall not be more than 3.4 meters per minute (11.2 feet per minute) when lowering and raising parts in and out of the degreaser, respectively.

(6) The average draft rate in the workroom, as measured parallel to the plane of the degreaser opening, shall not exceed 9.1 meters per minute (30 feet per minute).

(7) At start up, the primary condenser and the refrigerated freeboard chiller, if one is required, shall be turned on before the sump heater is turned on. At shutdown, the sump heater shall be turned off before the primary condenser and refrigerated freeboard chiller are turned off.

(8) The water separator shall be maintained to prevent water from returning to the surface of the boiling solvent sump or from becoming visibly detectable in the solvent exiting the water separator.

(9) The workload area shall not exceed more than half of the degreaser's air-vapor interface surface area.

(10) The workload shall be degreased in the vapor zone until condensation ceases.

(11) The temperature within the superheated vapor zone shall be at least 10°F above the boiling point of the solvent being used.

(12) Parts and parts baskets shall remain in the superheated vapor zone for at least the minimum proper dwell time, as stated in the manufacturer's specification.

(13) Solvent flow cleaning shall be done within the vapor zone and shall be done by a liquid stream rather than a fine, atomized, or shower-type spray. Solvent flow shall be directed downward to avoid turbulence at the air-vapor interface and to prevent liquid solvent from splashing out of the degreaser.

(14) Ventilation fans shall not be positioned in such a way as to direct airflow near the degreaser openings.

(15) All waste solvents shall be stored in properly identified and sealed containers. All associated pressure relief devices shall not allow liquid solvents to drain out.

(16) Spills during solvent transfer shall be wiped up immediately and the used wipe rags shall be stored in closed containers that are handled in accordance with (4)(d)(15) of this regulation.

(17) Solvent levels shall not exceed the fill line.

e.Additional Equipment Design and Work Practice Requirements for Open-top and Conveyorized (In-line) Vapor Degreasers

(1) Open-Top Vapor Degreaser

(A) The degreaser shall be operated with all of the following safety switches installed:(i) vapor level control switch;(ii) condenser water flow switch, for water-cooled degreasers;(iii) spray pump control switch, for solvent flow cleaning; and (iv) sump heat shut-off process control switch or a float for low liquid level indication.

(B) The degreaser shall be equipped with:(i) an automated parts handling system; (ii) circumferential primary condensing coils; (iii) a circumferential trough; (iv) a water separator; (v) a freeboard ratio of at least 1.0, and (vi) a superheated vapor zone.

In lieu of the superheated vapor zone, a refrigerated freeboard chiller may be used if the chilled air blanket temperature, measured at the center of the air blanket, is no greater than 40% of the boiling point of the solvent, in degrees Fahrenheit, for solvents that do not form azeotropes with water, or 50% of the boiling point, in degrees Fahrenheit, for solvents that form azeotropes with water. A water separator is not required for solvents that form azeotropes with water.

(2) Conveyorized (In-Line) Vapor Degreaser

(A)The degreaser shall be equipped with a high vapor cutoff thermostat with manual reset.

(B)Entrances and exits shall have an average clearance between each part and the edge of the degreaser opening of less than 10 centimeters (3.9 inches) or less than 10 percent of the width of the opening, whichever is less.

(C)All conveyorized (in-line) vapor degreasers shall be equipped with: (i) an automated parts handling system; (ii) circumferential primary condensing coils; (iii) a circumferential trough; (iv) a water separator; (v) a freeboard ratio of at least 1.0; (vi) 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% of the boiling point of the solvent, in degrees Fahrenheit, for solvents that do not form azeotropes with water, or 50% of the boiling point, in degrees Fahrenheit, for solvents that form azeotropes with water. A water separator is not required for solvents that form azeotropes with water, and; (vii) a superheated vapor zone.

5.0 Compliance Test Methods

(a) The VOC content of materials subject to the provisions of this rule shall be determined by the EPA Reference Method 24 (Determination of Volatile Matter Content, Water Content, Density Volume Solids, and Weight Solids of Surface Coatings, Code of Federal Regulations Title 40, Part 60, Appendix A), or by the most recent version of SCAQMD Method 304 [Determination of Volatile Organic Compounds (VOCs) in Various Materials] contained in the SCAQMD “Laboratory Methods of Analysis for Enforcement Samples” manual. The VOC content of Materials containing 50 g/l of VOC or less shall be determined by the most recent version of SCAQMD Method 313 (Determination of Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry) or any other alternative test methods approved by the [OTC STATE AGENCY] and the USEPA

(b) When more than one test method or set of methods are specified for any testing, a violation of any requirement of this rule established by any one of the specified test methods or set of test methods shall constitute a violation of the rule.

(c) The initial boiling point of solvents shall be determined by ASTM Method

D-1078-78, "Standard Test Method for Distillation Range of Volatile Organic Liquids."

(d) Measurements of average workroom draft rate shall be done parallel to the plane of the degreaser opening using a thermistor anemometer, with an accuracy within ±2 feet per minute, and a calibration traceable to the National Institute of Standards and Technology.

(e) Maximum hoist speed shall be measured with use of a stop clock and distance traveled by the hoist.

(f) Temperatures in the vapor zone shall be measured with the use of a temperature probe.

