

§ 129.67. Graphic arts systems.

(a) This section applies as follows:

(1) This section applies to the owner and operator of a facility whose rotogravure and flexographic printing presses by themselves or in combination with a surface coating operation subject to § 129.52, § 129.52a, § 129.52b or § 129.52c or in combination with a flexible packaging printing press subject to § 129.67a (relating to control of VOC emissions from flexible packaging printing presses) have the potential to emit or have emitted VOCs into the outdoor atmosphere in quantities greater than 1,000 pounds (460 kilograms) per day or 100 tons (90,900 kilograms) per year during any calendar year since January 1, 1987.

(2) This section applies to the owner and operator of a flexographic or rotogravure printing press that prints flexible packaging materials subject to § 129.67a(a)(1)(ii) if the owner or operator was required to install a control device under this section prior to June 28, 2014.

(3) This section does not apply to the owner or operator of a flexible packaging printing press subject to § 129.67a(a)(1)(i).

(b) A person may not permit the emission into the outdoor atmosphere of VOCs from a rotogravure or flexographic printing press subject to this section unless one of the following limitations is met:

(1) The volatile fraction of the ink, as applied to the substrate, contains 25% or less by volume of VOC and 75% or more by volume of water.

(2) The ink, as applied to the substrate, less water, contains 60% by volume or more of solid material.

(3) The owner or operator installs and operates a carbon adsorption system, an incineration system or an alternative VOC emission reduction system which recovers or destroys at least 90% of the VOCs entering the system. The overall level of emission recovery or destruction may not be less than that necessary to comply with subsection (c).

(c) A capture system shall be used in conjunction with the emission control systems in subsection (b)(3). The design and operation of the capture and control system shall be consistent with good engineering practice and shall be designed to provide for a contemporaneous, overall reduction in VOC emission from each ink/press of at least the following:

(1) Seventy-five percent where a publication rotogravure process is employed.

(2) Sixty-five percent where another rotogravure process is employed.

(3) Sixty percent where a flexographic printing process is employed.

(d) Presses used only to check the quality of the image formation of newly etched or engraved printing cylinders are exempted from this section if the aggregate emissions from the presses do not exceed 400 pounds in a 30-day running period.

(e) To determine applicability under this section, emissions of VOCs used in clean-up operations shall be summed with emissions from surface coating and printing.

Authority

The provisions of this § 129.67 issued under the Air Pollution Control Act (35 P.S. § § 4001—4015); amended under section 5(a)(1) and (8) of the Air Pollution Control Act (35 P.S. § 4005(a)(1) and (8)).

Source

The provisions of this § 129.67 adopted June 19, 1981, effective June 20, 1981, 11 Pa.B. 2118; amended August 2, 1991, effective August 3, 1991, 21 Pa.B. 3406; amended May 22, 1992, effective May 23, 1992, 22 Pa. B. 2720; amended September 4, 1998, effective September 5, 1998, 28 Pa.B. 4525; amended June 27, 2014, effective June 28, 2014, 44 Pa.B. 3929. Immediately preceding text appears at serial pages (355196) and (248203).

Cross References

This section cited in 25 Pa. Code § 129.51 (relating to general); 25 Pa. Code § 129.52 (relating to surface coating processes); 25 Pa. Code § 129.54 (relating to seasonal operation of auxiliary incineration equipment); 25 Pa. Code § 129.66 (relating to compliance schedules and final compliance dates); 25 Pa. Code § 129.67a (relating to control of VOC emissions from flexible packaging printing presses); 25 Pa. Code § 129.91 (relating to control of major sources of NO_x and VOCs); and 25 Pa. Code § 129.96 (relating to applicability).

§ 129.67a. Control of VOC emissions from flexible packaging printing presses.

(a) *Applicability.*

(1) Except as specified in paragraph (3) or (4), this section applies to the owner and operator of a flexible packaging printing press if one or more of the following apply:

(i) *Potential VOC emissions.* An individual flexible packaging printing press has potential emissions from the dryer, before consideration of add-on controls, of at least 25 tpy of VOCs from inks, coatings and adhesives combined. This section supersedes § 129.67 (relating to graphic arts systems).

