## Chapter 129 -- Standards for Sources

## SOURCES OF VOCs

### § 129.63. Degreasing operations.

(a) *Cold cleaning machines*. Except for those subject to the Federal National emissions standards for hazardous air pollutants (NESHAP) for halogenated solvent cleaners under 40 CFR Part 63 (relating to National emission standards for hazardous air pollutants for source categories), this subsection applies to cold cleaning machines that use 2 gallons or more of solvents containing greater than 5% VOC content by weight for the cleaning of metal parts.

(1) Immersion cold cleaning machines shall have a freeboard ratio of 0.50 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). In addition, the label shall include the following discretionary good operating practices:

(A) Cleaned parts should 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 should be positioned so that solvent drains directly back to the cold cleaning machine.

(B) When a pump-agitated solvent bath is used, the agitator should 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.

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

(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) 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.

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

(iv) Air agitated solvent baths may not be used.

(v) Spills during solvent transfer and use of the cold cleaning machine shall be cleaned up immediately.

(4) After December 22, 2002, a person may not use, sell or offer for sale for use in a cold cleaning machine any solvent with a vapor pressure of 1.0 millimeter of mercury (mm Hg) or greater and containing greater than 5% VOC by weight, measured at 20˚C (68˚F) containing VOCs.

(5) On and after December 22, 2002, 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).

(6) 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 (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.

(7) Paragraph (4) does not apply:

(i) To cold cleaning machines used in extreme cleaning service.

(ii) If the owner or operator of the cold cleaning machine demonstrates, and the Department approves in writing, that compliance with paragraph (4) will result in unsafe operating conditions.

(iii) To immersion cold cleaning machines with a freeboard ratio equal to or greater than 0.75.

(b) *Batch vapor cleaning machines*. Except for those subject to the Federal NESHAP for

halogenated solvent cleaners under 40 CFR Part 63, this subsection applies to batch vapor cleaning machines that use solvent containing greater than 5% VOC by weight for the cleaning of 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 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. A vapor up control switch is not required if the vapor cleaning machine is not equipped with a spray pump.

(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 or parts are entering or exiting the vapor zone. If the parts basket being cleaned occupy more than 50% of the solvent/air interface area, the speed of the parts or parts basket 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, 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 or parts baskets 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.

(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.* Except for those subject to the Federal NESHAP for halogenated solvent cleaners under 40 CFR Part 63, this section applies to in-line vapor cleaning machines that use solvent containing greater than 5% VOC by weight for the cleaning of metal parts.

(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, holesand 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 or parts basket being cleaned occupy more than 50% of the solvent/air interface area, the speed of the parts or parts basket 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 or parts baskets 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.

(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*. Except for those subject to the Federal NESHAP for halogenated solvent cleaners under 40 CFR Part 63, this section applies to airless cleaning machines and airtight cleaning machines that use solvent containing greater than 5% VOC by weight for the cleaning of 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 3-month rolling average, are equal to or less than the allowable limit determined by the use of 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)

(3) 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.

(4) 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.

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

(6) 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 or parts baskets 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.

(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) *Alternative provisions for solvent cleaning machines*. This section applies to all solvent cleaning machines used to process metal parts that use solvents containing greater than 5% VOC by weight. As an alternative to complying with subsections (b)—(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 at least 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 Table 1:

**Emission Limits for Solvent Cleaning Machines**
*with a Solvent/Air Interface*

**Table 1**

| *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 |
| In-line solvent cleaning machines installed after the effective date of the regulation | 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 without a solvent/air interface with a cleaning capacity that is less than or equal to 2.95 cubic meters, the emission limit shall be determined using Table 2 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 without a solvent/air interface 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 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 2. Emission Limits for Solvent Cleaning Machines Without a Solvent/Air Interface**

| *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)* | *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 |
| 0.90 | 310 | 1.90 | 485 | 2.90 | 625 |
| 0.95 | 320 | 1.95 | 493 | 2.95 | 632 |