(g) Determination of Efficiency of Emission Control System
[STATES MAY SUBSTITUTE EQUIVALENT STATE METHODS TO DETERMINE EFFICIENCY]

(1) The capture efficiency of an emission control system shall be determined by verifying the use of a Permanent Total Enclosure (PTE) and 100% capture efficiency as defined by USEPA Method 204, “Criteria for and Verification of a Permanent or TemporaryTotal Enclosure.” Alternatively, if a USEPA Method 204 defined PTE is not employed, capture efficiency shall be determined using a minimum of three sampling runs subject to data quality criteria presented in the USEPA technical guidance document “Guidelines for Determining Capture Efficiency, January 9, 1995.” Individual capture efficiency test runs subject to the USEPA technical guidelines shall be determined by: (i) The Temporary Total Enclosure (TTE) approach of USEPA Methods 204 through 204F; or (ii) The SCAQMD “Protocol for Determination of Volatile Organic Compounds (VOC) Capture Efficiency.”

(2)The control equipment efficiency of an emission control system as specified in subparagraph (k)(1)(D), on a mass emissions basis, and the VOC concentrations in the exhaust gases, measured and calculated as carbon, shall be determined by USEPA Test Methods 25, 25A, SCAQMD Method 25.1 (Determination of Total Gaseous Non-Methane Organic Emissions as Carbon), or SCAQMD Method 25.3 (Determination of Low Concentration Non-Methane Non-Ethane Organic Compound Emissions from Clean Fueled Combustion Sources), as applicable. USEPA Test Method 18, or CARB Method 422 shall be used to determine emissions of exempt compounds.

6.0 Monitoring, Recordkeeping and Reporting

(a) A person owning or operating any open-top vapor degreaser or airless/airtight cleaning system with a VOC-containing solvent shall record at monthly intervals the following information:

(1) the weight, in pounds, of VOCs added to the degreaser in the calendar month (*Wa*) ;

(2) the weight, in pounds, of VOCs removed from the degreaser in the calendar month (*Wb*) ;

(3) the weight, in pounds, of VOCs contained in the solid waste removed from the degreaser in the calendar month (*Wc*); and

(4) the monthly emissions (E) determined by the following equation: *E =Wa -Wb -Wc* .

In lieu of test data, the VOCs contained in the solid waste (*Wc*) may be calculated as 50% of the weight (in pounds) of the solid waste material removed from the degreasers.

The monthly record also shall include:
(i) the serial/identification number (or OTC State permit number) for the degreaser; (ii) the product name of the cleaning material;(iii) the VOC content of the cleaning material; and (iv) the boiling point of the cleaning material.

Records shall be retained for a period of at least two years, and be made available to the [OTC STATE AGENCY] upon request.

7.0 Exemptions.

(a) The provisions of this rule shall not apply to:

(1) Batch loaded cold cleaners or vapor degreasers, with open-top surface area less than 1.0 square foot (0.1 square meter) or with a capacity of less than 2 gallons, that are vented to a VOC emission collection and control system provided:(i) the equipment is used only for cleaning high-precision optics, electrical or electronic components; or aerospace and military applications for cleaning solar cells, laser hardware, fluid systems, and space vehicle components;and (ii) the emission collection and control system shall collect at least 90 percent, by weight, of the emissions generated by the degreasing operation and have a destruction efficiency of at least 95 percent, by weight, as determined pursuant to (5)(g) of this regulation, or have an output of less than 50 parts per million (ppm) calculated as carbon with no dilution; and (iii) no NESHAP halogenated solvents are used; and (iii) the equipment is operated in accordance with the applicable work practice requirements of (4)(a) or (4)(d) respectively of this regulation, excluding respectively (4)(a)(5), (4)(a)(10) and (4)(a)(11) of this regulation, and (4)(c)(4), (4)(c)(5), (4)(c)(6) and (4)(c)(14) of this regulation; and (iv) the operator meets the Monitoring, Recordkeeping, and Reporting requirements of (6.0) of this regulation.

(2)Batch loaded cold cleaners or vapor degreasers, with open-top surface area less than 1.0 square foot (0.1 square meter) or with a capacity of less than 2 gallons, provided: (i) the equipment is used only for cleaning electronic components that are designed to travel over 100 miles above the earth's surface; and (ii) the VOC emissions from all of the equipment do not exceed 22 pounds per month per facility, and no NESHAP halogenated solvents are used. However, for two or more facilities that consolidate at least 65% of each of their total VOC emissions from all of their equipment subject to this exemption to one consolidated facility, the VOC limit may be increased to 66 pounds total per month for three or more consolidating facilities, provided the following conditions

are met: (I) demonstrate to the satisfaction of the[OTC STATE AGENCY] that the facilities whose monthly emission limits are being transferred are under common ownership with the consolidated facility; (II) that any applicable permits for the equipment being consolidated have been cancelled; and (III) written concurrence of the 65% or more consolidation is obtained from the [OTC STATE AGENCY] specifying the applicable VOC emission limit in (7)(b)(2) of this regulation for the consolidating facilities. The combined VOC emissions from the facilities involved in the consolidation process cannot exceed the applicable monthly emission limits provided in (7)(b)(2) of this regulation for the consolidating facilities.

(3)Batch loaded cold cleaners or vapor degreasers, with open-top surface area less than 1.0 square foot (0.1 square meter) or with a capacity of less than 2 gallons, that are used solely for research and development programs, or laboratory tests in quality assurance laboratories, provided no NESHAP halogenated solvents are used.

