

# PROPOSED RULEMAKING

## ENVIRONMENTAL QUALITY BOARD

[25 PA. CODE CHS. 121 AND 129]

### Solvent Cleaning Operations

The Environmental Quality Board (Board) proposes to amend Chapters 121 and 129 (relating to general provisions; standards for sources) to read as set forth in Annex A.

The amendments propose to add and revise definitions for terms in Chapter 121 that are used in the substantive sections of Chapter 129. Section 129.63 (relating to degreasing operation) is proposed to be amended to update equipment requirements for solvent cleaning machines to make the equipment requirements consistent with current technology. In addition, the operating requirements in § 129.63 are proposed to be revised to specify improved operating practices. The proposed revisions also specify volatility limits for solvents used in cold cleaning machines. These revised equipment and operating practice requirements stress pollution prevention.

This notice is given under Board order at its meeting of May 19, 1999.

#### A. *Effective Date*

These proposed amendments will be effective upon publication in the *Pennsylvania Bulletin* as final rulemaking.

#### B. *Contact Persons*

For further information, contact Terry Black, Chief, Regulation and Policy Development Section, Division of Compliance Enforcement, Bureau of Air Quality, 12th Floor, Rachel Carson State Office Building, P. O. Box 8468, Harrisburg, PA 17105-8468, (717) 787-1663 or R. A. Reiley, Assistant Counsel, Bureau of Regulatory Counsel, Office of Chief Counsel, 9th Floor, Rachel Carson State Office Building, P. O. Box 8464, Harrisburg, PA 17105-8464, (717) 787-7060.

#### C. *Statutory Authority*

This proposed rulemaking is being made under the authority of section 5 of the Air Pollution Control Act (35 P. S. § 4005) which grants the Board the authority to adopt regulations for the prevention, control, reduction and abatement of air pollution.

#### D. *Background of the Proposed Amendments*

The purpose of this proposed rulemaking is to reduce the volatile organic compounds (VOCs) emitted from solvent cleaning operations. This proposed rulemaking is a part of the Commonwealth's specific action plan to achieve the ozone reductions mandated by the United States Environmental Protection Agency (EPA). The proposed revisions are based on the recommendations of the Southwest and Southeast Pennsylvania Ozone Stakeholders Working Groups which recommended that the Department of Environmental Protection (Department) revise the requirements relating to use of solvents for cleaning of parts. Both Stakeholders Groups recommended that the Commonwealth revise the VOC requirements related to solvent cleaning operations to reduce emissions of ozone precursors.

The proposed revisions will require that operators of solvent cleaning machines make modifications to the equipment to meet the revised equipment specifications. These machines are used in a variety of manufacturing operations for the cleaning of parts before further processing. Solvent cleaning machines are used in a variety of settings including auto repair facilities, manufacturing operations and maintenance shops at commercial, industrial and institutional facilities. These modifications will reduce the evaporative loss of solvents and will, therefore, reduce operating costs.

A separate, technical workgroup was convened to help draft the regulatory language. The group consisted of representatives of the major equipment and solvent suppliers, environmental groups and regulatory agencies. The proposed amendments represent the consensus position of this workgroup. The amendments were developed taking into account technology, environmental, economic and enforcement considerations. This group also believes that the best way to implement the proposed amendments is through an outreach and education program to the users of solvent cleaning equipment, particularly small businesses.

The VOC control requirements in the proposed amendments are more stringent than the control requirements in the Federal Control Techniques Guidelines issued in November of 1977. Both the technical workgroup and the stakeholders determined that these control requirements were necessary for solvent cleaning operations to enable the Commonwealth to attain and maintain the ozone standard.

Specifically, the proposed revisions include requirements adopted in the Federal maximum achievable control technologies (MACT) standard for solvent cleaning operations utilizing nonhazardous air pollutant (HAPS) solvents, as well as HAPS solvents. These provisions are to discourage operators from converting to non-HAPS solvents to avoid the more stringent MACT requirements. The conversions could adversely affect air quality.

For the solvent volatility and hand-wipe requirements, there are no Federal counterparts. The technical workgroup suggested this provision as a pollution prevention activity. Furthermore, the technical workgroup borrowed these provisions from the Federal guidance for aerospace surface coating and applied them to solvent cleaning operations.

