Chapter 161: Graphic Arts – Offset Lithography and Letterpress Printing

- Legislative Format

Chapter 161: GRAPHIC ARTS - OFFSET LITHOGRAPHY AND LETTERPRESS PRINTING

Summary: This regulation restricts the volatile organic compound (VOCs) emissions from Offset Lithography and Letterpress operations.

1. Applicability

A. This regulation applies statewide.

B. This regulation applies to any Offset Lithography (Heatset, Sheet Fed or Coldset) and Letterpress printing operation

(1) whose maximum actual emissions are greater than three tons of VOCs per rolling 12 month period;

(2) for non-heatset printing operations, whose total volume of cleaning solution, alcohol fountain solution, alcohol substitutes, coatings and ink purchased or used in any 30 day rolling period is greater than 64 gallons per month, or equivalently, 768 gallons in any 12 month rolling period; or

(3) for heatset printing operations whose total weight of heatset inks, cleaning solution, fountain solution and fountain solution additives purchased or used in any 30 day rolling period is greater than 450 pounds per month, or equivalently, 5400 pounds per 12 month rolling period.

Any person claiming exemption pursuant to this subsection shall record and maintain monthly operational records sufficient to demonstrate compliance as specified in Subsection 5A(7) of this Chapter.

NOTE: Graphic Arts – Flexography and Rotogravure printing operations are subject to Graphic Arts – Rotogravure and Flexography, 06-096 CMR 132 (effective February 10, 1993).

NOTE: Facilities or any owner that emits greater than 10 pounds per hour, 100 pounds per day of VOCs may have additional air licensing requirements and should contact the Department to determine whether any licensing requirements apply.

C. Any owner or operator of an offset lithographic or letterpress printing operation, who is subject to this Chapter, must demonstrate compliance by 12 months from the effective date of this Chapter. For a source that commences operation after the effective date of this Chapter, the owner or operator must determine compliance status by 12 months after the date on which the source commences operation. Any owner or operator of an offset lithographic or letterpress printing operation, who is subject to this Chapter and has a BACT analysis included in an air emission license must demonstrate compliance pursuant to their air emission license conditions.

D. Any printing operation that is subject to this Chapter due solely to exceeding the applicability threshold of three tons of VOC emissions per year in subsection 1B, and whose VOC emissions

subsequently fall below that applicability threshold for a rolling 12 month period will remain subject to the requirements of this Chapter for three years following the conclusion of that 12 month rolling period. The printing operation will become subject to this Chapter anew upon exceeding any applicability threshold set forth in subsection 1B.

2. Definitions

A. Actual Emissions. "Actual Emissions" means calculating a VOC mass balance over a period of time, using invoices and usage records to determine amounts of ink, fountain solution and cleaning solutions purchased and used; multiplied by an applicable emission retention factor.

B. Alcohol. "Alcohol" means any of the following compounds, when used as a fountain solution additive for offset lithographic or letterpress printing: ethanol, n-propanol, and isopropanol.

C. Alcohol substitute. "Alcohol substitute" means any non-alcohol additives that contain VOCs and are used in the fountain solution; including, but not limited to, ethylene glycol or glycol ether compounds. Some additives are used to reduce the surface tension of water: others are added to prevent piling (ink build-up).

D. Automatic Blanket Wash System. "Automatic Blanket Wash System" means equipment used to clean lithographic blankets which can include, but is not limited to, those utilizing a cloth and expandable bladder, brush, spray, or impregnated cloth system.

E. BACT. "BACT" means Best Available Control Technology as defined in *Definitions Regulation* 06-096 CMR 100 (effective December 24, 2005).

F. CAM. "CAM" means Compliance Assurance Monitoring as described in 40 CFR Part 64.

G. Cleaning Solution. "Cleaning Solution" means any liquid solvent or solution used to clean the operating surfaces of a printing press and its parts. For purposes of this Chapter, cleaning solutions include, but are not limited to, blanket wash, roller wash, metering roller cleaner, plate cleaner, impression cylinder washes, rubber rejuvenators, and other cleaners used for cleaning a press, press parts, or to remove dried ink or coating from areas around the press.

H. Control device. "Control device" means equipment used to reduce, by destruction or removal, the amount of air pollutant(s) in an air stream prior to discharge to the ambient air.

