

## **DISTRICT DEPARTMENT OF THE ENVIRONMENT**

### **Chapter 7 - Volatile Organic Compounds**

#### **763 SOLVENT CLEANING – GENERAL REQUIREMENTS**

- 763.1 Sections 763 through 769 shall apply to any person who sells, supplies, offers for sale, or manufactures any solvent on or after January 1, 2005, for use in the District of Columbia.
- 763.2 For purposes of §§ 763 through 769 and any of the definitions in §799 applicable to §§ 763 through 769, the District incorporates by reference rules and test methods from the California Air Resource Board (CARB), the South Coast Air Quality Management District (SCAQMD), and the American Society for Testing and Materials (ASTM), where specifically cited.
- 763.3 Each part of §§ 763 through 769 shall be deemed severable, and if any part is held to be invalid, the remainder shall continue in full force.

#### **764 SOLVENT CLEANING – COLD CLEANING**

- 764.1 This section applies to all cold cleaning machines that process metal parts and contain more than one liter (1 L) of VOC. The provisions of this section shall not apply if the owner and operator of the cold cleaning machine demonstrates, and the District approves in writing, that compliance with this section will result in unsafe operating conditions.
- 764.2 Immersion cold cleaning machines shall have a freeboard ratio of seventy-five one hundredths (0.75) or greater, unless the machines are equipped with covers that are kept closed except when parts are being placed into or are being removed from the machine.
- 764.3 Immersion cold cleaning machines and remote reservoir cold cleaning machines shall:
- (a) Have a permanent, conspicuous label summarizing the operating requirements in § 764.4; and
  - (b) 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 that drain directly into the solvent storage reservoir, a perforated drain with a diameter of not more than six inches (6 in.) shall constitute an acceptable cover.
- 764.4 Cold cleaning machines shall be operated in accordance with the following procedures:

- (a) 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;
- (b) Cleaned parts shall be drained at least fifteen (15) seconds or until dripping ceases, whichever is longer;
  - (1) Parts having cavities or blind holes shall be tipped or rotated while the part is draining; and
  - (2) During the draining, tipping or rotating, the parts shall be positioned so that solvent drains directly back to the cold cleaning machine;
- (c) 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 ten pounds (10 lb.) per square inch gauge (psig);
- (d) The owner or operator shall ensure that when the cover is open, the cold cleaning machine is not exposed to drafts greater than forty meters (40 m.) per minute (one hundred thirty-two feet (132 ft.) per minute), as measured between one meter (1 m.) and two meters (2 m.) (three and three tenths feet (3.3 ft.) and six and six tenths feet (6.6 ft.) upwind, and at the same elevation as the tank lip;
- (e) Sponges, fabric, wood, leather, paper products, and other absorbent materials shall not be cleaned in the cold cleaning machine;
- (f) 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;
- (g) Spills during solvent transfer and use of the cold cleaning machine shall be cleaned up immediately, and the wipe rags or other absorbent materials shall be immediately stored in covered containers for disposal or recycling;
- (h) Work area fans shall be located and positioned so that they do not blow across the opening of the degreaser unit; and
- (i) The owner or operator shall ensure that the solvent level does not exceed the fill line.

764.5

Any solvent for use in a cold cleaning machine shall not have a vapor pressure of one millimeter of mercury (1.0 mm. Hg) or greater, measured at twenty degrees

Celsius (20° C) or sixty-eight degrees Fahrenheit (68° F) containing VOCs;

764.6 A person who sells or offers for sale any solvent containing VOCs for use in a cold cleaning machine shall provide the following written information to the purchaser:

- (a) The name and address of the solvent supplier;
- (b) The type of solvent, including the product or vendor identification number; and
- (c) The vapor pressure of the solvent, measured in millimeters of mercury (mm Hg) at twenty degrees Celsius (20° C) or sixty-eight degrees Fahrenheit (68° F); and

764.7 A person who operates a cold cleaning machine shall maintain for not less than two (2) years and shall provide to the Department, on request, the information specified in § 764.6. 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.