(ii) *Actual VOC emissions at or above threshold.* The total actual VOC emissions from all inks, coatings and adhesives combined from all flexible packaging printing presses and all VOC emissions from related cleaning activities at the facility are equal to or greater than 450 pounds

(204.1 kilograms) per month or 2.7 tons (2,455 kilograms) per 12-month rolling period, before consideration of add-on controls.

(iii) *Actual VOC emissions below threshold.* The total actual VOC emissions from all inks, coatings and adhesives combined from all flexible packaging printing presses and all VOC emissions from related cleaning activities at the facility are less than 450 pounds (204.1 kilograms) per month or 2.7 tons (2,455 kilograms) per 12-month rolling period, before consideration of add-on controls.

(2) The owner or operator of a flexographic or rotogravure printing press subject to paragraph (1)(ii) and § 129.67, who was required to install a control device under § 129.67 prior to June 28, 2014, shall continue the operation of that control device and also meet the requirements of this section.

(3) VOCs from adhesives used at a facility that are not used or applied on or with a flexible packaging printing press are not subject to this section and may be regulated under § 129.52b, § 129.77 or Chapter 130, Subchapter D (relating to control of VOC emissions from paper, film and foil surface coating processes; control of emissions from the use or application of adhesives, sealants, primers and solvents; and adhesives, sealants, primers and solvents).

(4) Surface coating of flexible packaging substrates that is not done with a flexible packaging printing press is regulated under § 129.52b.

(b) *Existing RACT permit.* This section supersedes the requirements of a RACT permit issued to the owner or operator of a source subject to this section prior to January 1, 2015, under § § 129.91—129.95 (relating to stationary sources of NO_x and VOCs) to control, reduce or minimize VOCs from a flexible packaging printing press, except to the extent the RACT permit contains more stringent requirements.

(c) *Emission limits.* Beginning January 1, 2015, a person subject to subsection (a)(1)(i) may not cause or permit the emission into the outdoor atmosphere of VOCs from a flexible packaging printing press unless one or more of the following limitations is met:

(1) *Individual ink, coating or adhesive.* The VOC content of each as applied ink, coating or adhesive used on a single flexible packaging printing press meets the following requirements:

(i) The VOC content is equal to or less than one or both of the following limits:

(A) 0.16 lb VOC per lb material as applied.

(B) 0.8 lb VOC per lb material solids as applied.

(ii) The VOC content is calculated as follows for VOC content expressed in units of weight of VOC per weight of material solids:

$$\text{VOC}_B = (W_o)/(W_n)$$

Where:

VOC_B = VOC content in lb VOC/lb of solids as applied or kg VOC/kg of solids as applied

W_o = Weight percent of VOC ($W_v - W_w - W_{ex}$)

W_v = Weight percent of total volatiles (100%-weight percent solids)

W_w = Weight percent of water

W_{ex} = Weight percent of exempt solvents

W_n = Weight percent of solids of the as applied ink, coating or adhesive

(iii) Sampling of the ink, coating or adhesive and testing for the VOC content of the ink, coating or adhesive is performed in accordance with subsection (f).

(2) *Weighted average.* The daily weighted-average VOC content of all inks, coatings and adhesives combined used on a single flexible packaging printing press meets one or both of the VOC content limits in paragraph (1)(i). The use of averaging to meet the VOC content limits may not be used across multiple printing presses. Averaging is available on a single flexible packaging printing press if the following requirements are met:

(i) The daily weighted average is calculated using the following equation:

Where:

VOC_w = The daily weighted average VOC content, as applied, of all inks, coatings and adhesives combined used on a single flexible packaging printing press, in lb VOC/gal of coating solids

n = The number of different inks, coatings and adhesives used each day on the single flexible packaging printing press

V_i = The volume of solids for each ink, coating and adhesive, as applied, used each day on the single flexible packaging printing press, in gallons

C_i = The VOC content of each ink, coating and adhesive, as applied, used each day on the single flexible packaging printing press, in lb VOC/gal coating solids

V_t = The total volume of solids for all inks, coatings and adhesives combined, as applied, used each day on the single flexible packaging printing press, in gallons

(ii) Sampling of the inks, coatings and adhesives and testing for the VOC content of the inks, coatings and adhesives is performed in accordance with subsection (f).