I. Dampening System. "Dampening system" means equipment used to deliver the fountain solution to the lithographic plate.

J. Fountain Solution. "Fountain solution" means a mixture of water and other volatile and non-volatile chemicals and additives that maintains the quality of the printing plate including preventing debris build up (e.g., spray power, paper fiber, coating particles, dried ink particles and other materials), and increases viscosity and reduces the surface tension of the water so that is spreads easily across the printing plate service. The fountain solution wets the non-image area so that the ink is maintained within the image areas. Non-volatiles additives include mineral salts and hydrophilic gums. Alcohol and alcohol substitutes are the most common VOC additives used to reduce the surface tension of the fountain solution.

K. Fountain Solution Reservoir. "Fountain Solution Reservoir" means the collection tank that accepts fountain solution recirculated from printing unit(s). In some cases, the tanks are equipped with cooling coils for refrigeration of the fountain solution.

L. Heatset. "Heatset" means any operation where the printing inks are set by the evaporation of the ink oils in a heatset dryer.

M. Heatset Dryer. "Heatset dryer" means any device used in heatset web offset lithographic printing to heat the printed substrate and to promote the evaporation of ink oils.

N. Inking System. "Inking System" means a series of rollers used to meter ink onto the lithographic plate. The system can include agitators, pumps, totes, and others types of ink containers.

O. Letterpress printing press. "Letterpress Printing press" means a printing press that uses a relief method which uses type directly. Printing is done from cast metal type or plates on which the image or printing areas is raised above the nonprinting areas. Ink rollers touch on the surface of the raised areas. The surrounding (nonprinting) areas are lower and do not receive ink. The inked image is transferred directly to the paper.

P. Lithography. "Lithography" means a planographic printing process where the image and nonimage areas are chemically differentiated; the image area is oil receptive and the nonimage area is water receptive. This method differs from other printing methods, where the image is typically printed from a raised or recessed surface.

Q. Non-heatset. **"**Non-heatset" means a printing process where the printing inks are set by absorption and/or oxidation of the ink oil, not by evaporation of the ink oils in a dryer. For the purposes of this Chapter, use of an infrared heater or printing conducted using ultraviolet-cured or electron beam-cured inks is considered non-heatset.

R. Offset. "Offset" means a printing process that transfers the ink film from the lithographic plate to an intermediary surface (blanket), which, in turn, transfers the ink film to the substrate.

S. Press. "Press" means printing production assembly composed of one or more units used to produce a printed substrate including any associated coating, spray power application, heatset web dryer, ultraviolet or electron beam curing units, or infrared heating units.

T. Sheet fed. "Sheet fed" means any operation where paper is fed to the press in individual sheets.

U. Substrate. "Substrate" means the surface to which a coating is applied.

V. VOC Composite Partial Vapor Pressure – "VOC Composite Partial Vapor Pressure" means the sum of the partial pressure of the compounds defined as VOCs. VOC composite partial vapor pressure is calculated as follows:

$$PP_c = \sum_{i=1}^{n} \frac{(W_i)(VP_i)/MW_i}{\frac{W_w}{MW_w} + \frac{W_c}{MW_c} + \sum_{i=1}^{n} \frac{W_i}{MW_i}}$$

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 mm Hg
VP_i = Vapor pressure of the "i"th VOC compound at 20°C (68°F), in mm Hg

W. Web. "Web" means a continuous roll of paper used as a printing substrate.

3. Emission Control Limits

A. Work Practice Standards, Fountain and Cleaning Solution VOC Limits

Any owner or operator of a facility that utilizes any type of heatset, coldset or sheet fed offset web lithography printing press, or letterpress printing press system is subject to the following requirements for:

(1) **Work Practice Standards.** Each owner or operator shall use the following work practices:

(a) New and used VOC-containing ink, fountain solution and cleaning solvent, including solvents mixed on the premises, shall be stored in a nonabsorbent, non-leaking 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, fountain solution and cleaning solvent shall be minimized. Any leaked or spilled VOC-containing ink, fountain solution or cleaning solvent shall be absorbed and removed immediately to a sealed storage container. Spills of hazardous waste may also be subject to reporting pursuant to 38 MRSA § 1318-B (1) and the Hazardous Waste Management Rules, 06-096 CMR Chapters 850-857.