## **765 SOLVENT CLEANING – BATCH VAPOR CLEANING**

765.1 This section applies to batch vapor cleaning machines that process metal parts.

765.2 Batch vapor cleaning machines shall be equipped with:

- (a) 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;
  - (1) If the solvent cleaning machine opening is greater than ten square feet (10 sq. ft.), the cover must be powered; and
  - (2) If a lip exhaust is used, the closed cover shall be below the level of the lip exhaust;
- (b) Sides that result in a freeboard ratio greater than or equal to seventy-five one hundredths (0.75);
- (c) A safety switch (thermostat and condenser flow switch) that shuts off the sump heat if the coolant is not circulating;
- (d) A vapor up control switch that shuts off the spray pump if vapor is not present;

- (e) An automated parts handling system that moves the parts or parts baskets at a speed of eleven feet (11 ft.) (three and four tenths meters (3.4 m.)) 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 fifty percent (50%) of the solvent/air interface area, the speed of the parts basket or parts shall not exceed three feet (3 ft.) per minute;
- (f) A device that shuts off the sump heat if the sump liquid solvent level drops to the sump heater coils;
- (g) 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;
- (h) A primary condenser;
- (i) A 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 one hundred parts per million (100 ppm); and
- (j) A permanent, conspicuous label summarizing the operating requirements found in § 765.5.

765.3

In addition to the requirements in § 765.2, the operator of a batch vapor cleaning machine with a solvent/air interface area of thirteen square feet (13 sq. ft.) or less shall use one of the following devices or strategies:

- (a) A working mode cover, freeboard ratio of one (1.0), and superheated vapor;
- (b) A freeboard refrigeration device operated to ensure that the chilled air blanket temperature is no greater than thirty percent (30%) of the solvent's boiling point and superheated vapor;
- (c) A working mode cover and a freeboard refrigeration device operated to ensure that the chilled air blanket temperature is no greater than thirty percent (30%) of the solvent's boiling point;
- (d) Reduced room draft, freeboard ratio of one (1.0), and superheated vapor;
- (e) A freeboard refrigeration device operated to ensure that the chilled air blanket temperature is no greater than thirty percent (30%) of the solvent's boiling point and reduced room draft;
- (f) A freeboard refrigeration device operated to ensure that the chilled air blanket temperature is no greater than thirty percent (30%) of the solvent's

boiling point and a freeboard ratio of one (1.0);

- (g) A freeboard refrigeration device operated to ensure that the chilled air blanket temperature is no greater than thirty percent (30%) of the solvent's boiling point and dwell. Dwell shall be not less than thirty-five percent (35%) of the dwell time determined for the part or parts;
- (h) Reduced room draft, dwell, and a freeboard ratio of one (1.0);
- (i) A freeboard refrigeration device operated to ensure that the chilled air blanket temperature is no greater than thirty percent (30%) of the solvent's boiling point and a carbon adsorber which reduces solvent emissions in the exhaust to a level not to exceed one hundred parts per million (100 ppm) at any time; and
- (j) A freeboard ratio of one (1.0), superheated vapor, and a carbon adsorber which reduces solvent emissions in the exhaust to a level not to exceed one hundred parts per million (100 ppm) at any time.