The Department worked with the Air Quality Technical Advisory Committee (AQTAC) in the development of this proposed rulemaking. At its July 23, 1998, meeting, AQTAC recommended adoption of the proposed rulemaking.

#### E. *Summary of Regulatory Revisions*

The proposed changes to Chapter 121 add and revise definitions of the terms used in the substantive provisions of Chapter 129. The new definitions include: "airless cleaning system," "airtight cleaning system," "batch vapor cleaning machine," "carbon adsorber," "cold cleaning machine," "dwell," "dwell time," "freeboard refrigeration device," "hand-wipe cleaning operation," "immersion cold cleaning machine," "in-line vapor cleaning machine," "reduced room draft," "remote reservoir cold cleaning machine," "solvent/air interface," "solvent cleaning machine," "solvent cleaning machine automated parts handling system," "solvent cleaning machine down time," "solvent

cleaning machine idle time," "superheated vapor system," "vapor cleaning machine," "vapor cleaning machine primary condenser," "vapor up control switch" and "working mode cover." The amended definition includes "freeboard ratio."

The proposed changes to § 129.63(a)—(c) and the addition of subsection (d) apply to cold cleaning machines, batch vapor cleaning machines, in-line vapor cleaning machines, airless cleaning machines and airtight cleaning machines. These revisions update equipment requirements for these solvent cleaning machines to make the equipment requirements consistent with current technology. These equipment specifications are consistent with the Federal MACT requirements for solvent cleaning machines. However, as described in Section D of this Preamble, these proposed revisions are more stringent than the control requirements in the Federal control techniques guidelines. In addition, § 129.63(e) is proposed to be added to specify improved hand-wipe cleaning operation practices. There is no Federal hand-wipe cleaning operation requirements. Finally, new § 129.63(f), proposes to specify volatility limits for solvents in certain cleaning machines. There are no Federal volatility limits for solvents.

This regulatory revision will be submitted to the EPA as an amendment to the State Implementation Plan (SIP).

#### F. *Benefits, Costs and Compliance*

Executive Order 1996-1 requires a cost benefit analysis of the proposed amendments.

##### *Benefits*

Overall, the citizens of this Commonwealth will benefit from these recommended changes because they will result in improved air quality by reducing ozone precursor emissions, recognize and encourage pollution prevention practices, and encourage new technologies and practices which reduce emissions. Moreover, it is estimated that these proposed changes will save industry approximately \$7.3 million the first year and \$14.6 million annually thereafter Statewide.

##### *Compliance Costs*

These proposed amendments will slightly increase the operating costs of industry. However, the cost increase will be offset by the reduced evaporative loss of solvent which will result from the lower volatility, thereby reducing the need to purchase additional solvent.

##### *Compliance Assistance Plan*

The Department plans to educate and assist the public and the regulated community with understanding the newly revised requirements and how to comply with them. This will be accomplished through the Department's ongoing Regional Compliance Assistance Program.

##### *Paperwork Requirements*

The regulatory revisions will not increase the paperwork that is already generated during the normal course of business operations.

#### G. *Sunset Review*

This proposed rulemaking will be reviewed in accordance with the sunset review schedule published by the Department to determine whether the regulations effectively fulfill the goals for which they were intended.

#### H. *Regulatory Review*

Under section 5(a) of the Regulatory Review Act (71 P. S. § 745.5(a)), on August 17, 1999, the Department submitted a copy of the proposed rulemaking to the Independent Regulatory Review Commission (IRRC) and the Chairpersons of the Senate and House Environmental Resources and Energy Committees. In addition to submitting the proposed amendments, the Department has provided IRRC and the Committees with a copy of a detailed regulatory analysis form prepared by the Department. A copy of this material is available to the public upon request.

If IRRC has objections to any portion of the proposed amendments, it will notify the Department within 30 days of the close of the public comment period. The notification shall specify the regulatory review criteria which have not been met by that portion. The Regulatory Review Act specifies detailed procedures for the Department, the Governor and the General Assembly to review these objections before final publication of the regulations.