(c) Absorbent applicators, such as cloth and paper, which are moistened with VOC containing ink, fountain solution or cleaning solvent, shall be stored in a closed, non-absorbent, non-leaking container for disposal or recycling.

(d) VOC-containing ink, fountain solution and cleaning solvents shall be conveyed from one location to another in closed containers or pipes.

(e) Cleaning shall be performed to minimize associated VOC emissions.

(f) VOC waste containing materials as well as any hazardous waste may not be stored in any container which is rusted, bulging or leaking. For specific details, refer to the Standards for Generators of Hazardous Waste, 06-096 CMR Chapter 851. Additionally, the tanks and containers used to store VOCs or hazardous waste must be compatible with the waste stored in them, be labeled and stored according to hazardous waste management rules. Refer to Maine's Hazardous Waste Management Rules, 06-096 CMR Chapters 850-857,

as well as the federal regulations: 40 CFR 265.172 and 40 CFR 265.177 regarding incompatible containers and wastes.

(2) **Fountain Solution VOC Requirements** for heatset, sheet fed and coldset offset lithographic and letterpress presses. Any owner or operator of a subject printing press shall meet the following emission requirements:

(a) **Heatset Web Offset VOC Requirements** for on-press fountain solution shall achieve one of the following limits for fountain solution used on each heatset press;

(i) If the fountain solution contains only alcohol substitutes, maintain the as-applied VOC content of the fountain solution at or below 5.0 percent, by weight, and use no alcohol in the fountain solution.

(ii) If the fountain solution contains alcohol, maintain the as-applied VOC content of the fountain solution at or below 1.6 percent, by weight.

(iii) If the fountain solution contains alcohol and is refrigerated, maintain an as-applied VOC content of the fountain solution at or below 3.0 percent, by weight and refrigerate to sixty degrees Fahrenheit or less.

(b) **Sheet-Fed Web Offset VOC Requirements** for on-press fountain solution shall achieve one of the following limits for fountain solution used on each sheet fed press:

(i) If the fountain solution contains only alcohol substitutes, maintain the as-applied VOC content of the solution at or below 5.0 percent, by weight, and use no alcohol in the fountain solution.

(ii) If the fountain solution contains alcohol; maintain the as-applied VOC content of the fountain solution at or below 5.0 percent, by weight.

(iii) If the fountain solution contains alcohol and is refrigerated, maintain the as-applied VOC content of the solution at or below 8.5 percent, by weight and refrigerate to sixty degrees Fahrenheit or less.

(iv) Exemption: sheet-fed presses with sheet size of 11 x 17 inches or smaller or with total fountain solution reservoir of less than one gallon.

(c) **Coldset Web Offset Requirements** for on press fountain solution shall maintain the as-applied VOC content of the fountain solution used on each non-heatset press at or below 5.0 percent, by weight, and use no alcohol in the fountain solution.

(d) Where it can be demonstrated to the satisfaction of the Department that a subject lithographic printing press cannot be operated with fountain solutions meeting the limits in this Section for reasons of technological and/or economic infeasibility, the Department may establish site-specific limits based upon evidence of technological or economic feasibility, subject to approval by the EPA.

(3) **Cleaning Solvent Limits.** The owner or operator of an offset lithographic or

letterpress printing presses shall use cleaning solvents that have a composite partial vapor pressure less than 10 mm Hg at 20°C, or; have a VOC content less than 70 percent by weight.

(4) **Exemptions**

(a) Fountain Solution Limits for Sheet-Fed Web Offset or Letterpress presses: sheet-fed presses with sheet size of 11 x 17 inches or smaller or with total fountain solution reservoir of less than one gallon.

(b) Fountain Solution Limits for Coldset Web Offset or Letterpress presses: sheet-fed presses with sheet size of 11 x 17 inches or smaller or with total fountain solution reservoir of less than one gallon.

(c) Cleaning Solution Limits: For non - press or press parts cleaning processes, a facility is allowed to use a maximum 110 gallons of higher VOC content cleaning solvents within any consecutive twelve month period. This includes cleaning solutions used on electronic components of a press, pre-press cleaning operations (e.g. platemaking), post-press cleaning operations (e.g. binding), cleaning supplies (e.g. detergents) used to clean floors (other than dried ink) in an area around a press, or cleaning performed in parts washers or cold cleaners.