765.4

In addition to the requirements of § 765.2, the operator of a batch vapor cleaning machine with a solvent/air interface area of greater than thirteen square feet (13 sq. ft.) shall use one of the following devices or strategies:

- (a) A freeboard refrigeration device operated to ensure that the chilled air blanket temperature is no greater than thirty percent (30%) of the solvent's boiling point, a freeboard ratio of one (1.0), and superheated vapor;
- (b) Dwell and a freeboard refrigeration device operated to ensure that the chilled air blanket temperature is no greater than thirty percent (30%) of the solvent's boiling point, and reduced room draft. Dwell shall be not less than thirty-five percent (35%) of the dwell time determined for the part or parts;
- (c) A working mode cover and a freeboard refrigeration device operated to ensure that the chilled air blanket temperature is no greater than thirty percent (30%) of the solvent's boiling point and superheated vapor;
- (d) Reduced room draft, freeboard ratio of one (1.0), and superheated vapor;
- (e) A freeboard refrigeration device operated to ensure that the chilled air blanket temperature is no greater than thirty percent (30%) of the solvent's boiling point, reduced room draft, and superheated vapor;
- (f) A freeboard refrigeration device operated to ensure that the chilled air blanket temperature is no greater than thirty percent (30%) of the solvent's boiling point, reduced room draft, and a freeboard ratio of one (1.0); or
- (g) A freeboard refrigeration device operated to ensure that the chilled air blanket temperature is no greater than thirty percent (30%) 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 one hundred parts per million (100 ppm) at any time.

765.5 Batch vapor cleaning machines shall be operated in accordance with the following procedures:

- (a) 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;
- (b) Cleaned parts shall be drained at least fifteen (15) seconds or until dripping ceases, whichever is longer:
  - (1) Parts having cavities or blind holes shall be tipped or rotated while the part is draining; and
  - (2) A superheated vapor system shall be an acceptable alternate technology;
- (c) Parts baskets or parts shall not be removed from the batch vapor cleaning machine until dripping has ceased;
- (d) 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;
- (e) When the cover is open, the batch vapor cleaning machine shall not be exposed to drafts greater than forty meters (40 m.) per minute (one hundred thirty-two feet (132 ft.) per minute), as measured between one meter (1 m.) and two meters (2 m.) (three and three tenths feet (3.3 ft.) and six and six tenths feet (6.6 ft.) upwind and at the same elevation as the tank lip;
- (f) Sponges, fabric, wood, leather, paper products, and other absorbent materials shall not be cleaned in the batch vapor cleaning machine;
- (g) 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 absorbent materials shall be immediately stored in covered containers for disposal or recycling;
- (h) Work area fans shall be located and positioned so that they do not blow across the opening of the batch vapor cleaning machine;
- (i) During startup of the batch vapor cleaning machine the primary condenser shall be turned on before the sump heater;

- (j) 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;
- (k) When solvent is added to or drained from the batch vapor cleaning machine, the solvent shall be transferred using threaded or other leak proof couplings and the end of the pipe in the solvent sump shall be located beneath the liquid solvent surface;
- (l) 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; and
- (m) If a lip exhaust is used on the open top vapor degreaser, the ventilation rate shall not exceed twenty meters cubed per minute per meters squared ( $20 \text{ m}^3/\text{min.}/\text{m}^2$ ) or sixty-five feet cubed per minute per feet squared ( $65 \text{ ft}^3/\text{min.}/\text{ft}^2$ ) of degreaser open area, unless a higher rate is necessary to meet federal Occupational Safety & Health Administration (OSHA) requirements.

**766 SOLVENT CLEANING – IN-LINE VAPOR CLEANING**

766.1 This section applies to in-line vapor cleaning machines.

766.2 In-line vapor cleaning machines shall be equipped with:

- (a) 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;
- (b) A safety switch (thermostat and condenser flow switch) that shuts off the sump heat if the coolant is not circulating;
- (c) Sides that result in a freeboard ratio greater than or equal to seventy-five one hundredths (0.75);
- (d) A vapor up control switch;
- (e) An automated parts handling system that moves the parts or parts baskets at a speed of eleven feet (11 ft.) or three and four tenths meters (3.4 m.) 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 fifty percent (50%) of the solvent/air interface area, the speed of the parts basket or parts shall not exceed three feet per minute (3 ft./min.);
- (f) A device that shuts off the sump heat if the sump liquid solvent level drops

to the sump heater coils;

- (g) 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;
- (h) A permanent, conspicuous label summarizing the operating requirements in § 766.4;
- (i) A primary condenser; and
- (j) 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 one hundred parts per million (100 ppm).

