1. Article XXI Changes

§ 2105.80 CONTROL OF VOC EMISSIONS FROM OFFSET LITHOGRAPHIC PRINTING AND LETTERPRESS PRINTING

a. **Applicability.** Beginning January 1, 2012, this section applies to the owner or operator of an offset lithographic printing and/or letterpress printing operation, where the total actual VOC emissions from all offset lithographic printing and letterpress printing operations, with two exceptions, including related cleaning activities, at that facility are equal to or greater than 15 pounds (6.8 kilograms) per day or 2.7 tons (2,455 kilograms) per twelve month rolling period. These exceptions include heatset web offset lithographic printing operations and heatset web letterpress printing operations, for which this section only applies to those presses with potential to emit from the dryer, prior to controls, of at least 25 tons (22,680 kilograms) of VOC (petroleum ink oil) from heatset inks per twelve month rolling period.

b. **Limitations.** A person may not cause or permit the emission into the outdoor atmosphere of VOCs from an offset lithographic printing and/or letterpress printing operation unless one of the following limitations is met:

1. The VOC content for heatset web offset lithographic printing contains 1.6 percent alcohol or less (by weight), on-press (as-applied) in the fountain or the following equivalents:
A. 3.0 percent alcohol or less (by weight) on-press (as-applied) in the fountain solution provided the fountain solution is refrigerated to below 60°F (15.5°C); or
B. 5.0 percent alcohol substitute or less (by weight) on-press (as-applied) and no alcohol in the fountain solution.

2. The VOC content for sheet-fed offset lithographic printing contains 5.0 percent alcohol or less (by weight), in the fountain or the following equivalents:
A. 8.5 percent alcohol or less (by weight) on-press (as-applied) in the fountain solution provided the fountain solution is refrigerated to below 60°F (15.5°C); or
B. 5.0 percent alcohol substitute or less (by weight) on-press (as-applied) and no alcohol in the fountain solution.

3. The VOC content for cold web lithographic printing contains 5.0 percent alcohol substitute or less (by weight) on-press (as-applied) and no alcohol in the fountain solution.

4. The overall weight of VOC emitted to the atmosphere is reduced through the use of a chiller condenser or an oxidizer for heatset web offset lithographic printing or heatset web letterpress printing as follows:
A. The overall control efficiency for a chiller condenser shall be no less than 90 percent; or
B. The overall control efficiency for an oxidizer shall be no less than 95

percent; or
C. VOC outlet concentration is reduced to less than 20 ppmv on a dry basis.

5. Use cleaning materials with a VOC composite vapor pressure less than 10mm Hg at 68°F (20°C) or cleaning materials containing less than 70 weight percent VOC. The cleaning materials apply to blanket washing, roller washing, plate cleaners, metering roller cleaners, impression cylinder cleaners, rubber rejuvenators, and other cleaners used for cleaning a press, press parts, or to remove dried ink from the areas around a press. The cleaning materials provided do not apply to cleaners used on electric components of a press, pre-press cleaning operations, post-press operations, cleaning supplies used to clean the floor, other than dried ink, in the area around a press, or cleaning performed in parts washers or cold cleaners.

6. A combination of the methods listed in Paragraphs 1 through 5.
c. **Records.** A facility, regardless of the facility's annual emission rate, which contains offset lithographic printing and/or letterpress printing operations, shall maintain records sufficient to demonstrate compliance with this section. At a minimum, a facility shall maintain daily records of:

1. The following parameters for each ink and other component as supplied:
A. The name and identification number of each ink, or component;
B. The volume used;
C. The total volume of all the inks used in the offset lithographic printing and letterpress printing operation;
D. The mix ratio;
E. The density or specific gravity;
F. If used, the temperature of the fountain solution.
The records shall be maintained for 2 years and shall be submitted to the Department on a schedule reasonably prescribed by the Department.

d. **Exempt Solvents.** The solvents methyl chloroform (1,1,1-trichloroethane) and methylene chloride are exempt from control under this Section. No offset lithographic printing operation or letterpress printing operation which seeks to comply with this Section through the use of an exempt solvent may be included in any alternative standard approved pursuant to this Article.

e. **Exempt Other.** The following shall be exempt from the limitations set by Subsection b:

1. Sheet-feed presses with sheet size of 11 inches (27.9 centimeters) by 17 inches (43.2 centimeters) or smaller, or to any sheet-feed press with total fountain solution reservoir of less than one gallon (3.8 liters).

2. Heatset presses used for book printing or heatset presses with maximum web width of 22 inches (55.9 centimeters) or less are excluded from the add-on control of either a chiller condenser or an oxidizer.