(4)Motion picture film cleaning equipment.

(5)The cleaning of photocurable resins from stereolithography equipment and models provided no NESHAP halogenated solvents are used.

(7) Cleaning of medical devices.

(b) The provision of paragraph (3)(b) of this regulation shall not apply to vapor degreasers containing VOC materials provided:

(1) the equipment is used only for cleaning electronic components that are designed to travel over 100 miles above the earth's surface; and

(2) the VOC emissions from the equipment do not exceed 22 pounds per month per facility, and the equipment contains no NESHAP halogenated solvent; and

(3) the [OTC STATE AGENCY] has approved permit applications demonstrating that the requirements of (7)(b)(1) and (7)(b)(2) respectively of this regulation are met.

~~**Env-A xxxx.02 Standards.**~~

~~(a) This section applies to all cold cleaning machines that process metal parts and contain more than 1 liter of VOC. The provisions of this section shall not apply if the owner and operator of the cold cleaning machine demonstrates and the Department approves in writing that compliance with the section will result in unsafe operating conditions.~~

~~(1) Immersion cold cleaning machines shall have a freeboard ratio of 0.75 or greater unless the machines are equipped with covers that are kept closed except when parts are being placed into or being removed from the machine.~~

(2) Immersion cold cleaning machines and remote reservoir cold cleaning machines shall:

(i) Have a permanent, conspicuous label summarizing the operating requirements in section (3) below.

(ii) Be equipped with a cover that shall be closed at all times except during cleaning of parts or the addition or removal of solvent. For remote reservoir cold cleaning machines which drain directly into the solvent storage reservoir, a perforated drain with a diameter of not more than six inches shall constitute an acceptable cover.

(3) Cold cleaning machines shall be operated in accordance with the following procedures:

(i) Waste solvent shall be collected and stored in closed containers. The closed containers may contain a device that allows pressure relief, but does not allow liquid solvent to drain from the container.

(ii) Cleaned parts shall be drained at least 15 seconds or until dripping ceases, whichever is longer. Parts having cavities or blind holes shall be tipped or rotated while the part is draining. During the draining, tipping or rotating, the parts shall be positioned so that solvent drains directly back to the cold cleaning machine.

(iii) Flushing of parts using a flexible hose or other flushing device shall be performed only within the freeboard area of the cold cleaning machine. The solvent spray shall be a solid fluid stream, not an atomized or shower spray at a pressure that does not exceed 10 pounds per square inch gauge (psig).

(iv) The owner or operator shall ensure that, when the cover is open, the cold cleaning machine is not exposed to drafts greater than 40 meters per minute (132 feet per minute), as measured between 1 and 2 meters (3.3 and 6.6 feet) upwind and at the same elevation as the tank lip

(v) Sponges, fabric, wood, leather, paper products and other absorbent materials shall not be cleaned in the cold cleaning machine.

(vi) When a pump agitated solvent bath is used, the agitator shall be operated to produce a rolling motion of the solvent with no observable splashing of the solvent against the tank walls or the parts being cleaned. Air agitated solvent baths may not be used.

(vii) Spills during solvent transfer and use of the cold cleaning machine shall be cleaned up immediately, and the wipe rags or other sorbent material shall be immediately stored in covered containers for disposal or recycling.

(viii) Work area fans shall be located and positioned so that they do not blow across the opening of the degreaser unit.

(ix) The owner or operator shall ensure that the solvent level does not exceed the fill line.

(4) After _____ (the blank refers to one year from effective date of regulations), a person shall not use, sell, or offer for sale for use in a cold cleaning machine any solvent with a vapor pressure of 1.0 millimeters of mercury (mm Hg) or greater, measured at 20°C (68°F) containing volatile organic compounds.

(5) On and after _____ (the blank refers to one year from the effective date of the regulations), a person who sells or offers for sale any solvent containing volatile organic compounds for use in a cold cleaning machine shall provide, to the purchaser, the following written information:

(i) The name and address of the solvent supplier.

(ii) The type of solvent including the product or vendor identification number.

(iii) The vapor pressure of the solvent measured in mm hg at 20°C (68°F).

(6) A person who operates a cold cleaning machine shall maintain for not less than two years and shall provide to the [*regulatory agency*], on request, the information specified in paragraph (5). An invoice, bill of sale, certificate that corresponds to a number of sales, Material Safety Data Sheet (MSDS), or other appropriate documentation acceptable to the Department may be used to comply with this section.

(b) This section applies to batch vapor cleaning machines that process metal parts.

(1) Batch vapor cleaning machines shall be equipped with:

(i) Either a fully enclosed design or a working and downtime mode cover that completely covers the cleaning machine openings when in place, is free of cracks, holes and other defects, and can be readily opened or closed without disturbing the vapor zone. If the solvent cleaning machine opening is greater than 10 square feet, the cover must be powered. If a lip exhaust is used, the closed cover shall be below the level of the lip exhaust.

(ii) Sides that result in a freeboard ratio greater than or equal to 0.75.

(iii) A safety switch (thermostat and condenser flow switch) which shuts off the sump heat if the coolant is not circulating.

(iv) A vapor up control switch which shuts off the spray pump if vapor is not present.

