

8.0 Handling, Storage, and Disposal of Volatile Organic Compounds (VOCs) (2010 revision, draft 2)

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8.1 Except as provided for in 8.3, the requirements of 8.0 of this regulation apply to: any facility that is subject to any of the requirements of 10.0 through 50.0 of this regulation, and any facility that emits at least 6.8 kg/day (15 lb/day) of VOC before consideration of controls.

8.2 Definitions

“Cleanup solvent” means a VOC-containing material used to remove any loosely held uncured (i.e., not dry to the touch) adhesive or sealant that is subject to 4.0 of 7 DE Admin Code 1141 from a substrate, or to clean equipment used in applying an adhesive or sealant subject to 4.0 of 7 DE Admin Code 1141.

“Electrical and electronic components” means components and assemblies of components that generate, convert, transmit, or modify electrical energy. Electrical and electronic components include, but are not limited to, wires, windings, stators, rotors, magnets, contacts, relays, printed circuit boards, printed wire assemblies, wiring boards, integrated circuits, resistors, capacitors and transistors. Cabinets in which electrical and electronic components are housed are not considered electrical and electronic components.

“Flushing” means pumping a solvent from a reservoir through a pipe or hose or through equipment (e.g., pipes, hoses, tanks) to remove contaminants or residue.

“Hand-wiping” means a method of cleaning a surface by physically rubbing it with a material such as a rag, paper, sponge or a cotton swab moistened with a solvent.

“Medical device” means an instrument, apparatus, implement, machine, contrivance, implant, in vitro reagent or other similar article, including any component or accessory that is, (i) intended for use in the diagnosis of disease or other conditions, or in the cure, mitigation, treatment, or prevention of diseases, or (ii) is intended to affect the structure or any function of the body, or (iii) is defined in the National Formulary or the United States Pharmacopoeia or any supplement to it.

“Non-manufacturing area cleaning” means the cleaning of cafeterias, laboratories, pilot facilities, restrooms, office buildings, etc.

“Medical Device and Pharmaceutical Manufacturing” means Medical devices; pharmaceutical products; and associated manufacturing and product handling equipment and material, work surfaces, maintenance tools and room surfaces that are subject to US FDA current Good Manufacturing/Laboratory Practice, or CDC/NIH guidelines for biological disinfection of surfaces.

Pharmaceutical product means a preparation or compound, which includes any drug, analgesic, decongestant, antihistamine, cough suppressant, vitamin, mineral or herb supplement intended for human or animal consumption and used to cure, mitigate or treat disease or improve or enhance health.

“Precision optics” means the optical elements used in electro-optical devices that are designed to sense, detect, or transmit light energy, including specific wavelengths of light energy and changes of light energy levels.

“Solvent Cleaning Operation” means the removal of uncured adhesives, inks, coatings, or contaminants including dirt, soil, and grease from parts, products, tools, machinery, equipment, and general work areas. Solvent cleaning operations include hand-wiping, surface preparation, flushing and the cleaning of spray guns/cleaning of equipment used to spray coatings, adhesives, etc.

“Stripping” means the removal of cured coatings, cured inks, or cured adhesives.

“Surface preparation” means the removal of contaminants such as dust, soil, oil, grease, etc., prior to coating, adhesive, or ink applications.

“Surface preparation solvent” means a solvent used to remove dirt, oil and other contaminants from a substrate prior to the application of a primer, adhesive or sealant that is subject to 4.0 of 7 DE Admin Code 1141.

8.3 Exemptions.

8.3.1 The requirements of 8.0 this regulation do not apply to any equipment or operation that is specifically subject to the emission limitations of 10.0, 11.0 or 38.0 of this regulation; or to any piece of equipment that is specifically subject to the requirements of 33.0 of this regulation.