766.3 The operator of an in-line vapor cleaning machine shall use one (1) of the following devices or strategies:

- (a) A freeboard ratio of one (1.0) and superheated vapor;
- (b) A freeboard refrigeration device operated to ensure that the chilled air blanket temperature is no greater than thirty percent (30%) of the solvent's boiling point and a freeboard ratio of one (1.0);
- (c) Dwell and a freeboard refrigeration device operated to ensure that the chilled air blanket temperature is no greater than thirty percent (30%) of the solvent's boiling point. Dwell shall be not less than thirty-five percent (35%) of the dwell time determined for the part or parts; or
- (d) Dwell and a carbon adsorber, which reduces solvent emissions in the exhaust to a level not to exceed one hundred parts per million (100 ppm) at any time. Dwell shall be not less than thirty-five percent (35%) of the dwell time determined for the part or parts.

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

- (a) 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;
- (b) Parts shall be oriented so that the solvent drains freely from the parts;
  - (1) Cleaned parts shall be drained at least fifteen (15) seconds or until dripping ceases, whichever is longer; and
  - (2) Parts having cavities or blind holes shall be tipped or rotated while



the part is draining;

- (c) Parts baskets or parts shall not be removed from the in-line vapor cleaning machine until dripping has ceased;
- (d) 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;
- (e) Sponges, fabric, wood, leather, paper products, and other absorbent materials shall not be cleaned in the in-line vapor cleaning machine;
- (f) Spills during solvent transfer and use of the in-line vapor cleaning machine shall be cleaned up immediately, and the wipe rags or other absorbent materials shall be immediately stored in covered containers for disposal or recycling;
- (g) Workplace fans shall not be used near the degreaser opening unless a higher rate is necessary to meet federal Occupational Safety & Health Administration (OSHA) requirements;
- (h) During startup of the in-line vapor cleaning machine the primary condenser shall be turned on before the sump heater;
- (i) 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;
- (j) Spraying operations shall be done in the vapor zone or within a section of the machine that is not exposed to the ambient air;
- (k) When solvent is added to or drained from the in-line vapor cleaning machine, the solvent shall be transferred using threaded or other leak proof couplings and the end of the pipe in the solvent sump shall be located beneath the liquid solvent surface; and
- (l) Openings shall be minimized during operations so that entrances and exits silhouette workloads with an average clearance between the parts and the edge of the degreaser opening of less than ten centimeters (10 cm.) or four inches (4 in.) or less than ten percent (10%) of the width of the opening.

## **767 SOLVENT CLEANING – AIRLESS AND AIR-TIGHT CLEANING**

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

767.2 The operator of each machine shall maintain a log of solvent additions and deletions for each machine that includes the weight of solvent contained in activated carbon or other absorbent materials used to control emissions from the cleaning machine;

767.3 The operator of each machine shall demonstrate that the emissions from each machine, on a three (3) month rolling average, are equal to or less than the allowable limit determined by the use of Table I in this section or the following equation if the volume of the cleaning machine exceeds two and ninety-five one hundredths cubic meters (2.95 m.<sup>3</sup>):

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

where:

EL = the three-month rolling average monthly emission limit (kilograms/month);

vol. = the cleaning capacity of machine (cubic meters);

**Table I. Emission Limits for Cleaning Machines without a Solvent/Air Interface**

| Cleaning Capacity (m. <sup>3</sup> ) | 3-Month rolling average monthly emission limit (kilograms/month) | Cleaning Capacity (m. <sup>3</sup> ) | 3-Month rolling average monthly emission limit (kilograms/month) | Cleaning Capacity (m. <sup>3</sup> ) | 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  |

| Cleaning Capacity (m. <sup>3</sup> ) | 3-Month rolling average monthly emission limit (kilograms/month) | Cleaning Capacity (m. <sup>3</sup> ) | 3-Month rolling average monthly emission limit (kilograms/month) | Cleaning Capacity (m. <sup>3</sup> ) | 3-Month rolling average monthly emission limit (kilograms/month) |
|--------------------------------------|--|--------------------------------------|--|--------------------------------------|--|
| 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  |