B. VOC Emission Control Requirements for Heatset Dryers

An owner or operator of a Lithographic or Letterpress heatset dryer system whose actual emissions are greater than 25 tons per year of VOC emissions from the dryer, before controls, shall be equipped with a control system and shall operate the control system to meet the following requirements.

(1) Exemption: Heatset presses used for book printing and heatset presses with maximum web width of 22 inches or less are excluded from the add-on control requirements.

(2) For a control system first installed before the effective date of this Chapter the control system shall reduce VOC emissions from each dryer by at least ninety percent or maintain a maximum VOC outlet concentration of twenty ppmv, as hexane (C_6H_{14}) on a dry basis, whichever is less stringent;

(3) For a control system first installed on or after the effective date of this Chapter, the control system shall reduce VOC emissions from each dryer by at least ninety-five percent or maintain a maximum VOC outlet concentration of twenty ppmv, as hexane (C_6H_{14}) on a dry basis, whichever is less stringent;

(4) An owner or operator of a heatset lithographic or heatset letter press printing press and dryer(s) equipped with a control system shall maintain the dryer air pressure lower than the pressroom air pressure at all times the press is operating and ensure that:

(a) The capture system and control device are operated at all times that the printing press is in operation; and the manufacturer's minimum recommended operating temperature for the control device or as such other minimum operating temperature as specified in a

BACT or CAM analysis included in a license issued after 1997, shall be maintained whenever the presses are in operation, and

(b) The control device is equipped with the applicable monitoring equipment specified in Section 4 Compliance Test methods, and the monitoring equipment is installed, calibrated, operated, and maintained according to the manufacturer's specifications or as otherwise specified in a BACT or CAM analysis included in a license issued after 1997 at all times the control device is in use.

C. Any owner or operator shall demonstrate compliance with this section through the applicable coating analysis and test methods specified in Section 4 Compliance Test Methods of this Chapter and in accordance with the capture efficiency test methods in Chapter 126.

4. Compliance Test methods.

The following test methods shall be used, except where the use of an adaptation or alternative to any of the analytical methods specified in this section shall be approved by the Department and US EPA on a case-by-case basis. The owner or operator shall submit sufficient documentation for the Department and US EPA to find that the analytical methods specified below would yield inaccurate results and that the proposed adaptation is appropriate.

A. For any heatset web offset or heatset web letterpress printing press that is subject to the requirements of Section 3B VOC Emission Control Requirements for Heatset Dryers, compliance shall be determined by performing emission tests in accordance with the following:

(1) For the purpose of demonstrating compliance with the emission control requirements in Section 3B of this Chapter, the affected source shall be run at typical operating conditions and flow rates compatible with scheduled production during any emission testing.

(2) The negative dryer pressure shall be established during the initial test using an airflow direction indicator, such as a smoke stick or aluminum ribbons, or differential pressure gauge.

(3) The following US EPA test methods (in 40 CFR Part 60, Appendix A) shall be used to demonstrate compliance with the applicable emission control requirement in Section 3B of this Chapter.

(a) US EPA Method 1 or 1A, as appropriate, shall be used to select the sampling sites.

(b) US EPA Method 2, 2A, 2C, or 2D, as appropriate, shall be used to determine the velocity and volumetric flow rate of the exhaust stream.

(c) US EPA Method 3 or 3A, as appropriate, shall be used to determine the concentration of O_2 and CO_2.

(d) US EPA Method 4 shall be used to determine moisture content.

(e) US EPA Method 18, 25, or 25A shall be used to determine the VOC concentration of the exhaust stream entering and exiting the control device, unless the alternate limit of twenty ppmv as specified in Section 3B of this Chapter is being met, in which case only the

VOC concentration of the exit exhaust shall be determined. In cases where the anticipated outlet VOC concentration of the control device is less than fifty ppmv as carbon, Method 25A shall be used.

(i) If the average concentrations in the outlet of a thermal or catalytic oxidizer measured by Method 25A are greater than fifty ppmv as carbon, Method 18 or 25 may be used to determine non-VOC components (methane and ethane) to correct the outlet VOC readings, unless the director determines that the uncorrected Method 25A results are acceptable.

