

ARTICLE 8. VOLATILE ORGANIC COMPOUND RULES

NOTE: IC 13-1 and IC 13-7 were repealed by P.L.1-1996, SECTION 99, effective July 1, 1996.

Rule 17. Industrial Solvent Cleaning Operations

326 IAC 8-17-1 Applicability

Authority: IC 13-14-8; IC 13-17-3-4; IC 13-17-3-11

Affected: IC 13-15; IC 13-17

Sec. 1. (a) This rule applies to sources that meet the following criteria:

(1) Are located in Lake County or Porter County.

(2) Employ solvent materials in solvent cleaning operations during the production, repair, maintenance, or servicing of any of the following:

(A) Parts.

(B) Products.

(C) Tools.

(D) Machinery.

(E) Equipment.

(F) General work areas.

(3) Have actual volatile organic compound (VOC) emissions, before consideration of controls, of equal to or greater than three (3) tons per rolling twelve (12) month period from all solvent cleaning operations.

(b) Solvent cleaning operations exempt from the requirements of this rule based on the threshold applicability in subsection (a)(3) shall maintain records as required under section 10 of this rule. (*Air Pollution Control Division; 326 IAC 8-17-1; filed Nov 3, 2009, 3:31 p.m.: 20091202-IR-326090221FRA*)

326 IAC 8-17-2 Exemptions

Authority: IC 13-14-8; IC 13-17-3-4; IC 13-17-3-11

Affected: IC 13-15; IC 13-17

Sec. 2. (a) This rule does not apply to cleaning operations in the following source categories listed for regulation under Section 183(e) of the Clean Air Act:

(1) Aerospace coatings.

(2) Flexible packaging printing materials.

(3) Lithographic printing materials.

(4) Letterpress printing materials.

(5) Flat wood paneling coatings.

(6) Large appliance coatings.

(7) Metal furniture coatings.

(8) Paper, film, and foil coatings.

(9) Wood furniture coatings.

(10) Shipbuilding and repair coatings.

(11) Plastic parts coatings.

(12) Miscellaneous metal parts coatings.

(13) Miscellaneous industrial adhesives.

(14) Auto and light duty truck assembly coatings.

(b) The following solvent cleaning operations are exempt from all the requirements of this rule:

(1) Any solvent cleaning operation that is subject to 326 IAC 8-3 (Organic Solvent Degreasing Operations).

(2) Janitorial cleaning, including graffiti removal.

(3) Stripping of cured coatings, cured ink, or cured adhesives.

(4) Cleaning operations in printing prepress or graphic arts prepress areas, including the cleaning of film processors, color scanners, plate processors, film cleaning, and plate cleaning.

(5) Cleaning operations at digital printing presses.

(c) The following solvent cleaning operations are exempt from the VOC content limitations in section 4 of this rule:

(1) Cleaning of the following:

(A) Solar cells.

- (B) Laser hardware.
- (C) Scientific instruments.
- (D) High-precision optics.
- (2) Cleaning conducted as part of the following:
 - (A) Performance laboratory tests on coatings, adhesives, or inks.
 - (B) Research and development programs.
 - (C) Laboratory tests in quality assurance laboratories.
- (3) Cleaning of paper-based gaskets and clutch assemblies where the rubber is bonded to metal by means of an adhesive.
- (4) Cleaning of cotton swabs to remove cottonseed oil before cleaning of high precision optics.
- (5) Medical device and pharmaceutical sources using up to one and one-half (1.5) gallons per day of solvents.
- (6) Cleaning of adhesive application equipment used for thin metal laminating.
- (7) Cleaning of electronic or electrical cables.
- (8) Touch-up cleaning performed on printed circuit boards where surface mounted devices have already been attached.
- (9) Cleaning of coating and adhesive application processes used to manufacture transdermal drug delivery product using less than three (3) gallons per day of ethyl acetate.
- (10) Cleaning of application equipment used to apply coatings on satellites and radiation effect coatings.
- (11) Cleaning of application equipment used to apply solvent-borne fluoropolymer coatings.
- (12) Cleaning of ultraviolet or electron beam adhesive application.
- (13) Cleaning of sterilization indicating ink application equipment if the source employs less than one and one-half (1.5) gallons per day of solvents for the cleaning.
- (14) Cleaning of the following:
 - (A) Metering rollers.
 - (B) Dampening rollers.
 - (C) Printing plates.
- (15) Cleaning of polyester resin application equipment for sources subject to 40 CFR 63, Subpart WWWW*.
- (d) The following solvent cleaning operations are exempt from the work practice standards in section 4(c) of this rule:
 - (1) Cleaning of the nozzle tips of automated spray equipment systems, except for robotic systems.
 - (2) Cleaning with spray bottles or containers described in section 4(b)(2) of this rule.
 - (3) Printing operations where the roller or blanket wash is applied automatically.
- (e) Cleaning with aerosol products shall be exempt from the requirements of section 4(a) and 4(c) of this rule if the source employs one and one-quarter (1.25) gallons or less of the aerosol products per day.