#### I. *Public Comment and Public Hearings*

##### *Public Hearings*

The Board will hold three public hearings for the purpose of accepting comments on the proposed amendments. The hearings will be held at 10 a.m. on the following dates and at the following locations:

September 28, 1999	DEP Southwest Regional Office 400 Waterfront Drive Pittsburgh, PA
October 1, 1999	DEP Southeast Regional Office Suite 601 Lee Park 555 North Lane Conshohocken, PA
October 5, 1999	DEP Southcentral Regional Office Susquehanna River Conference Room 909 Elmerton Ave. Harrisburg, PA

Persons wishing to present testimony at the hearings are requested to contact Kate Coleman at the Environmental Quality Board, P. O. Box 8477, Harrisburg, PA 17105-8477, (717) 787-4526, at least 1 week in advance of the hearing to reserve a time to present testimony. Oral testimony will be limited to 10 minutes for each witness and three written copies of the oral testimony are requested to be presented at the hearing. Each organization is limited to designating one witness to present testimony on its behalf.

Persons with a disability who wish to attend the hearings and require an auxiliary aid, service or other accommodations to participate, should contact Kate Coleman at (717) 787-4526 or through the Pennsylvania AT&T Relay Service at (800) 654-5984 (TDD) to discuss how the Department may accommodate their needs.

##### *Written Comments*

In lieu of or in addition to presenting oral testimony at the hearings, interested persons may submit written comments, suggestions or objections regarding the proposed amendments to the Board, 15th Floor, Rachel Carson State Office Building, P. O. Box 8477, Harrisburg, PA 17105-8477. Comments received by facsimile will not be accepted. Comments must be received by October 27, 1999 (60 days from the date of publication). In addition to the written comments, interested persons may also submit a summary of their comments to the Board. The

summary may not exceed one page in length and must be received by October 27, 1999, (60 days from the date of publication). The summary will be provided to each member of the Board in the agenda packet distributed prior to the meeting at which the final-form regulations will be considered.

*Electronic Comments*

Comments may be submitted electronically to the Board at regcomments@dep.state.pa.us. A subject heading of the proposal and a return name and address must be included in each transmission. Comments submitted electronically must also be received by the Board by October 27, 1999 (60 days from the date of publication).

JAMES M. SEIF,  
*Chairperson*

**Fiscal Note:** 7-346. No fiscal impact; (8) recommends adoption.

**Annex A**

**TITLE 25. ENVIRONMENTAL PROTECTION  
PART I. DEPARTMENT OF ENVIRONMENTAL  
PROTECTION**

**Subpart C. PROTECTION OF NATURAL  
RESOURCES**

**ARTICLE III. AIR RESOURCES**

**CHAPTER 121. GENERAL PROVISIONS**

**§ 121.1. Definitions.**

The definitions in section 3 of the act (35 P. S. § 4003) apply to this article. In addition, the following words and terms, when used in this article, have the following meanings, unless the context clearly indicates otherwise:

\* \* \* \* \*

***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.

***Airtight 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.

\* \* \* \* \*

***Batch vapor cleaning machine***—

(i) 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.

(ii) The term includes solvent cleaning machines, such as ferris wheel cleaners or cross rod machines, that clean multiple loads simultaneously and are manually loaded.

(iii) The term does not include machines which do not have a solvent/air interface, such as airless and airtight cleaning systems.

\* \* \* \* \*

***Carbon adsorber***—A bed of activated carbon into which an air/solvent gas-vapor stream is routed and which adsorbs the solvent on the carbon.

\* \* \* \* \*

***Cold cleaning machine***—

(i) A device or piece of equipment, containing or using, or both, an unheated liquid which contains greater than 5% solvent or hazardous air pollutant (HAP) by weight, in to which parts are placed to remove dirt, grease, oil or other contaminants and coatings, from the surfaces of the parts or to dry the parts.

(ii) The term does not include machines which do not have a solvent/air interface, such as airless and airtight cleaning systems.