8.3.2 Existing sources affected by 8.0 of this regulation shall comply with the provisions of 8.0 of this regulation on and after (*insert the effective date*), except for the requirements of 8.5 of this regulation. Existing sources affected by 8.5 of this regulation shall comply with the requirements of 8.5 of this regulation beginning as soon as practical, but no later than (*insert one year after the effective date*). New, modified, or reconstructed sources affected by 8.0 of this regulation shall comply with the provisions of 8.0 of this regulation on and after startup.

8.3.3 The requirements of 8.5 of this regulation shall not apply to any facility subject to 47.0 of this regulation, or to:

8.3.3.1 The surface preparation or cleaning of electrical and electronic components;

8.3.3.2 The surface preparation or cleaning of precision optics;

8.3.3.3 The surface preparation or cleaning of numismatic dies;

8.3.3.4 Stripping of cured inks, coatings, and adhesives;

8.3.3.5 The cleaning of resin, coating, ink, and adhesive mixing, molding, and application equipment;

- 8.3.3.6 Surface preparation associated with research and development activities;
- 8.3.3.7 Surface preparation associated with medical device and pharmaceutical manufacturing;
- 8.3.3.8 Cleaning associated with performance or quality assurance testing of coatings, inks, or adhesives involved;
- 8.3.3.9 Non-manufacturing area cleaning, and
- 8.3.3.10 The use of any surface preparation solvent or cleanup solvent subject to 4.0 of 7 DE Admin Code 1141.

8.4 Work Practice Standards.

- 8.14.1 No owner or operator of a facility subject to 8.4 of this regulation may cause, allow, or permit the disposal of more than five kilograms (kg) (11 pounds [lb]) of any VOC, or of any materials containing more than five kg (11 lb) of any VOCs, at that facility in any one day in a manner that would permit the evaporation of VOC into the ambient air. This provision does not apply to:
 - 8.14.1.1 Any VOC or material containing VOC emitted from a regulated entity that is subject to a VOC standard under this regulation.
 - 8.14.1.2 Coating sources that are exempt from the emission limitations of 10.0 through 23.0 of this regulation.
 - 8.14.1.3 Waste paint (sludge) handling systems, water treatment systems, and other similar operations at coating facilities using complying coatings.
 - 8.14.1.4 Any VOC or material containing VOCs used during process maintenance turnarounds for cleaning purposes, provided that the provisions of 8.4.3, 8.4.4, ~~and~~ 8.4.5 and 8.4.6 of this regulation are followed.
- 8.14.2 The requirements of 8.14.1 of this regulation includes, but is not limited to, the disposal of VOC from VOC control devices.
- 8.14.3 No owner or operator of a facility subject to 8.4 of this regulation shall use open containers for the storage or disposal of cloth or paper impregnated with VOCs ~~that are used for surface preparation, cleanup, or coating removal~~. Containers for the storage or disposal of cloth or paper impregnated with VOCs shall be kept closed, except when adding or removing material.
- 8.14.4 No owner or operator of a facility subject to 8.4 of this regulation shall store in open containers spent or fresh VOC or VOC containing material ~~to be used for surface preparation, cleanup or coating removal~~. Containers for the storage of spent or fresh VOCs or VOC containing material shall be kept closed, except when adding or removing material.
- 8.14.5 No owner or operator of a facility subject to 8.4 of this regulation shall use VOC for the cleanup of spray equipment unless one or more of the following methods

are equipment is used to collect the cleaning compounds and to minimize their evaporation to the atmosphere.

8.4.5.1 Use of an enclosed spray gun cleaning system that is kept closed when not in use.

8.4.5.2 Non-atomized discharge of solvent into a waste container that is kept closed when not in use.

8.4.5.3 Disassembly of the spray gun and cleaning in a vat that is kept closed when not in use.

8.4.5.4 Atomized spray into a waste container that is fitted with a device that captures atomized solvent emissions.

8.4.5.5 Any alternative technique that has been demonstrated to, and accepted by the Department as producing emissions that are equal to or less than the emissions from the techniques specified in 8.4.5.1 through 8.4.5.4 of this regulation. Emissions from any alternative technique shall be demonstrated pursuant to test protocols that are approved in advance by the Department.