*This document is incorporated by reference. Copies may be obtained from the Government Printing Office, 732 North Capitol Street NW, Washington, D.C. 20401 or are available for review and copying at the Indiana Department of Environmental Management, Office of Air Quality, Indiana Government Center North, Tenth Floor, 100 North Senate Avenue, Indianapolis, Indiana 46204. (*Air Pollution Control Division; 326 IAC 8-17-2; filed Nov 3, 2009, 3:31 p.m.: 20091202-IR-326090221FRA; errata filed Nov 18, 2009, 3:42 p.m.: 20091216-IR-326090221ACA; filed Apr 3, 2012, 4:12 p.m.: 20120502-IR-326110401FRA*)

326 IAC 8-17-3 "Composite partial vapor pressure" defined
 Authority: IC 13-14-8; IC 13-17-3-4; IC 13-17-3-11
 Affected: IC 13-15; IC 13-17

Sec. 3. For purposes of this rule, "composite partial vapor pressure" means the sum of the partial pressures of the VOC compounds in a solvent. (*Air Pollution Control Division; 326 IAC 8-17-3; filed Nov 3, 2009, 3:31 p.m.: 20091202-IR-326090221FRA*)

326 IAC 8-17-4 VOC emissions control requirements
 Authority: IC 13-14-8; IC 13-17-3-4; IC 13-17-3-11
 Affected: IC 13-15; IC 13-17

Sec. 4. (a) The owner or operator of a source that is subject to this rule shall not use a solvent to perform solvent cleaning operations unless the solvent complies with the applicable VOC content limitation as follows:

Solvent Cleaning Operation	VOC Limit (as-applied) (pounds/gallon)
Product cleaning during manufacturing process or surface preparation for coating, adhesive, or ink application:	

General	0.42
Electrical apparatus components and electronic components	0.83
Medical devices and pharmaceuticals	6.7
Repair and maintenance cleaning:	
General	0.42
Electrical apparatus components and electronic components	0.83
Medical devices and pharmaceuticals:	
Tools, equipment, and machinery	6.7
General work surfaces	5.0
Cleaning of coating or adhesive application equipment	0.42
Cleaning of ink application equipment:	
General	0.42
Flexographic printing	0.42
Gravure printing:	
Publication	0.83
Packaging	0.42
Screen printing	4.2
Ultraviolet ink and electron beam ink application equipment, except screen printing	5.4
Specialty flexographic printing	0.83
Cleaning of polyester resin application equipment not subject to 40 CFR 63, Subpart WWW*	0.42

(b) The owner or operator of a source that is subject to this rule shall employ only the following cleaning devices and methods:

(1) Wipe cleaning.

(2) Closed containers or hand-held spray bottles from which solvents are applied without a propellant-induced force.

(3) Cleaning equipment that has a solvent container that is closed during cleaning operations, except when depositing and removing objects to be cleaned, and is closed during nonoperation with the exception of maintenance and repair to the cleaning equipment itself.

(4) Remote reservoir cleaner that complies with all of the following:

(A) Prevents solvent vapors from escaping from the solvent container by using such devices as a cover or a valve when the remote reservoir is not being used, cleaned, or repaired.

(B) Directs solvent flow in a manner that will prevent liquid solvent from splashing outside of the remote reservoir cleaner.

(C) Does not clean porous or absorbent materials, such as:

(i) cloth;

(ii) leather;

(iii) wood; or

(iv) rope.

(D) Uses only solvent containers free of all liquid leaks. Auxiliary equipment, such as pumps, pipelines, or flanges, shall not have any liquid leaks, visible tears, or cracks. Any liquid leak, visible tear, or crack detected shall be repaired within one (1) calendar day, or the leaking section of the remote reservoir cold cleaner shall be drained of all solvent and shut down until it is replaced or repaired.