(ii) A compliance test shall consist of up to three separate runs, each lasting a minimum of sixty minutes, unless the director determines that process variables dictate shorter sampling times.

(iii) US EPA Method 25 specifies a minimum probe temperature of two hundred sixty-five degrees Fahrenheit. The probe shall be heated to at least the temperature required to prevent condensation as specified in the stack test protocol required by the governing air emission license, or otherwise approved in writing by the Department and EPA.

(iv) US EPA Method 25A specifies a minimum temperature of two hundred twenty degrees Fahrenheit for the sampling components leading to the analyzer. The sampling components and flame ionization detector block shall be heated to at least the temperature required to prevent condensation as specified in the stack test protocol required by the governing air emission license, or otherwise approved in writing by the Department and EPA.

B. For any offset lithographic printing press that is subject to the requirements of Section 3A(2) Fountain Solution limits of this Chapter, compliance with the VOC content of the as-applied fountain solution shall be determined by one of the methods in paragraphs 4B(1) and (2) (below) of this Chapter except when paragraph 4B(4) is applicable:

(1) US EPA Method 24 shall be used to determine the VOC content of the as-applied fountain solution;

(2) If diluted prior to use, a calculation shall be performed for VOC content that combines US EPA Method 24 analytical data for the concentrated materials used to prepare the as-applied fountain solution and the proportions in which they are mixed to make the as-applied fountain solution. The analysis of the concentrated material(s) may be performed by the manufacturer/supplier(s) of those material(s). The analytical data may be derived from a material safety data sheet (MSDS) or equivalent information from the supplier as long as it is based on US EPA Method 24 results; or

(3) If not diluted prior to use, the owner or operator shall use formulation information provided by the supplier, such as a MSDS sheet or equivalent information from the supplier. In the event of a dispute between information provided by the supplier and data obtained by US EPA Method 24, the data obtained by US EPA Method 24 shall be employed.

(4) For any offset lithographic printing press that is subject to the Fountain Solution requirements of Sections 3A(2)(a) (ii) and (iii) of this Chapter, when adding alcohol to a fountain solution batch previously tested in accordance with one of the compliance test methods contained herein, in lieu of the methods in paragraphs 4B(1) to (3) above, the owner or operator shall determine the VOC (alcohol) content of the altered fountain solution using a hydrometer.

C. For any offset lithographic printing press that is subject to the refrigerated fountain solution temperature requirements of 3A(2)(a) (iii) and 3A(2) (b) (iii) of this Chapter, a thermometer or other temperature detection device capable of reading to 0.5 degrees Fahrenheit shall be used to ensure that any refrigerated fountain solution reservoirs are maintained at or below sixty degrees Fahrenheit at all times.

D. For any offset lithographic printing press that is complying via the Cleaning Solution requirements for VOC content of 70% by weight limits of this Chapter, the VOC content of cleaning solutions shall be determined by one of the following methods:

(1) US EPA Method 24 shall be used to determine the VOC content of the cleaning solution;

(2) If diluted prior to use, a calculation shall be performed for VOC content that combines US EPA Method 24 analytical data for the concentrated materials used to prepare the cleaning solution and the proportions in which they are mixed to make the as-applied cleaning solution. The analysis of the concentrated material(s) may be performed by the supplier(s) of those material(s). The analytical data may be derived from a material safety data sheet (MSDS) or equivalent information from the supplier as long as it is based on US EPA Method 24 results;

(3) If not diluted prior to use, the owner or operator shall use formulation information provided by the supplier, such as MSDS sheet or equivalent information from the supplier. In the event of a dispute between information provided by the supplier and data obtained by US EPA Method 24, the data obtained by US EPA Method 24 shall be employed.

E. For any offset lithographic printing press that is complying via the Cleaning Solution requirements for VOC composite vapor pressure limits of this Chapter, the VOC composite partial vapor pressure of cleaning solutions shall be determined by one of the following methods:

(1) If diluted prior to use, calculate the VOC composite vapor pressure of the as-applied solvent by using the formula for "VOC composite vapor pressure" as follows:

(a) Determine the identity and quantity of each compound in a blended organic solvent by using ASTM D2306, or by using ASTM E260 for organics and ASTM D3792 for water content, if applicable, or the manufacturer's product formulation data.