8.4.6 Any owner or operator of a facility subject to 8.4 of this regulation shall handle and transfer all fresh and spent cleaning solvent and other VOC-containing material to or from any container, tank, vat, vessel, or piping system, etc. in such a manner that minimizes losses.

8.5 Control Requirements. No owner or operator of a facility subject to 8.5 of this regulation shall use any liquid VOC containing material for any solvent cleaning operation that does not meet one of the requirements of 8.5.1 through 8.5.3.

8.5.1 The VOC content is equal to or less than 50 grams VOC per liter (0.42 lb/gal), as applied, or

8.5.2 The VOC composite vapor pressure is equal to or less than 8 millimeters of mercury (mmHg) at 20 degrees Celsius, as applied, or

8.5.3 The emissions of that material are controlled by an emission control system that:

8.5.3.1 Achieves an overall control efficiency of equal to or greater than 85 percent, by weight, or

8.5.3.2 Maintains a maximum outlet total organic carbon concentration of 20 parts per million by volume (ppmv) as carbon (C1) on a dry basis.

8.6 Test Methods and Procedures.

8.6.1 Any owner or operator subject to 8.5.1 of this regulation shall determine the VOC content of each cleaning solution using the test methods and procedures specified in **Appendix A** and **Appendix B** of this regulation, or using the manufacturer's product formulation data, and the following equation:

$$\text{VOC Content (in grams per liter of material)} = (W_s - W_w - W_{es}) / V_m \quad (8-1)$$

Where:

W_s = Weight of volatile compounds in grams(g);

W_w = Weight of water, in g;

W_{es} = Weight of exempt compounds in g;

V_m = Volume of material in liters

8.6.2 Any owner or operator subject to 8.5.2 of this regulation shall determine the VOC composite vapor pressure of each cleaning solution using the test methods and procedures specified in **Appendix A** and **Appendix B** of this regulation, or using the manufacturer's product formulation data, and the following equation:

$$PP_c = \frac{\sum_{i=1}^n \frac{(W_i)(VP_i)}{MW_i}}{\frac{W_w}{MW_w} + \frac{W_e}{MW_e} + \sum_{i=1}^n \frac{W_i}{MW_i}} \quad (8-2)$$

Where:

W_i = Weight of the i^{th} VOC compound, in grams (g);

W_w = Weight of water, in g;

W_e = Weight of exempt compound, in g;

MW_i = Molecular weight of the i^{th} VOC compound, in grams per gram-mole

MW_w = Molecular weight of water, in grams per gram-mole

MW_e = Molecular weight of exempt compound, in grams per gram-mole;

PP_c = VOC composite partial pressure at 20°C, in mmHg

VP_i = Vapor pressure of the i^{th} VOC compound at 20°C, in mmHg

8.6.3 Any owner or operator subject to 8.5.3 of this regulation shall conduct an initial test to demonstrate the efficiency of each emission control system using the applicable test methods and procedures specified in **Appendix A** through **Appendix E** of this regulation. The cleaning operation shall operate at maximum operating conditions and flow rates during any emission testing.

8.7. Recordkeeping. Any owner or operator subject to 8.5 of this regulation shall maintain all of the information necessary for the Department to determine compliance with the applicable requirements of Section 8.5 of this regulation. Such information shall be made available to the Department upon verbal or written request, and shall be maintained for a minimum of five years from the date such record is created. Information sufficient to determine compliance shall include, but is not limited to the following:

8.7.1 Name and quantity of each cleaning solvent used,

8.7.2 VOC content or vapor pressure of each cleaning solvent, as applied,

- 8.7.3 Material Safety Data Sheets for all cleaning solvents used,
- 8.7.4 Documentation of air pollution control equipment efficiency or capture efficiency, if applicable,
- 8.7.5 Date and type of maintenance performed on air pollution control or capture equipment, if applicable, and
- 8.7.6 Quantity of non-compliant solvent used, in gallons, for each day, each week, and calendar year.