\* \* \* \* \*

***Dwell***—Holding parts within the freeboard area of a solvent 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.

***Dwell time***—The 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.

\* \* \* \* \*

***Freeboard ratio***—

(i) For a cold cleaning [ degreaser ] machine, the distance from the liquid solvent to the top edge of the [ degreaser ] cold cleaning machine divided by the [ degreaser ] width of the cold cleaning machine [ ; for ]

(ii) For an operating [ vapor degreaser or a conveyORIZED degreaser ] batch vapor cleaning machine or an in-line vapor cleaning machine, the distance from the top of the solvent vapor layer to the top edge of the [ degreaser ] vapor cleaning machine divided by the [ degreaser ] width of the vapor cleaning machine.

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

\* \* \* \* \*

***Hand-wipe cleaning operation***—Removing contaminants such as dirt, grease, oil and coatings [ from an aerospace vehicle or component ] with a solvent by physically rubbing [ it ] with a material such as a rag, paper or cotton swab that has been moistened with a cleaning solvent.

\* \* \* \* \*

***Immersion cold cleaning machine***—A cold cleaning machine in which the parts are immersed in the solvent when being cleaned.

\* \* \* \* \*

**In-line vapor cleaning machine**—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.

\* \* \* \* \*

**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 second (15.2 meters per second) by methods including:

- (i) Redirecting fans or air vents, or both.
- (ii) Moving a machine to a corner where there is less room draft.
- (iii) Constructing a partial or complete enclosure.

\* \* \* \* \*

**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.

\* \* \* \* \*

**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.

**Solvent cleaning machine**—

- (i) 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.
- (ii) Types of solvent cleaning machines include:
  - (A) Batch vapor cleaning machines.
  - (B) In-line vapor cleaning machines.
  - (C) Immersion cold cleaning machines.
  - (D) Remote reservoir cold cleaning machines.
  - (E) Airless cleaning systems.
  - (F) Air-tight cleaning systems.

**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.

**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.

**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.

\* \* \* \* \*

**Superheated vapor system**—A system that heats the solvent vapor to a temperature 10° F above the solvent's boiling point. Parts are held in the super-

heated vapor before exiting the machine to evaporate the liquid solvent on the parts.

\* \* \* \* \*

**Vapor cleaning machine**—

- (i) 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.
- (ii) The term does not include machines which do not have a solvent/air interface, such as airless and air-tight cleaning systems.

**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, creating a concentrated vapor zone.

\* \* \* \* \*

**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.

\* \* \* \* \*

**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.

\* \* \* \* \*

**CHAPTER 129. STANDARDS FOR SOURCES OF VOCs**

*(Editor's Note: As part of this proposal, the Board is deleting the text of the existing section, found at 25 Pa. Code pages 129-29 to 129-31, serial pages (199533) to (199553), and replacing it with the following. This new section is being printed in regular type to enhance readability.)*

**§ 129.63. Degreasing operations.**

- (a) *Cold cleaning machines.* This subsection applies to cold cleaning machines.
  - (1) Immersion cold cleaning machines shall have a freeboard ratio of 0.75 or greater.
  - (2) Immersion cold cleaning machines and remote reservoir cold cleaning machines shall:
    - (i) Have a permanent, conspicuous label summarizing the operating requirements in paragraph (3).
    - (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 6 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 cold cleaning machine. The solvent spray shall be a solid fluid stream, not an atomized or shower spray.

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

(v) 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.

(vi) 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.

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

(4) After \_\_\_\_\_ (*Editor's Note: The blank refers to a date 1 year from effective date of adoption of this proposal.*), a person may not use, sell or offer for sale for use in a cold cleaning machine any solvent with a vapor pressure of 2.0 millimeters of mercury (mm Hg) or greater, measured at 20°C (68°F) containing VOCs.

(5) After \_\_\_\_\_ (*Editor's Note: The blank refers to a date 2 years from the effective date of adoption of this proposal.*), a person may not use, sell or offer for sale for use in an cold cleaning machine a solvent with a vapor pressure of 1.0 mm Hg or greater, measured at 20°C (68° F) containing VOCs.

(6) On and after \_\_\_\_\_ (*Editor's Note: The blank refers to a date 1 year from the effective date of adoption of this proposal.*), a person who sells or offers for sale any solvent containing VOCs 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).

(7) A person who operates a cold cleaning machine shall maintain for at least 2 years and shall provide to the Department, on request, the information specified in paragraph (6). 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) *Batch vapor cleaning machines.* This subsection applies to batch vapor cleaning machines.