(3) *Add-on air pollution control device.* The overall weight of VOCs emitted to the atmosphere from all inks, coatings and adhesives combined used on a single flexible packaging printing press is reduced through the use of vapor recovery or oxidation or another method that is acceptable under § 129.51(a) (relating to general). The overall control efficiency of a control system, as determined by the test methods and procedures specified in subsection (f), may not be less than that listed in Table 1.

Table 1

Overall Control Efficiency Requirement of a Control System on a Single Flexible Packaging Printing Press with Potential Emissions $\geq$ 25 tpy of VOC Before Control

Control System Overall Control Efficiency Requirement	Printing Press First Installation Date¹		Air Pollution Control Device First Installation Date¹	
	Prior to March 14, 1995*	On or after March 14, 1995*	Prior to January 1, 2015**	On or after January 1, 2015**
$\geq$ 65%	X		X	
$\geq$ 70%	X			X
$\geq$ 75%		X	X	
$\geq$ 80%		X		X

¹ First installation date is the first date of operation for a source or a control device. This date does not change if the source or control device is moved to a new location or if the control device is later used to control a new source.

* March 14, 1995, is the date of the proposed 1996 NESHAP for the printing and publishing industry.

** January 1, 2015, is the compliance date of the flexible packaging printing press regulation.

(4) *Restriction on potential VOC emissions.* The Department has issued a plan approval, operating permit or Title V permit to the owner or operator prior to January 1, 2015, establishing a Federally-enforceable limitation to limit the potential emissions of VOC from the flexible packaging printing press below 25 tpy before consideration of add-on controls.

(d) *Compliance and monitoring requirements for an add-on air pollution control device.* The owner or operator of a flexible packaging printing press subject to subsection (a)(1)(i) using an add-on air pollution control device in accordance with subsection (c)(3) shall comply with the following requirements:

(1) The add-on air pollution control device shall be equipped with the applicable monitoring equipment and the monitoring equipment shall be installed, calibrated, operated and maintained according to manufacturer's specifications at all times the add-on air pollution control device is in use. If the add-on air pollution control device is a:

(i) Noncatalytic thermal oxidizer, the minimum combustion or operating temperature must be continuously monitored. The temperature reading shall be recorded in accordance with subsection (e)(1) at least once every 15 minutes while the noncatalytic thermal oxidizer is operating.

(ii) Catalytic thermal oxidizer:

(A) The inlet gas temperature must be continuously monitored. The temperature reading shall be recorded in accordance with subsection (e)(1) at least once every 15 minutes while the catalytic thermal oxidizer is operating.

(B) A catalyst activity test shall be performed a minimum of one time per rolling 2-year period.

(iii) Control device other than that specified in subparagraph (i) or (ii), parameters specific to the control device must be continuously monitored. The parameters shall be recorded in accordance with subsection (e)(1) at least once every 15 minutes while the control device is operating.

(2) The add-on air pollution control device specified in paragraph (1) shall be operated at a 3-hour average temperature not lower than 50°F below the average temperature demonstrated during the most recent compliant source test approved by the Department.

(3) The add-on air pollution control device specified in paragraph (1) shall be in operation at all times that the source is operating.

(4) The add-on air pollution control device shall be approved, in writing, by the Department in a plan approval, operating permit or Title V permit prior to use.

(e) *Recordkeeping and reporting requirements.* Beginning January 1, 2015, the owner or operator of a flexible packaging printing press subject to this section shall maintain records sufficient to demonstrate compliance with the requirements of this section. Records maintained for compliance demonstrations may include purchase, use, production and other records.

(1) An owner or operator subject to subsection (a)(1)(i) using an add-on air pollution control device shall maintain records sufficient to demonstrate compliance with subsection (d), including records of the following information:

(i) Temperature reading of the add-on air pollution control device.

(ii) Maintenance performed on the add-on air pollution control device and monitoring equipment, including the date and type of maintenance.

(iii) Catalyst activity test performed, if applicable.

(2) An owner or operator subject to subsection (a)(1)(i) not using an add-on air pollution control device shall maintain records of the as applied VOC content of inks, coatings and adhesives sufficient to demonstrate compliance with the limitations under subsection (c)(1) or (2).

(3) An owner or operator claiming exemption from a VOC control provision of this section based on potential or actual VOC emissions, as applicable, shall maintain records that demonstrate to the Department that the press or facility is exempt.