(v) An automated parts handling system which moves the parts or parts baskets at a speed of 11 feet (3.4 meters) per minute or less when the parts are entering or exiting the vapor zone. If the parts basket or parts being cleaned occupy

more than 50% of the solvent/air interface area, the speed of the parts basket or parts shall not exceed 3 feet per minute.

(vi) A device that shuts off the sump heat if the sump liquid solvent level drops to the sump heater coils.

(vii) A vapor level control device that shuts off the sump heat if the vapor level in the vapor cleaning machine rises above the height of the primary condenser.

(viii) Each vapor cleaning machine shall have a primary condenser.

(ix) Each vapor cleaning machine that uses a lip exhaust shall be designed and operated to route all collected solvent vapors through a properly operated and maintained carbon adsorber such that the concentration of organic solvent in the exhaust does not exceed 100 parts per million.

(x) A permanent, conspicuous label summarizing the operating requirements found in Section (b)(4).

(2) In addition to the requirements of Section (1), the operator of a batch vapor cleaning machine with a solvent/air interface area of 13 square feet or less shall implement one of the following options:

(i) A working mode cover, freeboard ratio of 1.0, and superheated vapor.

(ii) A freeboard refrigeration device operated to ensure that the chilled air blanket temperature is no greater than 30 percent of the solvent's boiling point and superheated vapor.

(iii) A working mode cover and a freeboard refrigeration device operated to ensure that the chilled air blanket temperature is no greater than 30 percent of the solvent's boiling point.

(iv) Reduced room draft, freeboard ratio of 1.0 and superheated vapor;

(v) A freeboard refrigeration device operated to ensure that the chilled air blanket temperature is no greater than 30 percent of the solvent's boiling point and reduced room draft.

(vi) A freeboard refrigeration device operated to ensure that the chilled air blanket temperature is no greater than 30 percent of the solvent's boiling point and a freeboard ratio of 1.0.

(vii) A freeboard refrigeration device operated to ensure that the chilled air blanket temperature is no greater than 30 percent of the solvent's boiling point and dwell. Dwell shall be not less than 35 percent of the dwell time determined for the part or parts.

(viii) Reduced room draft, dwell and a freeboard ratio of 1.0.

(ix) A freeboard refrigeration device operated to ensure that the chilled air blanket temperature is no greater than 30 percent of the solvent's boiling point and a carbon adsorber which reduces solvent emissions in the exhaust to a level not to exceed 100 ppm at any time.

(x) A freeboard ratio of 1.0, superheated vapor and a carbon adsorber which reduces solvent emissions in the exhaust to a level not to exceed 100 ppm at any time.

(3) In addition to the requirements of Section (1), the operator of a batch vapor cleaning machine with a solvent/air interface area of greater than 13 square feet shall use one of the following devices or strategies:

(i) A freeboard refrigeration device operated to ensure that the chilled air blanket temperature is no greater than 30 percent of the solvent's boiling point, a freeboard ratio of 1.0 and superheated vapor.

(ii) Dwell, a freeboard refrigeration device operated to ensure that the chilled air blanket temperature is no greater than 30 percent of the solvent's boiling point, and reduced room draft. Dwell shall be not less than 35 percent of the dwell time determined for the part or parts.

(iii) A working mode cover and a freeboard refrigeration device operated to ensure that the chilled air blanket temperature is no greater than 30 percent of the solvent's boiling point and superheated vapor.

(iv) Reduced room draft, freeboard ratio of 1.0 and superheated vapor.

(v) A freeboard refrigeration device operated to ensure that the chilled air blanket temperature is no greater than 30 percent of the solvent's boiling point, reduced room draft and superheated vapor.

(vi) A freeboard refrigeration device operated to ensure that the chilled air blanket temperature is no greater than 30 percent of the solvent's boiling point, reduced room draft and a freeboard ratio of 1.0.

(vii) A freeboard refrigeration device operated to ensure that the chilled air blanket temperature is no greater than 30 percent of the solvent's boiling point, superheated vapor, and a carbon adsorber which reduces solvent emissions in the exhaust to a level not to exceed 100 ppm at any time;

(4) Batch vapor cleaning machines shall be operated in accordance with the following procedures:

(i) Waste solvent, still bottoms and sump bottoms shall be collected and stored in closed containers. The closed containers may contain a device that allows pressure relief, but does not allow liquid solvent to drain from the container.

(ii) Cleaned parts shall be drained at least 15 seconds or until dripping ceases, whichever is longer. Parts having cavities or blind holes shall be tipped or rotated while the part is draining. A superheated vapor system shall be an acceptable alternate technology.

(iii) Parts baskets or parts shall not be removed from the batch vapor cleaning machine until dripping has ceased.

(iv) Flushing or spraying of parts using a flexible hose or other flushing device shall be performed within the vapor zone of the batch vapor cleaning machine or within a section of the machine that is not exposed to the ambient air. The solvent spray shall be a solid fluid stream, not an atomized or shower spray.

(v) When the cover is open, the batch vapor cleaning machine shall not exposed to drafts greater than 40 meters per minute (132 feet per minute), as measured between 1 and 2 meters (3.3 and 6.6 feet) upwind and at the same elevation as the tank lip

(vi) Sponges, fabric, wood, leather, paper products and other absorbent materials shall not be cleaned in the batch vapor cleaning machine.

