Chapter 154: Control of Volatile Organic Compounds from Flexible Package Printing

SUMMARY: This regulation limits emissions of volatile organic compounds from flexible package printers.

1. Applicability

A. This regulation applies to any flexible package printing press that has the potential to emit from the dryer, prior to controls, of at least 25 tons per year of VOC from the use of inks, coatings and adhesives combined.

B. Facilities with flexible package printing presses with a potential to emit of less than 25 tons per year of VOC from the use of inks, coatings and adhesives combined, are required to meet only the work practice requirements in Section 4 and the recordkeeping requirements in Section 5 of this Chapter.

C. Facilities with flexible package printing presses with a potential to emit of less than 25 tons per year of VOC from the use of inks, coatings and adhesives combined that are used solely for quality control /quality assurance and for research and development purposes are required to meet only the recordkeeping requirements in Section 5 of this Chapter.

2. Definitions

A. Air pollution control equipment efficiency. "Air pollution control equipment efficiency" means the ratio of VOC emissions recovered or destroyed by the air pollution control equipment to the total VOC emissions that are introduced into the air pollution control equipment, expressed as a percentage.

B. Capture efficiency. "Capture efficiency" the ratio of VOC emissions delivered to the air pollution control equipment to the total VOC emissions resulting from flexible package printing activities, expressed as a percentage.

C. Cleaning. "Cleaning" means, with respect to a flexible package printing press or presses, cleaning of a press or press parts or the removal of dried ink from areas around the press. "Cleaning" does not include cleaning of electronic components, cleaning in platemaking or binding operations, housekeeping activity near a press or the use of a parts washer or cold cleaner.

D. Flexible package. "Flexible package" means any package or part of a package the shape of which may be readily changed. A "flexible package" may be in the form of a bag, pouch, liner or wrap made of paper, plastic, film, aluminum foil, or metalized or coated film or paper, alone or in combination. None of the following are considered a "flexible package": a folding carton, self-adhesive labels, gift wrap, wall covering, vinyl products, decorative laminates, floor coverings or tissue products.

E. Flexographic print station. "Flexographic print station" means a work station on which a flexographic printing operation is conducted. A flexographic print station

includes a flexographic printing plate, which is an image made of rubber or other elastomeric material. The image to be printed is raised above the printing plate.

F. Installation date. "Installation date" means the first date on which a piece of equipment is in place and prepared to operate. The "installation date" does not change if the equipment is moved to a new location at the same premises.

G. Overall control efficiency. "Overall control efficiency" means the product of the capture efficiency and the air pollution control equipment efficiency.

H. Press. "Press" means a printing production assembly that is composed of one or more work stations, one or more of which is a flexographic or rotogravure print station, that produces a printed product.

I. Quality control /quality assurance and research and development. "Quality control/quality assurance" means the testing of products to ensure that they meet performance requirements and that the product and/or service is reproducible. "Research and development" means a process intended to create new or improved products or technology. The products produced as a result of quality control/quality assurance and/or research and development activities are not directly sold or marketed as a product.

J. Rotogravure print station. "Rotogravure print station" means a work station on which a rotogravure printing operation is conducted. A rotogravure print station includes a rotogravure cylinder and ink supply. The image to be printed is etched or engraved below the surface of the rotogravure cylinder.

K. Work station. "Work station" means a unit on a press where material is deposited onto a substrate.

3. **Requirements.** Beginning January 1, 2011, flexible package printing presses that have the potential to emit from the dryer, prior to controls, of at least 25 tons per year of VOC from the use of inks, coatings and adhesives combined must use one of the following methods to control VOC emissions:

A. Use only inks, coatings and adhesives with an as applied VOC content that does not exceed 0.8 kg VOC/kg of solids (0.8 lb VOC/lb of solids) or 0.16 kg VOC/kg of materials (0.16 lb VOC/lb of materials). The VOC content limits may be met by averaging the VOC content of materials used on a single printing line in a single day; or

B. Install, operate and maintain in accordance with the manufacturer's recommendations, an emissions control system, consisting of a capture and a control device, which meets the following overall control efficiency levels:

Installation date of press	***Installation date of air pollution control device***	***Overall control efficiency (%)***
Prior to March 14, 1995	Prior to January 1, 2011	65

Prior to March 14, 1995	On or after January 1, 2011	70
On or after March 14, 1995	Prior to January 1, 2011	75
On or after March 14, 1995	On or after January 1, 2011	80

4. **Work Practice Requirements.** Beginning January 1, 2011, the owner or operator of any flexible package printing press must use the following work practices:

   A. New and used VOC-containing ink, adhesives, coating or cleaning solvent, including ink or coating mixed on the premises, shall be stored in a nonabsorbent, non-leaking, vapor-tight container. Such a container shall be kept closed at all times except when the container is being filled, emptied or is otherwise actively in use;

   B. Spills and leaks of VOC-containing ink, adhesives, coating or cleaning solvent shall be minimized. Any leaked or spilled VOC-containing ink, coating or cleaning solvent shall be absorbed and removed immediately;

   C. Absorbent applicators, such as cloth and paper, which are moistened with VOC containing ink, adhesives, coating or solvent, shall be stored in a closed, nonabsorbent, nonleaking container for disposal or recycling;

   D. VOC-containing ink, adhesives, coating and cleaning solvent shall be conveyed from one location to another in a closed container or pipe;

   E. Cleaning shall be performed to minimize associated VOC emissions; and

   NOTE: The handling, storage and disposal of hazardous wastes, including waste VOCs and cloth or paper impregnated with such waste are subject to hazardous waste management standards as set forth in Maine's Hazardous Waste Management Rules, 06-096 CMR Chapters 850-857.

5. **Recordkeeping Requirements**

   A. By January 1, 2011, or upon initial startup of a new flexible package printing press, or upon changing the method of compliance for an existing flexible package printing press from use of complying coatings or daily-weighted averaging to control devices, the owner or operator of the subject printing press shall perform all tests and submit to the Department the results of all tests and calculations necessary to demonstrate that the subject flexible package printing press will be in compliance with the emissions reductions required by Section 3 of this Chapter on and after January 1, 2011, or on and after the initial startup date. Testing shall be performed according to Procedures A,B,C,E, and F as specified in Appendix A to Chapter 132 of the Department's regulations.

   B. Beginning January 1, 2011, the owner or operator of any flexible package printing press must maintain records of the information necessary to demonstrate compliance with the applicable requirements of this Chapter, including but not limited to:

      (1) Name and quantity of any ink, adhesives, coating or cleaning solvent used;

      (2) VOC content of each ink, adhesives, coating or cleaning solvent used, as applied;

(3) A catalog of Material Safety Data Sheets for all inks, adhesives, coatings and cleaning solvents used;

(4) Documentation of air pollution control equipment efficiency or capture efficiency, if applicable;

(5) Date and type of maintenance performed on air pollution control or capture equipment, if applicable; and

(6) Calculations demonstrating that the potential emissions of VOC from all flexible package printing presses at the facility are and will be less than 25 tons per calendar year before the application of capture systems and control devices. Total potential emissions of VOC for a flexible package printing facility is the sum of potential emissions of VOC from each flexible package printing press at the facility. The following equation shall be used to calculate total potential emissions of VOC per calendar year before the application of capture systems and control devices for each flexible package printing press at the facility:

$$E_P = A \times B$$

where:

E_p=Total potential emissions of VOC from one flexible package printing press in units of pounds per year (lb/yr).

A=Weight of VOC per volume of solids of the coating or ink with the highest VOC content, as applied, each year on the printing press in units of pounds of VOC per gallon (lb VOC/gal) of coating or ink solids.

B=Total volume of solids for all coatings and inks that can potentially be applied each year on the printing press in units of gallons per year (gal/yr.). The instrument and/or method by which the owner or operator accurately measured or calculated the volume of coating and ink solids applied and the amount that can potentially be applied each year on the printing press.

(7) The actual overall emission reduction efficiency achieved for each day for each flexible package printing press as determined using Procedure E of Appendix A.

(8) Control device monitoring data;

(9) A log of operating time for the capture system, control device, monitoring equipment and the associated flexible package printing press; and

(10) A maintenance log for the capture system, control device, and monitoring equipment detailing all routine and non-routine maintenance performed, including dates and duration of any outages.

(11) For thermal incinerators, all continuous 3-hour periods of operation in which the average combustion temperature was more than 28 degrees C (50 degrees F) below the average combustion temperature during the most recent performance test that demonstrated that the facility was in compliance;

(12) For catalytic incinerators, all continuous 3-hour periods of operation in which the average temperature of the process vent stream immediately before the catalyst bed is more than 28 degrees C (50 degrees F) below the average temperature recorded during the most recent performance test that demonstrated that the facility was in compliance; and

(13). For carbon adsorbers, all continuous 3-hour periods of operation during which either the average VOC concentration or the reading of organics in the exhaust gases is more than 20 percent greater than the average exhaust gas concentration or reading measured by the organics monitoring device during the most recent determination of the recovery efficiency of the carbon adsorber that demonstrated that the facility was in compliance.

C. All required records shall be maintained for a period of at least six (6) years and made available to the Department or US EPA to inspect and copy upon request.