(4) The owner or operator may group materials into classes using the highest VOC content in any material in a class to represent that class of material.

(5) The records required under paragraphs (1)—(4) shall be maintained for 2 years, unless a longer period is required by a plan approval or operating permit issued under Chapter 127 (relating to construction, modification, reactivation and operation of sources). The records shall be submitted to the Department in an acceptable format upon receipt of a written request.

(6) The owner or operator of a flexible packaging printing press subject to subsection (a)(1)(i) that is required to demonstrate overall control efficiency in accordance with subsections (c)(3) and (d) shall submit reports to the Department in accordance with Chapter 139 (relating to sampling and testing).

(f) *Sampling and testing.*

(1) Sampling and testing shall be performed as follows:

(i) Sampling of an ink or coating and testing for the VOC content of the ink or coating shall be performed in accordance with the procedures and test methods specified in Chapter 139.

(ii) Sampling and testing of an add-on air pollution control device shall be performed in accordance with the procedures and test methods specified in Chapter 139 and meet one of the following:

(A) Sampling and testing shall be performed no later than 180 days after the compliance date of the press.

(B) Sampling and testing shall have been performed within 5 years prior to January 1, 2015, and previously approved by the Department. Capture efficiency retesting may be waived for capture systems that are not permanent total enclosures if the operating parameters indicate that a fundamental change has not taken place in the operation or design of the equipment, unless retesting is required under Subpart C, Article III (relating to air resources) or a plan approval, operating permit or an order issued by the Department. For purposes of this clause, fundamental changes include adding printing stations to a press, increasing or decreasing the volumetric flow rate from the dryer or changing the static duct pressure.

(2) The overall control efficiency of the add-on air pollution control device shall be determined by the following test methods and procedures subject to prior written approval by the Department.

(i) The capture efficiency shall be determined in accordance with either of the following methods:

(A) 40 CFR Part 51, Appendix M, Methods 204—204F, including updates and revisions.

(B) 40 CFR Part 63, Subpart KK, Appendix A (relating to data quality objective and lower confidence limit approaches for alternative capture efficiency protocols and test methods).

(ii) The control efficiency shall be determined using one or more of the following methods, as applicable. The method used to measure the inlet concentration of VOC may be the same method used to determine the outlet concentration of VOC unless use of the same method is determined to be technically infeasible.

(A) EPA Reference Method 25, *Determination of Total Gaseous Nonmethane Organic Emissions as Carbon*, codified in 40 CFR Part 60, Appendix A, including updates and revisions. EPA Reference Method 25 may be used if the total gaseous nonmethane organic compound concentration is equal to or greater than 50 parts per million by volume, measured as carbon.

(B) EPA Reference Method 25A, *Determination of Total Gaseous Organic Concentration Using a Flame Ionization Analyzer*, codified in 40 CFR Part 60, Appendix A, including updates and revisions. EPA Reference Method 25A may not be used if the total gaseous nonmethane organic compound concentration at the outlet of the add-on air pollution control device is equal to or greater than 50 parts per million by volume, measured as carbon.

(C) EPA Reference Method 18, *Measurement of Gaseous Organic Compound Emissions by Gas Chromatography*, codified in 40 CFR Part 60, Appendix A, including updates and revisions. EPA Reference Method 18 may be used if the total gaseous nonmethane organic compound concentration is equal to or greater than 50 parts per million by volume, measured as carbon. EPA Reference Method 18 may be used in conjunction with EPA Reference Method 25A to subtract emissions of exempt VOCs.

(3) Other test methods demonstrated to provide results that are acceptable for purposes of determining compliance with this section may be used if prior approval is obtained in writing from the Department and the EPA.

(g) *Work practice requirements for cleaning activities.*

(1) Except as specified in paragraph (3), beginning January 1, 2015, the owner or operator of a flexible packaging printing press subject to subsection (a)(1)(i), (1)(ii) or (2) shall comply with the following work practices for cleaning activities at the facility:

(i) Store all VOC-containing cleaning solutions, waste cleaning solutions and used shop towels in closed containers.

(ii) Ensure that mixing vessels and storage containers used for VOC-containing cleaning solutions, waste cleaning solutions and used shop towels are kept closed at all times, except when depositing or removing these solutions or shop towels.