(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 shall be powered. If a lip exhaust is used, the closed cover shall be below the level of the lip exhaust.

(ii) Sides which 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 may 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 the operating requirements in paragraph (4).

(2) In addition to the requirements of paragraph (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 and superheated vapor.

(iii) A working mode cover and a freeboard refrigeration device.

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

(v) A freeboard refrigeration device and reduced room draft.

(vi) A freeboard refrigeration device and a freeboard ratio of 1.0.

(vii) A freeboard refrigeration device and dwell.

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

(ix) A freeboard refrigeration device 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.

(3) In addition to the requirements of paragraph (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, a freeboard ratio of 1.0 and superheated vapor.

(ii) Dwell, a freeboard refrigeration device and reduced room draft.

(iii) A working mode cover and a freeboard refrigeration device and superheated vapor.

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

(v) A freeboard refrigeration device, reduced room draft and superheated vapor.

(vi) A freeboard refrigeration device, reduced room draft and a freeboard ratio of 1.0.

(vii) A freeboard refrigeration device, 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 may 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) Sponges, fabric, wood, leather, paper products and other absorbent materials may not be cleaned in the batch vapor cleaning machine.

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

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

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

(ix) 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.

(x) 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.

(xi) 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.

(c) *In-line vapor cleaning machines.* 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 may 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 the operating requirements in paragraph (3).

(2) In addition to the requirements of paragraph (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 and a freeboard ratio of 1.0.

(iii) Dwell and a freeboard refrigeration device.

(iv) Dwell and a carbon adsorber which reduces solvent emissions in the exhaust to a level not to exceed 100 ppm at any time.

(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 may 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 may 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) Work area fans shall be located and positioned so that they do not blow across the in-line vapor cleaning machine.

(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.

(d) *Airless cleaning machines and airtight cleaning machines.* This section applies to airless cleaning machines and airtight cleaning machines.

(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 3-month rolling average, are equal to or less than the allowable limit determined by the use of the following equation:

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

where:

EL = the 3-month rolling average monthly emission limit (kilograms/month).

vol = the cleaning capacity of machine (cubic meters)

(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  $\pm 25$  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 (5).

(7) Airless cleaning machines and airtight 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 may 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 may not be cleaned in the airless cleaning machines and airtight cleaning machines.

(v) Spills during solvent transfer and use of the airless cleaning machines and airtight 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 airtight 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 airtight 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.

(e) *Hand-wipe cleaning operations.* The following applies to hand-wipe cleaning operations using cleaning solvents containing greater than 5% VOC or HAP by weight. Cloths, rags, paper towels and other fabrics used for hand-wipe cleaning shall be placed in closed containers for disposal or recycling.

(f) *Alternative provisions for solvent cleaning machines.* This section applies to all solvent cleaning machines. As an alternative to complying with subsections (a)—(d), the operator of a solvent cleaning machine may demonstrate compliance with paragraph (1) or (2). 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 solvent 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 the emissions from each solvent cleaning machine are equal to or less than the applicable emission limit presented in the following table:

<i>Emission Limits for Solvent Cleaning Machines with a Solvent/Air Interface</i>		
<i>Solvent cleaning machine</i>	<i>3-month rolling average monthly emission limit (kg/m<sup>2</sup>/month) lb/ft<sup>2</sup>/month</i>	
Batch vapor solvent cleaning machines	150	30.7

<i>Solvent cleaning machine</i>	<i>3-month rolling average monthly emission limit</i> (kg/m <sup>2</sup> /month) lb/ft <sup>2</sup> /month	
Existing in-line solvent cleaning machines	153	31.3
New in-line solvent cleaning machines	99	20.2

(2) If the solvent 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).

(3) For solvent cleaning machines with a cleaning capacity that is less than or equal to 2.95 cubic meters, the emission limit shall be determined using Table IV 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, 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.

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

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 this subsection 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. Exceedances shall be reported to the Department within 30 days of the determination of the exceedance.

**TABLE 6. EMISSION LIMITS FOR SOLVENT CLEANING MACHINES WITHOUT A SOLVENT/AIR INTERFACE**

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

[Pa.B. Doc. No. 99-1484. Filed for public inspection August 27, 1999, 9:00 a.m.]