(b) Determine the vapor pressure of each pure VOC component by using ASTM D2879 or publications such as Perry's Chemical Engineer's Handbook, CRC Handbook of Chemistry and Physics, or Lange's Handbook of Chemistry.

(c) Calculate the VOC composite partial pressure of the solvent by using the formula for "VOC composite partial pressure" in Section 2V. For the purpose of this calculation, the blended solvent shall be assumed to be an ideal solution where Raoult's Law applies. The

partial vapor pressures of each compound at twenty degrees Celsius (sixty-eight degrees Fahrenheit) shall be used in the formula. ~~The VOC composite partial pressure shall be calculated as follows:~~

(2) If not diluted prior to use, the owner or operator shall use formulation information provided by the supplier, such as a material safety data sheet (MSDS) or equivalent information from the supplier as long as it is based on results determined in accordance with the procedure specified above in Section 4E(1) of this Chapter.

5. Monitoring and Recordkeeping Requirements

A. Recordkeeping and reporting. The records required in this section shall be available for inspection during normal business hours and copies shall be provided to the Department or US EPA upon request. All records must be maintained on site for a period of 6 years. The periods of retention are extended automatically during the course of any unresolved enforcement action regarding regulated activity or as requested by the Department or by an Administrator of the USEPA.

(1) The owner or operator of any heatset offset lithographic or letterpress printing press that is subject to the control system requirements specified in Section 3B of this Chapter, shall install and operate continuous temperature monitoring and recording equipment that measures and records temperature data at least once every fifteen minutes or as otherwise approved in writing by the Department and EPA, and shall collect and record the following information and maintain the information at the facility for a period of 6 years:

(a) For each day of operation of the press, a log or record of the operating time for the control device, monitoring equipment, and the associated press.

(b) For thermal oxidizers, for each day of operation of the press;

(i) A log or record showing all three-hour averaged periods of operation during which the average thermal oxidizer chamber temperature was more than fifty degrees Fahrenheit below the average temperature of the thermal oxidizer chamber temperature during the most recent emission test that demonstrated that the press was in compliance, or

(ii) A log or record using a shorter averaging period approved in writing by the Commissioner and EPA, and as applicable, documenting any shutdowns triggered by an oxidizer shutdown threshold temperature as otherwise specified in a BACT analysis or CAM requirement included in an air emissions license after 1997; and

(iii) A log or record showing all events when the unit shuts down due to malfunction, including an automatic shutdown or any events when alarms are activated shall be recorded, and any time that the unit is not operating.

(c) For catalytic oxidizers, for each day of operation of the press:

(i) A log or record showing all three-hour averaged periods of operation during which the average catalytic oxidizer chamber temperature was more than fifty degrees Fahrenheit below the average temperature of the catalytic oxidizer chamber during the most recent emission test that demonstrated that the press was in compliance, or

(ii) A log or record using a shorter averaging period approved in writing by the Commissioner and EPA, and as applicable, documenting any shutdowns triggered by an oxidizer shutdown threshold temperature as otherwise specified in a BACT Analysis or CAM requirement included in an air emissions license after 1997; and

(iii) A log or record showing all events when the unit shuts down due to malfunction, including an automatic shutdown or any events when alarms are activated shall be recorded, and any time that the unit is not operating.

Note: For thermal oxidizers, an owner or operator must comply with either 5A subsection (1)(b)(i) or (1)(b)(ii), but must also comply with subsection (1)(b)(iii).

For catalytic oxidizers, an owner or operator must comply with either 5A subsection (1)(c)(i) or (1)(c)(ii), but must also comply with subsection (1)(c)(iii).

(d) For catalytic oxidizers, the catalyst bed material shall be inspected annually, for years in which the unit is operated for at least 1000 hours, for general catalyst condition and any signs of potential catalyst depletion. The owner or operator shall also collect a representative sample of the catalyst from the oxidizer, per manufacturer's recommendations, and have it tested to evaluate the catalyst's capability to continue to function at or above the required control efficiency. An evaluation of the catalyst bed material shall be conducted whenever the results of the inspection indicate signs of potential catalyst depletion or poor catalyst condition based on manufacturer's recommendations, but not less than once per year, but not less than once every five years, regardless of usage.