(vii) Spills during solvent transfer and use of the batch vapor cleaning machine shall be cleaned up immediately or the machine shall be shut down. Wipe rags or other sorbent material shall be immediately stored in covered containers for disposal or recycling.

(viii) Work area fans shall be located and positioned so that they do not blow across the opening of the batch vapor cleaning machine.

(ix) During startup of the batch vapor cleaning machine the primary condenser shall be turned on before the sump heater.

(x) During shutdown of the batch vapor cleaning machine, the sump heater shall be turned off and the solvent vapor layer allowed to collapse before the primary condenser is turned off.

(xi) When solvent is added to or drained from the batch vapor cleaning machine, the solvent shall be transferred using threaded or other leakproof couplings and the end of the pipe in the solvent sump shall be located beneath the liquid solvent surface.

(xii) The working and downtime covers shall be closed at all times except during parts entry and exit from the machine, during maintenance of the machine when the solvent has been removed, and during addition of solvent to the machine.

(xiii) If a lip exhaust is used on the open top vapor degreaser, the ventilation rate shall not exceed 20 $m^3/min/m^2$ (65 $ft^3/min/ft^2$) of degreaser open area, unless a higher rate is necessary to meet OSHA requirements.

(c) This section applies to in-line vapor cleaning machines.

(1) In-line vapor cleaning machines shall be equipped with:

(i) Either a fully enclosed design or a working and downtime mode cover that completely covers the cleaning machine openings when in place, is free of cracks, holes and other defects, and can be readily opened or closed without disturbing the vapor zone.

(ii) A switch (thermostat and condenser flow switch) which shuts off the sump heat if the coolant is not circulating.

(iii) Sides which result in a freeboard ratio greater than or equal to 0.75.

(iv) A vapor up control switch.

(v) An automated parts handling system which moves the parts or parts baskets at a speed of 11 feet (3.4 meters) per minute or less when the parts are entering or exiting the vapor zone. If the parts basket or parts being cleaned occupy more than 50% of the solvent/air interface area, the speed of the parts basket or parts shall not exceed 3 feet per minute.

(vi) A device that shuts off the sump heat if the sump liquid solvent level drops to the sump heater coils.

(vii) A vapor level control device that shuts off the sump heat if the vapor level in the vapor cleaning machine rises above the height of the primary condenser.

(viii) A permanent, conspicuous label summarizing these operating requirements [part (c)(3)].

(ix) A primary condenser.

(x) Each machine that uses a lip exhaust shall be designed and operated to route all collected solvent vapors through a properly operated and maintained carbon adsorber such that the concentration of organic solvent in the exhaust does not exceed 100 parts per million.

(2) In addition to the requirements of Section (1), the operator of an in-line vapor cleaning machine shall use one of the following devices or strategies:

(i) A freeboard ratio of 1.0 and superheated vapor.

(ii) A freeboard refrigeration device operated to ensure that the chilled air blanket temperature is no greater than 30 percent of the solvent's boiling point and a freeboard ratio of 1.0.

(iii) Dwell and a freeboard refrigeration device operated to ensure that the chilled air blanket temperature is no greater than 30 percent of the solvent's boiling point. Dwell shall be not less than 35 percent of the dwell time determined for the part or parts.

(iv) Dwell and a carbon adsorber which reduces solvent emissions in the exhaust to a level not to exceed 100 ppm at any time. Dwell shall be not less than 35 percent of the dwell time determined for the part or parts.

(3) In-line vapor cleaning machines shall be operated in accordance with the following procedures:

(i) Waste solvent, still bottoms, and sump bottoms shall be collected and stored in closed containers. The closed containers may contain a device that allows pressure relief, but does not allow liquid solvent to drain from the container.

(ii) Parts shall be oriented so that the solvent drains freely from the parts. Cleaned parts shall be drained at least 15 seconds or until dripping ceases, whichever is longer. Parts having cavities or blind holes shall be tipped or rotated while the part is draining.

(iii) Parts baskets or parts shall not be removed from the in-line vapor cleaning machine until dripping has ceased.

(iv) Flushing or spraying of parts using a flexible hose or other flushing device shall be performed within the vapor zone of the in-line vapor cleaning machine or within a section of the machine that is not exposed to the ambient air. The solvent spray shall be a solid fluid stream, not an atomized or shower spray.

(v) Sponges, fabric, wood, leather, paper products and other absorbent materials shall not be cleaned in the in-line vapor cleaning machine.

(vi) Spills during solvent transfer and use of the in-line vapor cleaning machine shall be cleaned up immediately, and the wipe rags or other sorbent material shall be immediately stored in covered containers for disposal or recycling.

(vii) Use no workplace fans near the degreaser opening, and ensure that exhaust ventilation does not exceed 20 m^3/min/m^2 of degreaser opening, unless a higher rate is necessary to meet OSHA requirements.

(viii) During startup of the in-line vapor cleaning machine the primary condenser shall be turned on before the sump heater.

(ix) During shutdown of the in-line vapor cleaning machine, the sump heater shall be turned off and the solvent vapor layer allowed to collapse before the primary condenser is turned off.

(x) Spraying operations shall be done in the vapor zone or within a section of the machine that is not exposed to the ambient air.

(xi) When solvent is added to or drained from the in-line vapor cleaning machine, the solvent shall be transferred using threaded or other leakproof couplings and the end of the pipe in the solvent sump shall be located beneath the liquid solvent surface.