767.4 The operator of each machine shall operate the machine in conformance with the manufacturer's instructions and good air pollution control practices;

767.5 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 one hundred parts per million (100 ppm) by volume of solvent to air at an accuracy of plus or minus twenty-five parts per million (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;

767.6 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 one hundred parts per million (100 ppm) by volume, measured while the solvent cleaning machine is in the working mode and is venting to the adsorber;

767.7 The machine shall be equipped with a permanent, conspicuous label summarizing the operating requirements in § 767.8;

767.8 Airless cleaning machines and air-tight cleaning machines shall be operated in accordance with the following procedures:

- (a) 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;

- (b) Parts shall be oriented so that the solvent drains freely from the parts:
  - (1) Cleaned parts shall be drained at least fifteen (15) seconds or until dripping ceases, whichever is longer; and
  - (2) Parts having cavities or blind holes shall be tipped or rotated while the part is draining;
- (c) Parts baskets or parts shall not be removed from the in-line vapor cleaning machine until dripping has ceased;
- (d) Sponges, fabric, wood, leather, paper products and other absorbent materials shall not be cleaned in the airless cleaning machines and air-tight cleaning machines;
- (e) 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 absorbent materials shall be immediately stored in covered containers for disposal or recycling;
- (f) Work area fans shall be located and positioned so that they do not blow across the airless cleaning machine and air-tight cleaning machine;
- (g) Spraying operations shall be done in the vapor zone or within a section of the machine that is not exposed to the ambient air; and
- (h) Solvents shall be transferred using threaded or other leak proof couplings and the end of the pipe in the solvent sump shall be located beneath the liquid solvent surface when solvent is added to or drained from the airless cleaning machine and air-tight cleaning machine.

**768 SOLVENT CLEANING – ALTERNATIVE COMPLIANCE**

- 768.1 As an alternative to complying with the provisions of §§ 764 through 767, the operator of a solvent cleaning machine may demonstrate compliance with § 768.3 and 768.4.
- 768.2 The operator shall maintain records sufficient to demonstrate compliance. The records, which shall be maintained for not less than two (2) years, shall include, at a minimum, the quantity of solvent added to and removed from the solvent cleaning machine, and the dates of the addition and removal.
- 768.3 If the cleaning machine has a solvent/air interface, the owner or operator shall:

- (a) Maintain a log of solvent additions and deletions for each solvent cleaning machine; and
- (b) Ensure that emissions from each solvent cleaning machine are equal to or less than the applicable emission limit presented in Table II of this section.

**Table II. Emission limits for Batch Vapor and In-Line Solvent Cleaning Machines with a Solvent/Air Interface**

| Solvent Cleaning Machine                   | Three (3) Month Rolling Average (kg./m. <sup>2</sup> /month) | Monthly Emission Limit: (lb./ft. <sup>2</sup> /month) |
|--|--|---|
| Solvent cleaning machines batch vapor      | 150  | 30.7  |
| Existing in-line solvent cleaning machines | 153  | 31.3  |
| New in-line solvent cleaning machines      | 99   | 20.2  |

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

- (a) Maintain a log of solvent additions and deletions for each solvent cleaning machine; and
- (b) Ensure that the emissions from each solvent cleaning machine are equal to or less than the appropriate limits as described in § 768.5 and 768.6. Each owner or operator of a batch vapor or in-line cleaning machine shall demonstrate compliance with the applicable three (3) month rolling average monthly emission limit on a monthly basis.