(5) Nonatomized solvent flow method where the cleaning solvent is collected in a container or a collection system that is closed except for solvent collection openings and, if necessary, openings to avoid excessive pressure buildup inside the container.

(6) Solvent flushing where the cleaning solvent is discharged into a container that is closed except for solvent collection openings and, if necessary, openings to avoid excessive pressure buildup inside the container. The discharged solvent from the equipment must be collected into containers without atomizing into the open air. The solvent may be flushed through the system by air or hydraulic pressure or by pumping.

(c) The owner or operator of a source that is subject to this rule is prohibited from atomizing any solvent unless the emissions are vented to VOC emission control equipment that meets the requirements of subsection (e).

(d) Work practices shall be used to minimize VOC emissions from the use, handling, storage, and disposal of cleaning solvents and shop towels. Work practices shall include, at a minimum, but not be limited to, the following:

- (1) Covering open containers and used applicators.
- (2) Minimizing air circulation around cleaning operations.
- (3) Properly disposing of used solvent and shop towels.
- (4) Implementing equipment practices that minimize emissions, for example, keeping parts cleaners covered and maintaining cleaning equipment to repair solvent leaks.

(e) As an alternative to complying with the requirements in subsections (a) and (b), the owner or operator of a source that is subject to this rule may comply with this rule by installing and operating VOC emission control equipment for the solvent cleaning operation. The VOC emission control equipment shall comply with the following requirements:

- (1) A capture efficiency of at least ninety percent (90%), by weight, for the VOC emissions.
- (2) Either a destruction efficiency of at least ninety percent (90%), by weight, or an outlet concentration of less than fifty (50) parts per million, by volume, dry basis, for the VOC emissions.

(f) As an alternative to complying with the VOC content limits in subsection (a), the owner or operator of a source may use solvents or solvent solutions for industrial cleaning operations that have a VOC composite partial vapor pressure at or below eight (8) millimeters of mercury (mmHg) at twenty (20) degrees Celsius (sixty-eight (68) degrees Fahrenheit).

(g) As an alternative to complying with the requirements in subsections (a) and (b), a manufacturer of coatings, inks, adhesives, or resins may comply with the following requirements:

- (1) Clean portable or stationary mixing vats, high dispersion mills, grinding mills, tote tanks, and roller mills by one (1) or more of the following methods:

(A) Use a cleaning solvent that either contains less than one and sixty-seven hundredths (1.67) pounds per gallon of VOC or has a composite partial vapor pressure at or below eight (8) mmHg at twenty (20) degrees Celsius (sixty-eight (68) degrees Fahrenheit).

(B) Comply with the following work practices:

- (i) Equipment being cleaned must be maintained leak free.
- (ii) Drain VOC-containing cleaning materials from the cleaned equipment upon completion of cleaning.
- (iii) Store or dispose of VOC-containing cleaning materials, including waste solvent, in a manner that will not cause or allow evaporation into the atmosphere.
- (iv) Store all VOC-containing cleaning materials in closed containers.

(C) Collect and vent the emissions from equipment cleaning to a VOC emission control system that has an overall capture and control efficiency of at least eighty percent (80%), by weight, for the VOC emissions. If the reduction is achieved by incineration, at least ninety percent (90%) of the organic carbon shall be oxidized to carbon dioxide.

(D) Use organic solvents other than those allowed in clause (A) provided not more than sixty (60) gallons of fresh solvent shall be used per month. Organic solvent that is reused or recycled (either on-site or off-site), for further use in equipment cleaning or the manufacture of coatings, inks, or adhesives shall not be included in this limit. All VOC-containing cleaning materials shall be stored in closed containers.

- (2) When using solvent for wipe cleaning, the owner or operator of a facility shall not:

- (A) use open containers for the storage or disposal of cloth or paper impregnated with organic compounds that are used for cleanup or the removal of coatings, inks, adhesives, or resins; or
- (B) store spent or fresh organic compounds to be used for cleanup or the removal of coatings, inks, adhesives, or resins in open containers.