3. 110 gallons (416 liters) per year of cleaning materials, or less, which meet neither the low VOC composite vapor pressure limitation nor the lower VOC content limitation and work practices.

f. **Housekeeping.** The following work practices for cleaning materials apply to the owner or operator of an offset lithographic printing and letterpress printing operation:

1. Store all VOC-containing cleaning materials and used shop towels in closed containers.

2. Ensure that ink, fountain solution and cleaning material storage containers are kept closed at all times except when depositing or removing those materials.

3. Minimize spills of VOC-containing inks, fountain solutions and cleaning materials, cleaning up spills immediately.

4. Convey VOC-containing inks, fountain solutions and cleaning materials from one location to another in closed containers or pipes.

5. Minimize VOC emissions during cleaning of storage and conveying equipment.

G. **Measurements.** Measurements of the volatile fraction of inks and fountain solution, and of volatile organic compound emissions shall be performed according to the applicable procedures established in § 2107.04 of this Article.

§ 2105.81 CONTROL OF VOC EMISSIONS FROM FLEXIBLE PACKAGE PRINTING

a. **Applicability.** Beginning January 1, 2012, this section applies to the owner or operator of a flexible packaging printing press, including rotogravure printing and flexographic printing, where the total actual VOC emissions from all flexible package printing press operations, including related cleaning activities, at the facility are equal to or greater than 15 pounds (6.8 kilograms) per day or 2.7 tons (2,455 kilograms) per twelve month rolling period.

1. The limits from § 2105.11 Graphic Arts System no longer apply to flexible package printing presses, as of January 1, 2012.

b. **Limitations.** A person may not cause or permit the emission into the outdoor atmosphere of VOCs from a flexible package printing press unless one of the following limitations is met:

1. The overall control efficiency shall be no less than 80 percent.
2. The VOC content of materials (inks, coatings and adhesives) used on a single press shall not be greater than 0.8 lb VOC per lb solids applied.
3. The VOC content of materials (inks, coatings and adhesives) used on a single press shall not be greater than 0.16 lb VOC per lb materials applied.

c. **Records.** A facility, regardless of the facility's annual emission rate, which contains a flexible package printing press, shall maintain records sufficient to demonstrate compliance with this section. At a minimum, a facility shall maintain daily records of:

1. The following parameters for each material, ink, coating, adhesive and other component as supplied:

A. The name and identification number of each material, ink, coating and adhesive;
B. The volume used;
C. The mix ratio;
D. The density or specific gravity;
E. The weight percent of total volatiles, water, solids, and exempt solvents;
F. The VOC content of the materials (inks, coatings and adhesives) used on a single press per weight of solids or materials applied.

The records shall be maintained for 2 years and shall be submitted to the Department on a schedule reasonably prescribed by the Department.

d. **Exempt Solvents.** The solvents methyl chloroform (1,1,1-trichloroethane) and methylene chloride are exempt from control under this Section. No flexible package printing operation which seeks to comply with this Section through the use of an exempt solvent may be included in any alternative standard approved pursuant to this Article.

e. **Housekeeping.** The following work practices for cleaning materials apply to the owner or operator of a flexible printing press:

1. Store all VOC-containing cleaning materials and used shop towels in closed containers.
2. Ensure that ink, coating, adhesive and cleaning material storage containers are kept closed at all times except when depositing or removing those materials.
3. Minimize spills of VOC-containing inks, coatings, adhesives and cleaning materials, cleaning up spills immediately.
4. Convey VOC-containing inks, coatings, adhesives and cleaning materials from one location to another in closed containers or pipes.
5. Minimize VOC emissions during cleaning of storage and conveying equipment.

f. **Measurements.** Measurements of the volatile fraction of inks, and of volatile organic compound emissions shall be performed according to the applicable procedures established in § 2107.04 of this Article.

§ 2105.82 CONTROL OF VOC EMISSIONS FROM INDUSTRIAL SOLVENT CLEANING OPERATIONS

a. **Applicability.** Beginning January 1, 2012, this section applies to the owner or operator

of a facility, where the total actual VOC emissions from all of the industrial solvent cleaning operations at that facility are equal to or greater than 15 pounds (6.8 kilograms) per day or 2.7 tons (2,455 kilograms) per twelve month rolling period. This regulation applies to any facility that employs solvent materials in industrial solvent cleaning operations during the production, repair, maintenance, or servicing of parts, products, tools, machinery, equipment, or general work areas, and stores and/or disposes of these solvent materials.