(xii) Minimize openings during operation so that entrances and exits silhouette workloads with an average clearance between the parts and the edge of the degreaser opening of less than 10 cm (4 in) or less than 10 percent of the width of the opening.

(d) This section applies to airless cleaning machines and air-tight cleaning machines that process metal parts.

(1) The operator of each machine shall maintain a log of solvent additions and deletions for each machine including the weight of solvent contained in activated carbon or other sorbent material used to control emissions from the cleaning machine.

(2) The operator of each machine shall demonstrate that the emissions from each machine, on a three-month rolling average, are equal to or less than the allowable limit determined by the use of Table 5 or the following equation if the volume of the cleaning machine exceeds 2.95 cubic meters:

$$EL = 330 (vol)^{0.6}$$

where:

EL = the three-month rolling average monthly emission limit (kilograms/month).
vol = the cleaning capacity of machine (cubic meters).

~~TABLE 5. EMISSION LIMITS FOR CLEANING MACHINES WITHOUT A SOLVENT/AIR INTERFACE~~

~~Cleaning capacity (M^3)~~	~~3-Month rolling average monthly emission limit (kilograms/month)~~	~~Cleaning capacity (cubic meters)~~	~~3-Month rolling average monthly emission limit (kilograms/month)~~	~~Cleaning capacity (cubic meters)~~	~~3-Month rolling average monthly emission limit (kilograms/month)~~
~~0.00~~	~~0~~	~~1.00~~	~~330~~	~~2.00~~	~~500~~
~~0.05~~	~~55~~	~~1.05~~	~~340~~	~~2.05~~	~~508~~
~~0.10~~	~~83~~	~~1.10~~	~~349~~	~~2.10~~	~~515~~
~~0.15~~	~~106~~	~~1.15~~	~~359~~	~~2.15~~	~~522~~
~~0.20~~	~~126~~	~~1.20~~	~~368~~	~~2.20~~	~~530~~
~~0.25~~	~~144~~	~~1.25~~	~~377~~	~~2.25~~	~~537~~
~~0.30~~	~~160~~	~~1.30~~	~~386~~	~~2.30~~	~~544~~
~~0.35~~	~~176~~	~~1.35~~	~~395~~	~~2.35~~	~~551~~
~~0.40~~	~~190~~	~~1.40~~	~~404~~	~~2.40~~	~~558~~
~~0.45~~	~~204~~	~~1.45~~	~~412~~	~~2.45~~	~~565~~
~~0.50~~	~~218~~	~~1.50~~	~~421~~	~~2.50~~	~~572~~
~~0.55~~	~~231~~	~~1.55~~	~~429~~	~~2.55~~	~~579~~
~~0.60~~	~~243~~	~~1.60~~	~~438~~	~~2.60~~	~~585~~
~~0.65~~	~~255~~	~~1.65~~	~~446~~	~~2.65~~	~~592~~
~~0.70~~	~~266~~	~~1.70~~	~~454~~	~~2.70~~	~~599~~
~~0.75~~	~~278~~	~~1.75~~	~~462~~	~~2.75~~	~~605~~
~~0.80~~	~~289~~	~~1.80~~	~~470~~	~~2.80~~	~~612~~
~~0.85~~	~~299~~	~~1.85~~	~~477~~	~~2.85~~	~~619~~

~~Cleaning capacity (M^3)~~	~~3-Month rolling average monthly emission limit (kilograms/month)~~	~~Cleaning capacity (cubic meters)~~	~~3-Month rolling average monthly emission limit (kilograms/month)~~	~~Cleaning capacity (cubic meters)~~	~~3-Month rolling average monthly emission limit (kilograms/month)~~
~~0.90~~	~~310~~	~~1.90~~	~~485~~	~~2.90~~	~~625~~
~~0.95~~	~~320~~	~~1.95~~	~~493~~	~~2.95~~	~~632~~

~~(3) The operator of each machine shall operate the machine in conformance with the manufacturer's instructions and good air pollution control practices.~~

~~(4) The operator of each machine equipped with a solvent adsorber shall measure and record the concentration of solvent in the exhaust of the carbon adsorber weekly with a colorimetric detector tube designed to measure a concentration of 100 ppm by volume of solvent to air at an accuracy of ± 25 ppm by volume. This test shall be conducted while the solvent cleaning machine is in the working mode and is venting to the adsorber.~~

~~(5) The operator of each machine equipped with a solvent adsorber shall maintain and operate the machine and adsorber system so that emissions from the adsorber exhaust do not exceed 100 ppm by volume measured while the solvent cleaning machine is in the working mode and is venting to the adsorber.~~

~~(6) The machine shall be equipped with a permanent, conspicuous label summarizing the operating requirements in paragraph (7) below.~~

~~(7) Airless cleaning machines and air-tight cleaning machines shall be operated in accordance with the following procedures:~~

~~(i) Waste solvent, still bottoms, and sump bottoms shall be collected and stored in closed containers. The closed containers may contain a device that allows pressure relief, but does not allow liquid solvent to drain from the container.~~

~~(ii) Parts shall be oriented so that the solvent drains freely from the parts. Cleaned parts shall be drained at least 15 seconds or until dripping ceases, whichever is longer. Parts having cavities or blind holes shall be tipped or rotated while the part is draining.~~