(2) The owner or operator of a heatset web or sheet-fed offset lithographic printing press subject to the requirements for Fountain Solution containing alcohol limits pursuant to this Chapter shall measure:

(a) The VOC (alcohol) content, in accordance with Section ~~3~~ 4B(4)of this Chapter, of any altered fountain solution, at the time of alteration, in percent by weight, of the fountain solution employed in the press and shall maintain records of the results of the measurements at the facility for a period of six years.

(b) On a daily basis, the temperature, in degrees Fahrenheit, of the fountain solution, if the owner or operator refrigerates the fountain solution containing alcohol in accordance with paragraph 3A(2)(a)(iii) and 3A(b)(iii) of this Chapter, and shall maintain records of the results of the measurements at the facility for a period of six years.

(3) The owner or operator of a subject lithographic printing press shall maintain records of all recipes used to prepare the as-applied fountain solution to meet the limits specified in Section 3~~Section~~ A(2) Fountain Solution VOC requirements. A fountain solution that is continuously blended with an automatic mixing unit is considered to be the same batch until such time that the recipe or mix ratios change. Each recipe shall be maintained in the recipe log for a period of six years from the date the recipe was last prepared for a press. Each recipe shall clearly identify the following:

(a) The volume and VOC content of each concentrated alcohol substitute, added to make a batch of fountain solution, based upon the manufacturer's laboratory analysis using US EPA Method 24.

(b) The proportions in which the fountain solution is mixed, including the addition of alcohol and/or water. The proportion may be identified as a volume when preparing a discrete batch or may be identified as the settings when an automatic mixing unit is employed.

(c) The calculated VOC content of a final, mixed batch recipe.

(d) The date, time and any recipe changes or deviations of fountain solution batches that are used on a press.

(4) The owner or operator of a subject ~~non-heatset web offset~~ lithographic printing press not maintaining a recipe log in accordance with Section 5A(3) above, shall maintain records for each batch of fountain solution prepared for use in the press, including:

(a) The volume and VOC content of any concentrated alcohol substitute, added to make a batch of fountain solution, based upon the manufacturer's laboratory analysis using US EPA Method 24.

(b) The volume of any alcohol added to make each batch of fountain solution.

(c) The volume of water added to make the batch of fountain solution.

(d) The calculated VOC content of the final, mixed batch.

(e) The date and time the batch was prepared.

(5) The owner or operator shall maintain records of the VOC content or VOC composite partial vapor pressure of all cleaning materials employed in all the lithographic and letterpress printing operations.

(6) The owner or operator of a subject lithographic printing press or letterpress printing press shall maintain records of the following information:

(a) The total amount, in gallons, of all the cleanup materials used; and

(b) The total amount, in gallons, of the entire cleanup materials used that exceeds the allowable VOC content or VOC composite vapor pressure.

(7) Exempted printing operations shall maintain monthly purchase records and Material Safety Data Sheets (MSDS) for each process chemical, as used to comply with the Occupational Safety and Health Administration's Hazard Communication Standard, 29 CFR 1910.1200. The records shall document the quantities and VOC content of cleaning solution, fountain solution alcohol, fountain solution alcohol substitutes, coatings, and ink used, to demonstrate that the printing operation falls below the applicability thresholds in Section 1B, or as specified in a BACT analysis included in an air emission license. The records shall be maintained onsite for six years.

B. Reporting Requirements for Monitoring and Record Keeping

The owner or operator of a lithographic or letterpress printing facility that is subject to this Chapter shall notify the Department of exceedances within forty-five days after the instance occurs, and it shall include a copy of the record showing the instance(s):

(1) Each hydrometer measurement that shows an exceedance of the applicable alcohol content limits specified in this Chapter.

(2) Each temperature reading that shows an exceedance of the temperature limits specified in this Chapter.

(3) Each calculated VOC content that exceeds the VOC content limits specified in this Chapter.

(4) Each instance when an exceedance of the alcohol usage restriction as specified for fountain solutions in this Chapter occurs.

(5) Each instance when alcohol is used in the fountain solution for a non-heatset web offset lithographic printing press.

(6) Each instance when an exceedance of the VOC content or VOC composite partial vapor pressure specified in this Chapter for cleanup materials occurs.