AUTHORITY: 38 M.R.S.A., Section 585-A

EFFECTIVE DATE:

BASIS STATEMENT

Section 184 of the Clean Air Act requires states to implement or update reasonably available control technology (RACT) controls on all major VOC and NOx emission sources and on source categories covered by a Control Technique Guideline (CTG) document. EPA defines RACT as the lowest emission limit that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility. In September 2006, EPA published a CTG for Flexible Package Printing that recommends control options for this source category.

In addition to the Basis Statement above, the Department has filed with the Secretary of State response to representative comments received during the comment period.

SUPPLEMENTAL BASIS STATEMENT
CHAPTER 154, CONTROL OF VOLATILE ORGANIC COMPOUNDS FROM FLEXIBLE PACKAGE PRINTING

JUNE 2010

Commenters

1. Anne Arnold
   EPA Region 1

2. Dixon Pike
   Pierce Atwood
   (representing MPPA)

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Applicability

1. Comment: The proposed regulation provides that facilities with flexible package printing presses with the potential to emit less than 25 tons per year of VOC are required to meet the work practices and recordkeeping requirements in Sections 4 and 5 of the regulation. None of the MPPA-member pulp and paper mills operate flexible package printing presses to produce marketable flexible package products. However, several of the mills operate flexographic and/or rotogravure printing presses as part of their laboratory quality control/quality assurance operations and for research and development purposes. The paper printed for these purposes is not sold or marketed as a product, but is used internally to assess the qualities of various paper products and as a sample for potential customers. The amount of printing performed is minimal and therefore, the amount of VOC emitted is very small. The commenter is requesting that printing done for research and development purposes and for quality assurance/control be exempt from this regulation. (commenter 2)

Response: The Department agrees that quality control/quality assurance and research and development activities should be exempt from the work practice requirements contained in Section 4 of the proposal. These activities will, however, be subject o the recordkeeping requirements contained in Section 5 of the proposed rule to ensure compliance with the 25 tons per year applicability threshold of Section 1A.

2. Comment: The references made to work practices requirements and recordkeeping in Section 1(B) should be to Sections 4 and 5, respectively. (commenter 1)

Response: The Department agrees and has made that change.

Work Practices

3. Comment: The proposed rule applies to any flexible package printing press that has the potential to emit from the dryer, prior to controls, of at least 25 tons per year of VOC from the use of inks, coatings and adhesives combined. In addition, the Section 3(A) VOC content limits apply to the use of inks, coatings, and adhesives. Therefore, the work practice requirements of Section 4 should also be revised to include adhesives. (commenter 1)

Response: The Department agrees and has made that change.

Recordkeeping

4. Comment: Comment: The proposed rule applies to any flexible package printing press that has the potential to emit from the dryer, prior to controls, of at least 25 tons per year of VOC from the use of inks, coatings and adhesives combined. In addition, the Section 3(A) VOC content limits apply to the use of inks, coatings, and adhesives. Therefore, the recordkeeping requirements of Section 5(A) must be revised to include adhesives. (commenter 1)

Response: The Department agrees and has made that change.

5. Comment: EPA recommends the Section 5(A) recordkeeping section of the rule include a provision requiring facilities with emissions below the applicability threshold to calculate their potential VOC emissions before the application of control devices, similar to Section 7(A)(1)(d) of Maine's existing Chapter 132 graphic arts rule. (commenter 1)

Response: The Department has made the suggested changes

6. Comment: EPA recommends the Section 5(B) recordkeeping section of this rule be revised to be consistent with the recordkeeping requirements of Maine's operating permit program as follows:

> "All required records shall be maintained for a period of at least ~~five (5)~~ six (6) years and made available to the Department, or US EPA, to inspect and copy upon request." (commenter 1)

Response: The Department has made the suggested change.

7. Comment: Maine's proposal is consistent with EPA's recommended overall emission reduction efficiencies and VOC content limits given in the CTG for Flexible Package Printing. However, the proposed rule does not contain sufficiently detailed provisions to ensure that the proposed requirements are readily enforceable.

For example, Section 5(A)(4) requires a facility to maintain "documentation of air pollution control equipment efficiency or capture efficiency." The rule should be revised to include appropriate test methods and monitoring procedures to ensure compliance with the required overall control efficiency. Specifically, the rule should include reference to EPA's capture efficiency test procedures (Methods 204 and 204A through F of 40 CFR Part 51 Appendix M) and other relevant test methods and compliance procedures, such as found in Appendix A of Maine's existing Chapter 132 graphic arts rule, as well as monitoring provisions to ensure continued compliance, such as those found in Section 7(D)(2)(g) through (k) of Maine's Chapter 132. (commenter 1)

Response: The Department has made the suggested changes.