The provisions of this rule shall 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. Wood furniture coatings;
3. Shipbuilding and repair coatings;
4. Flexible package printing materials;
5. Lithographic printing materials;
6. Letterpress printing materials;
7. Flat wood paneling coatings;
8. Large appliance coatings;
9. Metal furniture coatings;
10. Paper, film, and foil coatings;
11. Plastic parts coatings;
12. Miscellaneous metal parts coatings;
13. Fiberglass boat manufacturing materials;
14. Miscellaneous industrial adhesives; or
15. Auto and light-duty truck assembly coatings.

b. **Limitations.** A person may not cause or permit the emission into the outdoor atmosphere of VOCs from industrial solvent cleaning operations unless one of the following limitations is met:

1. The solvent complies with the applicable VOC Content Limitation Table 2105.82;
2. The owner or operator of a facility that is subject to this rule shall employ only the following cleaning devices and methods:

A. Wipe cleaning;
B. Closed containers or hand held spray bottles from which solvents are applied without a propellant-induced force;
C. Cleaning equipment which has a solvent container that can be and is closed during cleaning operations, except when depositing and removing objects to be cleaned, and is closed during non-operation with the exception of maintenance and repair to the cleaning equipment itself;
D. Remote reservoir cleaner, if the operator of the cleaner complies with all of the following:

i. 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.
ii. Directs solvent flow in a manner that will prevent liquid solvent from splashing outside of the remote reservoir cleaner.
iii. Does not clean porous or absorbent materials, such as cloth, leather, wood or rope.
iv. 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 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.

E. Non-atomized solvent flow method where the cleaning solvent is collected in a container or a collection system which is closed except for solvent collection openings and, if necessary, openings to avoid excessive pressure build-up inside the container; or

F. Solvent flushing method where the cleaning solvent is discharged into a container which is closed except for solvent collection openings and, if necessary, openings to avoid excessive pressure build-up 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.

3. The owner or operator of a facility that is subject to this rule is prohibited from atomizing any solvent unless the emissions are vented to VOC emission control equipment that meet the requirements of Paragraph b.5 of this rule.

4. All VOC containing solvents used in solvent cleaning operations shall be stored in non-absorbent, non-leaking containers which shall be kept closed at all times except when filling or emptying. Cloth and paper moistened with VOC containing solvents shall be stored in closed, non-absorbent, non-leaking containers.

5. In lieu of complying with the requirements of Paragraphs b.1 and b.2 of this rule for an industrial solvent cleaning operation, the owner or operator of a facility that is subject to this rule may comply with this rule by installing and operating VOC emission control equipment for the industrial solvent cleaning operation. The VOC emission control equipment shall comply with all of the following requirements:

A. A capture efficiency of at least 90 percent, by weight, for the VOC emissions.

B. Either a destruction/removal efficiency of at least 95 percent, by weight, for the VOC emissions, or an outlet concentration of less than 20 ppmv,

on a dry basis, for the VOC emissions.

7. In lieu of complying with the requirements in Paragraph b.1 of this rule, the owner or operator of a facility may use solvents or solvent solutions for industrial cleaning operations which have a VOC composite partial vapor pressure of less than or equal to 8mm of Hg at 68°F (20°C).

c. **Records.** A facility, regardless of the facility's annual emission rate, which is subject to any of the VOC content limitations specified in this rule, shall maintain records sufficient to demonstrate compliance with this section. At a minimum, a facility shall maintain daily records of:

1. The following parameters for each industrial solvent cleaner and other component as supplied:
A. The name and identification number of each industrial solvent cleaning material and the associated industrial cleaning activity;
B. The volume of each solvent used in the industrial solvent cleaning operation;
C. The total volume of all the solvents used in the industrial solvent cleaning operation;
D. The mix ratio;
E. The density or specific gravity;
F. The VOC content, based upon applicable procedures established in § 2107.04 of this Article, of each industrial solvent cleaning material, as employed or the VOC composite partial vapor pressures of the solvents or solvent solutions used in the industrial solvent cleaning operation.

2. The VOC content of each industrial solvent cleaner as supplied.

3. The VOC content of each industrial solvent cleaner as applied.
The records shall be maintained for 2 years and shall be submitted to the Department on a schedule reasonably prescribed by the Department.

d. **Exempt Solvents.** The solvents methyl chloroform (1,1,1-trichloroethane) and methylene chloride are exempt from control under this Section. No industrial solvent cleaning operation which seeks to comply with this Section through the use of an exempt solvent may be included in any alternative standard approved pursuant to this Article.

e. **Exempt Other.** The following industrial solvent cleaning operations shall be exempt from the limitations set by Subsection b:

1. The following industrial solvent cleaning operations are exempt from all the requirements of this rule:

A. Janitorial cleaning, including graffiti removal.
B. Stripping of cured coatings, cured ink, or cured adhesives.

C. Cleaning operations in printing pre-press or graphic arts pre-press areas, including the cleaning of film processors, color scanners, plate processors, film cleaning and plate cleaning.