(7) All ~~three-hour blocks of time~~ periods of operation during which the average combustion temperature within the thermal oxidizer was below the temperature limits specified in Section 5A(1)(b) of this Chapter.

(8) All ~~three-hour blocks of time~~ periods of operation ~~when the emissions unit was in operation during~~ during which the average temperature ~~of the exhaust gases immediately before~~ of the catalyst bed was below the temperature limits specified Section 5A(1)(c) of this Chapter.

6. Retention Factors and Capture Efficiencies

A. For purposes of determining VOC emissions from offset lithographic printing operations, the following retention factors and capture efficiencies shall be used:

(1) A portion of the VOCs contained in inks and cleaning solution is retained in the printed web or in the shop towels used for cleaning. The following retention factors shall be used:

(a) A one-hundred percent VOC retention factor for all vegetable ink oils and a twenty percent VOC retention factor shall be used for all other heatset inks printed on absorptive substrates, meaning eighty percent of the VOCs in the ink is emitted during the printing process and is available for capture and control by an add-on pollution control device.

(b) A one-hundred percent VOC retention factor for all vegetable ink oils and a ninety-five percent VOC retention factor shall be used for all other sheet-fed and non-heatset web inks printed on absorptive substrates, meaning five percent of the VOCs in the ink are emitted during the printing process.

(c) A fifty percent VOC retention factor shall be used for cleaning solution VOCs in shop towels for cleaning solutions with a VOC composite vapor pressure of no more than ten mm Hg at twenty degrees Celsius (sixty-eight degrees Fahrenheit) if the contaminated shop towels are kept in closed containers, meaning fifty percent of the VOCs used on the shop towels is emitted during the cleaning process.

(2) A portion of the VOCs contained in inks, fountain solutions, and automatic blanket washes on heatset presses is captured in the press dryer for control by add-on pollution control devices. The following capture efficiencies are to be used:

(a) A one hundred percent VOC carry over efficiency shall be used for inks. All the VOCs in the ink that are not retained are assumed to be volatilized in the press dryer. Capture efficiency testing for heatset dryers is not required if it is demonstrated that pressure in the dryer is negative relative to the surrounding press room and the airflow is into the dryer.

(b) A seventy percent VOC carry over efficiency shall be used for fountain solutions containing alcohol substitutes.

(c) A forty percent VOC carry over efficiency shall to be used for automatic blanket wash solutions with a VOC composite vapor pressure of no more than ten mm Hg at twenty degrees Celsius (sixty-eight degrees Fahrenheit).

7. Emission limitations from the handling, storage, and disposal of materials containing VOCs

A. Vapor-tight containers shall be used for the storage of spent or fresh and for the storage or disposal of cloth or paper impregnated with VOCs that are used for surface preparation, clean up or coating removal.

B. The use of VOCs is prohibited for the cleanup of spray equipment unless equipment is used to collect the cleaning compounds and to minimize their evaporation to the atmosphere.

C. Some VOCs may also be designated as hazardous wastes. The handling, storage and disposal of hazardous wastes including such waste VOCs and cloth or paper impregnated with such waste VOCs are also subject to hazardous waste management standards as stipulated in Maine's Hazardous Waste Management Rules, 06-096 CMR Chapters 850-857.

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

EFFECTIVE DATE:

BASIS STATEMENT

Many inks, fountain and cleaning solutions used in graphic arts contain volatile organic compounds (VOCs), which are precursors to ground-level ozone formation. This regulation restricts the VOC emissions from offset lithography and letterpress printing operations. Under Section 184 of the Clean Air Act Amendments of 1990, 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. The State must submit plans to control VOC emissions from all sources covered by a Control Technique Guideline (CTG) issued by US EPA.

This regulation is based on a CTG issued by US EPA on September, 2006 (published on October 5, 2006, 71 FR 58745) and provides emission control standards for reducing VOC emissions stemming from the use of fountain solutions, cleaning materials and inks. It requires all sources within this category to determine their emission levels and implement reasonable options for keeping such emissions at a minimum, in a cost effective way that includes: control technology approaches, VOC composite vapor pressure limits and standards for work practices. The rule provides a variety of approaches for managing VOC emissions and complying with the limits stipulated in the Chapter with flexibility for sources to implement the limits in the manner that is most suitable for their facility.