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326 IAC 8-17-5 Compliance dates

Authority: IC 13-14-8; IC 13-17-3-4; IC 13-17-3-11

Affected: IC 13-15; IC 13-17

Sec. 5. The owner or operator of a source that is subject to this rule shall comply with the requirements of this rule no later than April 1, 2011, or upon initial startup of the operation for new solvent cleaning operations. (*Air Pollution Control Division; 326 IAC 8-17-5; filed Nov 3, 2009, 3:31 p.m.: 20091202-IR-326090221FRA*)

326 IAC 8-17-6 Compliance test methods

Authority: IC 13-14-8; IC 13-17-3-4; IC 13-17-3-11
Affected: IC 13-15; IC 13-17

Sec. 6. (a) Compliance with add-on control requirements shall be determined by performing emission tests as follows:

(1) Run at typical operating conditions and flow rates compatible with scheduled production during any emission testing.
(2) The initial emission test shall be performed, within ninety (90) days after the compliance date for the solvent cleaning operation or startup, when the control device is installed and operating to demonstrate compliance with the applicable emission control requirement.

(3) The test methods and procedures in 326 IAC 8-1-4(d) through 326 IAC 8-1-4(f) shall be followed.

(b) VOC content of solvents shall be determined in accordance with the following:

(1) Analysis by 40 CFR 60, Method 24*.

(2) Analytical data derived from a material safety data sheet (MSDS) or equivalent information from the supplier as long as it is based on 40 CFR 60, Method 24*.

(3) If diluted prior to use, a material balance calculation that combines 40 CFR 60, Method 24* analytical data or supplier information for the concentrated materials used to prepare the cleaning solvent and the proportions in which they are mixed to make the as-applied material.

(c) The composite partial vapor pressure of solvents shall be determined as follows:

(1) Determine the identity and quantity of each compound in a blended organic solvent using the manufacturer's product formulation data.

(2) Determine the vapor pressure of each pure VOC component by using one (1) of the following:

(A) Standard reference texts.

(B) ASTM Method D2879-92*, ASTM International, 100 Barr Harbor Drive, West Conshohocken, Pennsylvania 19428.

(3) Calculate the composite partial vapor pressure of the cleaning material by using the following formula:

Where:

W_i	=	Weight of the "i"th VOC compound, in grams
W_w	=	Weight of water, in grams
W_c	=	Weight of exempt compound, in grams
MW_i	=	Molecular weight of the "i"th VOC compound, in g/g-mole
MW_w	=	Molecular weight of water, in g/g-mole
MW_c	=	Molecular weight of exempt compound, in g/g-mole
PP_c	=	VOC composite partial vapor pressure at 20°C (68°F), in mmHg
VP_i	=	Vapor pressure of the "i"th VOC compound at 20°C (68°F), in mmHg

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326 IAC 8-17-7 Monitoring and record keeping

Authority: IC 13-14-8; IC 13-17-3-4; IC 13-17-3-11

Affected: IC 13-15; IC 13-17

Sec. 7. (a) The owner or operator of a solvent cleaning operation that is subject to one (1) or more of the VOC content limits in section 4 of this rule shall collect and record the following information each month for each cleaning material subject to a VOC content limit:

(1) The name and identification of each cleaning material and the associated solvent cleaning activity.

(2) The VOC content of each cleaning material, in pounds per gallon, as applied or the VOC composite partial vapor pressures of the solvents or solvent solutions used in the industrial cleaning operation.

(b) The owner or operator of a solvent cleaning operation installing and operating VOC emission control equipment to achieve and maintain compliance with the requirements in section 4(e) or 4(g)(1)(C) of this rule shall comply with the following:

(1) Monitoring equipment requirements in 326 IAC 8-1-12(b)(2).

(2) The control device monitoring data in 326 IAC 8-1-12(c)(6) through 326 IAC 8-1-12(c)(8) shall be collected and recorded each day of operation of the solvent cleaning operation and control device.

(c) Any owner or operator of a solvent cleaning operation that is exempt from the VOC content limits specified in section 4 of this rule, under section 2(c)(5) or 2(c)(12) of this rule, shall collect and record the following information each day for each such solvent cleaning operation:

(1) The name and identification of each solvent used in the solvent cleaning activity.

(2) The volume, in gallons, of each solvent used in the industrial cleaning operation.

(3) The total volume, in gallons, of all the solvents used in the industrial cleaning operation.

(d) Any owner or operator of a solvent cleaning operation that is exempt from the requirements in section 4(a) and 4(c) of this rule, under section 2(e) of this rule, shall collect and record the following information each day for each such solvent cleaning operation:

(1) The name and identification of each aerosol product used in the solvent cleaning activity.

(2) The volume, in gallons, of each aerosol product used in the industrial cleaning operation.

(3) The total volume, in gallons, of all the aerosol product used in the industrial cleaning operation.