2. The following industrial solvent cleaning operations are exempt from the VOC content limitations specified in Paragraph b.1 of this rule:
A. Cleaning of solar cells, laser hardware, scientific instruments and high precision optics.
B. Cleaning conducted as part of the following: performance laboratory tests on coatings, adhesives or inks; research and development programs; and laboratory tests in quality assurance laboratories.
C. Cleaning of paper-based gaskets and clutch assemblies where rubber is bonded to metal by means of an adhesive.
D. Cleaning of cotton swabs to remove cottonseed oil before cleaning of high precision optics.
E. Medical device and pharmaceutical facilities using up to 1.5 gallons (5.7 Liters) per day of solvents.
F. Cleaning of adhesive application equipment used for thin metal laminating.
G. Cleaning of electronic or electronic cables.
H. Touch-up cleaning performed on printed circuit boards where surface mounted devices have already been attached.
I. Cleaning of coating and adhesive application processes utilized to manufacture transdermal drug delivery product using less than three gallons per day of ethyl acetate.
J. Cleaning of application equipment used to apply coatings on satellites and radiation effect coatings.
K. Cleaning of application equipment used to apply solvent borne fluoropolymer coatings.
L. Cleaning of ultraviolet or electron beam adhesive application.
M. Cleaning of sterilization indicating ink application equipment if the facility employs less than 1.5 gallons (5.7 Liters) per day of solvents for such cleaning.
N. Cleaning of metering rollers, dampening rollers and printing plates.
O. Cleaning of polyester resin application equipment for sources subject to 40 CRF Part 63, Subpart WWWW.

3. The following industrial solvent cleaning operations are exempt from the requirements of Paragraph b.3 of this rule:
A. Cleaning of the nozzle tips of automated spray equipment systems, except for robotic systems.
B. Cleaning with spray bottles or containers described in Subparagraph b.2.B of this rule.
C. Printing operations where the roller shall be exempt from the requirements of Paragraphs b.1 and b.3 of this rule if the facility employs 1.25 gallons [one hundred sixty fluid ounces (4.7 Liters)] or less of the aerosol products

per day.

f. **Housekeeping.** The following work practices for cleaning materials apply to the owner or operator of an industrial solvent cleaning operation:

1. Store all VOC-containing cleaning materials and used shop towels in closed containers.
2. Ensure that mixing and storage containers used for industrial solvent cleaning operations are kept closed at all times except when depositing or removing those materials.
3. Minimize spills of VOC-containing industrial solvent cleaners, and cleaning materials, cleaning up spills immediately.
4. Convey VOC-containing industrial solvent cleaners and cleaning materials from one location to another in closed containers or pipes.
5. Minimize VOC emissions during cleaning of storage and conveying equipment.

g. **Measurements.** Measurements of the volatile fraction of industrial solvent cleaners, and of volatile organic compound emissions shall be performed according to the applicable procedures established in § 2107.04 of this Article.

Table 2105.82
Emission Limits of VOCs for Industrial Solvent Cleaning Operations

Industrial Solvent Cleaning Operation	VOC Content Limitation as employed lbs VOC per gal	kg VOC per liter
1. Product cleaning during manufacturing process or surface preparation for coating, adhesive, or ink application		
(a) General	0.42	0.050
(b) Electrical apparatus components and electronic components	0.83	0.099
(c) Medical devices and pharmaceuticals	6.7	0.80
2. Repair and maintenance cleaning		
(a) General	0.42	0.050
(b) Electrical apparatus components and electronic components	0.83	0.099
(c) Medical devices and pharmaceuticals		
(i) Tools, equipment and machinery	6.7	0.80
(ii) General work surfaces	5.0	0.60
3. Cleaning of coating or adhesive	0.42	0.050
4. Cleaning of ink application equipment:		
(a) General	0.42	0.050
(b) Flexographic printing	0.42	0.050

(c) Gravure printing
(i) Publication 0.83 0.099
(ii) Packaging 0.42 0.050
(d) Screen printing 4.2 0.50
(e) Ultraviolet ink and electron beam ink 4.2 0.50
application equipment, except screen printing
(f) Specialty flexographic printing 0.83 0.099

5. Cleaning of polyester resin application equipment 0.42 0.050
not subject to 40 CRF Part 63 Subpart WWWW