768.5 For cleaning machines with a cleaning capacity that is less than or equal to two and ninety-five one hundredths cubic meters (2.95 m.<sup>3</sup>), the emission limit shall be determined using Table I in § 767.3 or the equation in § 768.6. 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 (2) emission limits applies;

768.6 For cleaning machines with a cleaning capacity that is greater than two and ninety-five one hundredths cubic meters (2.95 m.<sup>3</sup>), the emission limit shall be determined using the following equation:

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

where:

EL = the three (3) month rolling average monthly emission limit (kilograms/month);

vol = the cleaning capacity of machine (cubic meters);

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

768.8 The owner or operator of a batch vapor or in-line solvent cleaning machine shall maintain records and determine compliance in accordance with the following:

- (a) On the first operating day of every month ensure that the solvent cleaning machine system contains only clean liquid solvent;
  - (1) This includes, but is not limited to, fresh unused solvent, recycled solvent, and used solvent that has been cleaned of soils;
  - (2) A fill line must be indicated during the first month the measurements are made;
  - (3) The solvent level within the machine must be returned to the same fill-line each month, immediately before calculating monthly emissions; and
  - (4) The solvent cleaning machine does not have to be emptied and filled with fresh unused solvent before the calculations.
- (b) Using the records of all solvent additions and deletions for the previous monthly reporting period, determine solvent emissions using one (1) of the following equations:

- (1) For cleaning machines with a solvent/air interface:

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

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); or

(2) 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 (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 (40 C.F.R. § 60) or by engineering calculations included in the compliance report; and

- (c) Determine the monthly rolling average, EA, for the three (3) month period ending with the most recent reporting period using one (1) of the following equations:

- (1) For cleaning machines with a solvent/air interface:

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

where:

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

j=1 = the most recent

j=2 = the monthly reporting period immediately before j=1;

j=3 = the monthly reporting period immediately before j=2;  
or

- (2) For cleaning machines without a solvent/air interface:

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

where:

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



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

j=1 = the most recent monthly reporting period;

j=2 = the monthly reporting period immediately before j=1;

j=3 = the monthly reporting period immediately before j=2.

## **769 SOLVENT CLEANING – RECORDKEEPING AND MONITORING**

769.1 The operator of a solvent cleaning machine subject to §§ 764 through 767 shall conduct monitoring and record keeping as follows:

- (a) 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;
- (b) 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;
- (c) If a cover (working-mode, downtime-mode, 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 opens and closes 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;
- (d) 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;
- (e) 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;
- (f) The owner or operator of a batch vapor or in-line solvent cleaning machine complying using reduced room draft, maintained by controlling

room parameters including but not limited to redirecting fans, and closing doors and windows, shall conduct monitoring and record the results as follows:

- (1) Initially measure the wind speed within six inches (6 in.) 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; and
    - (D) Average the values obtained at each corner and record the average wind speed;
  - (2) Record the room parameters established during the initial compliance test to achieve the reduced room draft;
  - (3) Quarterly monitor the wind speed in accordance with subparagraph (f)(1) of this section; and
  - (4) Weekly monitor the room parameters as specified in this section;
- (g) 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 wind speed 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; and
- (h) If a carbon adsorber is used to comply with these standards, the owner or operator shall measure and record the concentration of halogenated HAP solvent in the exhaust of the carbon adsorber weekly with a colorimetric detector tube;
- (1) This test shall be conducted while the solvent cleaning machine is in the working mode and is venting to the carbon adsorber;
  - (2) The exhaust concentration shall be determined using a colorimetric detector tube designed to measure a concentration of one hundred

parts per million (100 ppm) by volume of solvent in air to an accuracy of plus or minus twenty-five parts per million (25 ppm) by volume; and

- (3) The concentration shall be determined through a sampling port for monitoring within the exhaust outlet that is easily accessible and located at least eight (8) stack or duct diameters downstream and two (2) stack or duct diameters upstream from any flow disturbance such as a bend, expansion, contraction, or outlet; downstream from no other inlet.