(e) Any owner or operator of a solvent cleaning operation that is exempt from the VOC content limits specified in section 4 of this rule, under section 2(c)(9) of this rule, shall record each day the total volume of ethyl acetate employed in such solvent cleaning operation.

(f) A manufacturer of coatings, inks, adhesives, or resins that complies with section 4(g)(1)(D) of this rule shall record and maintain each month for each cleaning material the following information:

(1) The name, identification, and volume of each VOC-containing cleaning solution as applied in each cleaning operation.

(2) The total volume of fresh cleaning solvent material used for cleaning coating, ink, adhesive, or resin manufacturing equipment.

(3) The total volume of cleaning solvent material recovered for either on-site or off-site reuse or recycling for further use in the cleaning of coating, ink, adhesive, or resin manufacturing equipment.

(g) All records required by this rule shall be maintained at the source for a period of five (5) years. (*Air Pollution Control Division; 326 IAC 8-17-7; filed Nov 3, 2009, 3:31 p.m.: 20091202-IR-326090221FRA; filed Apr 3, 2012, 4:12 p.m.: 20120502-IR-326110401FRA*)

326 IAC 8-17-8 Reporting requirements for monitoring and record keeping information

Authority: IC 13-14-8; IC 13-17-3-4; IC 13-17-3-11

Affected: IC 13-15; IC 13-17

Sec. 8. (a) The owner or operator of a solvent cleaning operation shall notify the department of the following exceedances of applicable requirements in section 4 of this rule within forty-five (45) days after the instance occurs:

(1) Each record showing the use of noncomplying solvents.

(2) Each record showing that the solvent cleaning operation exceeded an applicable maximum daily solvent usage limit specified in section 2(c)(5), 2(c)(9), 2(c)(12), or 2(e) of this rule.

(b) The owner or operator of a solvent cleaning operation that employs control equipment to comply with this rule shall submit to the department quarterly summaries of the records required by section 7(b) of this rule. These quarterly reports shall:

(1) be submitted no later than April 30, July 31, October 31, and January 31; and

(2) cover records for the previous calendar quarter.

(*Air Pollution Control Division; 326 IAC 8-17-8; filed Nov 3, 2009, 3:31 p.m.: 20091202-IR-326090221FRA*)

326 IAC 8-17-9 Requirements on compliance certification

Authority: IC 13-14-8; IC 13-17-3-4; IC 13-17-3-11

Affected: IC 13-15; IC 13-17

Sec. 9. (a) The owner or operator of an affected solvent cleaning operation shall submit to the department a compliance certification within thirty (30) days following the completion of any of the following requirements:

(1) The first documented achievement of compliance with each of the requirements in section 4 of this rule, as applicable.

(2) The installation and initial use of a VOC emission controls system for the solvent cleaning operation.

(3) The installation and initial use of any monitoring device.

(4) A compliance test to demonstrate compliance with the applicable control requirement.

(b) The compliance certification under subsection (a) shall provide the following information, where applicable:

(1) A description of the requirements.

- (2) A description of the VOC emission control system.
- (3) A description of the monitoring devices.
- (4) A description of the records that document continuing compliance.
- (5) The results on any compliance tests, including documentation of test data.
- (6) The results of any records that document continuing compliance, including calculations.
- (7) A statement by the owner or operator of the affected source as to whether the solvent cleaning operation has complied with applicable requirements.

(Air Pollution Control Division; 326 IAC 8-17-9; filed Nov 3, 2009, 3:31 p.m.: 20091202-IR-326090221FRA)

326 IAC 8-17-10 Record keeping requirements for exempt sources

Authority: IC 13-14-8; IC 13-17-3-4; IC 13-17-3-11

Affected: IC 13-15; IC 13-17

Sec. 10. (a) An owner or operator employing a solvent cleaning operations that is exempt from the requirements of this rule, other than the record keeping requirements of this section, based on the threshold applicability in section 1(a)(3) of this rule shall maintain the following records on a monthly basis:

- (1) The total gallons of each cleaning solvent used.
- (2) The VOC content of each cleaning solvent.

(b) Records required by subsection (a) shall be submitted to the department within thirty (30) days of the receipt of a written request. If the records are not available, the source shall be considered to be subject to the requirements in section 4 of this rule. *(Air Pollution Control Division; 326 IAC 8-17-10; filed Nov 3, 2009, 3:31 p.m.: 20091202-IR-326090221FRA)*