~~(iii) Parts baskets or parts shall not be removed from the in-line vapor cleaning machine until dripping has ceased.~~

~~(iv) Sponges, fabric, wood, leather, paper products and other absorbent materials shall not be cleaned in the airless cleaning machines and air-tight cleaning machines.~~

~~(v) Spills during solvent transfer and use of the airless cleaning machines and air-tight cleaning machines shall be cleaned up immediately, and the wipe rags or other sorbent material shall be immediately stored in covered containers for disposal or recycling.~~

~~(vi) Work area fans shall be located and positioned so that they do not blow across the airless cleaning machine and air-tight cleaning machine.~~

~~(vii) Spraying operations shall be done in the vapor zone or within a section of the machine that is not exposed to the ambient air.~~

~~(viii) When solvent is added to or drained from the airless cleaning machine and air-tight cleaning machine, the solvent shall be transferred using threaded~~

or other leakproof couplings and the end of the pipe in the solvent sump shall be located beneath the liquid solvent surface.

(c) As an alternative to complying with the provisions of sections (b) through (d) above the operator of a solvent cleaning machine may demonstrate compliance with paragraph (1) or (2) below. The operator shall maintain records sufficient to demonstrate compliance. The records shall include, at a minimum, the quantity of solvent added to and removed from the solvent cleaning machine, the dates of the addition and removal and shall be maintained for not less than 2 years.

(1) If the cleaning machine has a solvent/air interface, the owner or operator shall:

(i) Maintain a log of solvent additions and deletions for each solvent cleaning machine.

(ii) Ensure that emissions from each solvent cleaning machine are equal to or less than the applicable emission limit presented in Table 6.

Table 6.

EMISSION LIMITS FOR BATCH VAPOR AND IN-LINE SOLVENT CLEANING MACHINES WITH A SOLVENT/AIR INTERFACE

Solvent cleaning machine	3-month rolling average monthly emission limit	
	kg/m^2/month	lb/ft^2/month
Batch vapor solvent cleaning machines	150	30.7
Existing in-line solvent cleaning machines	153	31.3
New in-line solvent cleaning machines	99	20.2

(2) If the cleaning machine is a batch vapor cleaning machine and does not have a solvent/air interface, the owner or operator shall:

(i) Maintain a log of solvent additions and deletions for each solvent cleaning machine.

(ii) Ensure that the emissions from each solvent cleaning machine are equal to or less than the appropriate limits as described in paragraphs (3) and (4) of this section. Each owner or operator of a batch vapor or in-line cleaning machine complying with section (e) above shall demonstrate compliance with the applicable 3-month rolling average monthly emission limit on a monthly basis.

(3) For cleaning machines with a cleaning capacity that is less than or equal to 2.95 cubic meters, the emission limit shall be determined using the Table 5 or the equation in paragraph 4. If the table is used, and the cleaning capacity of the cleaning machine falls between two cleaning capacity sizes, then the lower of the two emission limits applies.

(4) For cleaning machines with a cleaning capacity that is greater than 2.95 cubic meters, the emission limit shall be determined using the following equation.

$$EL = 330 (vol)^{0.6}$$

where:

EL = the 3-month rolling average monthly emission limit (kilograms/month).
vol = the cleaning capacity of machine (cubic meters).

(5) Each owner or operator of a batch vapor or in-line solvent cleaning machine complying with section (e) above shall demonstrate compliance with the applicable 3-month rolling average monthly emission limit on a monthly basis. If the applicable 3-month rolling average emission limit is not met, an exceedance has occurred. All exceedances shall be reported to the Department within 30 days of the determination of the exceedance.

(f) The owner or operator of a batch vapor or in-line solvent cleaning machine complying with Section (e) shall maintain records and determine compliance with the applicable provisions in accordance with the following.

(1) On the first operating day of every month ensure that the solvent cleaning machine system contains only clean liquid solvent. This includes, but is not limited to, fresh unused solvent, recycled solvent and used solvent that has been cleaned of soils. A fill line must be indicated during the first month the measurements are made. The solvent level within the machine must be returned to the same fill line each month, immediately prior to calculating monthly emissions as specified in Section (f). The solvent cleaning machine does not have to be emptied and filled with fresh unused solvent prior to the calculations.

(2) Using the records of all solvent additions and deletions for the previous monthly reporting period, determine solvent emissions (E) using one of the following equations:

for cleaning machines with a solvent/air interface:

$$E = \frac{SA - LSR - SSR}{AREA}$$

where:

E = the total halogenated HAP solvent emissions from the solvent cleaning machine during the most recent monthly reporting period (kilograms of solvent per square meter of solvent/air interface area per month).

SA = the total amount of halogenated HAP liquid solvent added to the solvent cleaning machine during the most recent monthly reporting period (kilograms of solvent per month).

LSR = the total amount of halogenated HAP liquid solvent removed from the solvent cleaning machine during the most recent monthly reporting period (kilograms of solvent per month).

SSR = the total amount of halogenated HAP solvent removed from the solvent cleaning machine in solid waste during the most recent monthly reporting period (kilograms of solvent per month) determined from tests conducted using EPA reference method 25d or by engineering calculations included in the compliance report

Area =the solvent/air interface area of the solvent cleaning machine (square meters).

for cleaning machines without a solvent/air interface:

$$E = SA - LSR - SSR$$

where:

E = the total halogenated HAP solvent emissions from the solvent cleaning machine during the most recent monthly reporting period i, (kilograms of solvent per month).

SA = the total amount of halogenated HAP liquid solvent added to the solvent cleaning machine during the most recent monthly reporting period (kilograms of solvent per month).

LSR = the total amount of halogenated HAP liquid solvent removed from the solvent cleaning machine during the most recent monthly reporting period (kilograms of solvent per month).

SSR = the total amount of halogenated HAP solvent removed from the solvent cleaning machine in solid waste during the most recent monthly reporting period (kilograms of solvent per month) determined from tests conducted using EPA reference method 25d or by engineering calculations included in the compliance report

(3) Determine the monthly rolling average, EA, for the 3-month period ending with the most recent reporting period using one of the following equations:

for cleaning machines with a solvent/air interface

$$EA = \frac{\sum_{j=1}^{3} E}{3}$$

where:

EA = the average halogenated HAP solvent emissions over the preceding 3 monthly reporting periods, (kilograms of solvent per square meter of solvent/air interface area per month).

E = halogenated HAP solvent emissions for each month (j) for the most recent 3 monthly reporting periods (kilograms of solvent per square meter of solvent/air interface area).

j=1 = the most recent monthly reporting period.

j=2 = the monthly reporting period immediately prior to j=1.

j=3 = the monthly reporting period immediately prior to j=2.

for cleaning machines without a solvent/air interface

$$EA = \frac{\sum_{j=1}^{3} E}{3}$$

where:

EA = the average halogenated HAP solvent emissions over the preceding 3 monthly reporting periods (kilograms of solvent per month).

E = halogenated HAP solvent emissions for each month (j) for the most recent 3 monthly reporting periods (kilograms of solvent per month).

j=1 = the most recent monthly reporting period.

j=2 = the monthly reporting period immediately prior to j=1.

j=3 = the monthly reporting period immediately prior to j=2.

(g) The operator of a solvent cleaning machine subject to the provisions of Sections (b) through (d) of this section shall conduct monitoring and record keeping as follows.

(1)If a freeboard refrigeration device is used to comply with these standards, the owner or operator shall use a thermometer or thermocouple to measure the temperature at the center of the air blanket during the idling mode. Measurements and recordings shall be made weekly.

(2)If a superheated vapor system is used to comply with these standards, the owner or operator shall use a thermometer or thermocouple to measure the temperature at the center of the superheated solvent vapor zone while the solvent cleaning machine is in the idling mode. Measurements and recordings shall be made weekly.

(3) If a cover (working-mode, downtime-mode, and/or idling-mode cover) is used to comply with these standards, the owner or operator shall conduct a visual inspection to determine if the cover is opening and closing properly, completely covers the cleaning machine openings when closed, and is free of cracks, holes, and other defects. Observations and recordings shall be made weekly.

(4) If dwell is used, the owner or operator shall determine the actual dwell time by measuring the period of time that parts are held within the freeboard area of the solvent cleaning machine after cleaning. Observations and recordings shall be made monthly.

(5) The owner or operator shall determine the hoist speed by measuring the time it takes for the hoist to travel a measured distance. The speed is equal to the distance in meters divided by the time in minutes (meters per minute). Measurements and recordings shall be made monthly.

(6)The owner or operator of a batch vapor or in-line solvent cleaning machine complying using reduced room draft, maintained by controlling room parameters (i.e., redirecting fans, closing doors and windows, etc.), shall conduct monitoring and record the results as follows.

(i) Initially measure the windspeed within 6 inches above the top of the freeboard area of the solvent cleaning machine in accordance with the following:

(A) Determine the direction of the wind current by slowly rotating a velometer or similar device until the maximum speed is located.

(B) Orient a velometer in the direction of the wind current at each of the four corners of the machine.

(C) Record the reading for each corner.

(D) Average the values obtained at each corner and record the average wind speed.

(ii) Record the room parameters established during the initial compliance test to achieve the reduced room draft.

(iii) Quarterly monitor of the windspeed in accordance with subparagraph(i).

(iv) Weekly monitoring of the room parameters as specified in paragraphs.

(7) If an enclosure (full or partial) is used to achieve reduced room draft, the owner or operator shall conduct an initial monitoring test and, thereafter, monthly monitoring tests of the windspeed within the enclosure by slowly rotating a velometer inside the entrance to the enclosure until the maximum speed is located and record the maximum wind speed. The owner or operator shall also conduct a monthly visual inspection of the enclosure to determine if it is free of cracks, holes and other defects.

(8) The owner or operator of a using a carbon adsorber to comply with this section subpart shall measure and record the concentration of halogenated HAP solvent in the exhaust of the carbon adsorber weekly with a colorimetric detector tube. This test shall be conducted while the solvent cleaning machine is in the working mode and is venting to the carbon adsorber. The exhaust concentration shall be determined using a colorimetric detector tube designed to measure a concentration of 100 parts per million by volume of solvent in air to an accuracy of plus or minus 25 parts per million by volume. The concentration shall be determined through a sampling port for monitoring within the exhaust outlet that is easily accessible and located at least 8 stack or duct diameters downstream and 2 stack or duct diameters upstream from any flow disturbance such as a bend, expansion, contraction, or outlet; downstream from no other inlet.