(iii) Minimize spills of VOC-containing cleaning solutions and waste cleaning solutions and clean up spills immediately.

(iv) Convey VOC-containing cleaning solutions, waste cleaning solutions and used shop towels from one location to another in closed containers or pipes.

(2) The requirements in paragraph (1) apply to the following activities:

(i) Cleaning of ink, coating or adhesive from a press.

(ii) Cleaning of ink, coating or adhesive from press parts, including press parts that have been removed from the press for cleaning.

(iii) Cleaning of ink, coating or adhesive from areas around a press.

(3) The requirements in paragraph (1) do not apply to the following activities:

(i) Cleaning electronic components of a press.

(ii) Cleaning in pre-press (for example, platemaking) operations.

(iii) Cleaning in post-press (for example, binding) operations.

(iv) Using janitorial supplies (for example, detergents or floor cleaners) for general cleaning around a press.

(v) The use of parts washers or cold cleaners at a flexible packaging printing facility. The use of parts washers and cold cleaners is regulated under § 129.63 (relating to degreasing operations).

Authority

The provisions of this § 129.67a issued under section 5(a)(1) and (8) of the Air Pollution Control Act (35 P.S. § 4005(a)(1) and (8)).

Source

The provisions of this § 129.67a adopted June 27, 2014, effective June 28, 2014, 44 Pa.B. 3929.

Cross References

This section cited in 25 Pa. Code § 121.1 (relating to definitions); 25 Pa. Code § 129.51 (relating to general); 25 Pa. Code § 129.67 (relating to graphic arts systems); and 25 Pa. Code § 129.96 (relating to applicability).

§ 129.67b. Control of VOC emissions from offset lithographic printing presses and letterpress printing presses.

(a) *Applicability.*

(1) Except as specified in paragraph (3), this section applies to the owner and operator of an offset lithographic printing press or a letterpress printing press, or both, if the press meets one or a combination of the following:

(i) *Add-on air pollution control device.* A single heatset web offset lithographic printing press or heatset web letterpress printing press that has potential emissions from the dryer, before consideration of add-on controls, of at least 25 tpy of VOCs from all heatset inks (including varnishes), coatings and adhesives combined.

(ii) *Letterpress printing.* One or more letterpress printing presses if the total actual VOC emissions from all inks (including varnishes), coatings and adhesives combined from all

letterpress printing presses and all VOC emissions from related cleaning activities at the facility are equal to or greater than 450 pounds (204.1 kilograms) per month or 2.7 tons (2,455 kilograms) per 12-month rolling period, before consideration of add-on controls.

(iii) *Offset lithographic printing.* One or more offset lithographic printing presses if the total actual VOC emissions from all inks (including varnishes), coatings, adhesives and fountain solutions combined from all offset lithographic printing presses and all VOC emissions from related cleaning activities at the facility are equal to or greater than 450 pounds (204.1 kilograms) per month or 2.7 tons (2,455 kilograms) per 12-month rolling period, before consideration of add-on controls.

(iv) *Offset lithographic printing and letterpress printing.* One or more offset lithographic printing presses and one or more letterpress printing presses if the total actual VOC emissions from all inks (including varnishes), coatings, adhesives and fountain solutions combined and all VOC emissions from related cleaning activities at the facility are equal to or greater than 450 pounds (204.1 kilograms) per month or 2.7 tons (2,455 kilograms) per 12-month rolling period, before consideration of add-on controls.

(v) *Emissions below 450 pounds per month and 2.7 tons per 12-month rolling period.* The total actual VOC emissions from all inks (including varnishes), coatings, adhesives and fountain solutions combined from all offset lithographic printing presses, all letterpress printing presses and all VOC emissions from related cleaning activities at the facility are less than 450 pounds (204.1 kilograms) per month and 2.7 tons (2,455 kilograms) per 12-month rolling period, before consideration of add-on controls.

(2) The owner or operator of an offset lithographic printing press subject to paragraph (1) may use the VOC emission retention factors and capture efficiency factors specified in subsection (l) to determine the amount of potential or actual VOC emissions that is available for capture and control from the inks (including varnishes), fountain solutions and cleaning solutions used on the offset lithographic printing press.

(3) VOCs from adhesives used at a facility that are not used or applied on or with an offset lithographic printing press or a letterpress printing press are not subject to this section and may be regulated under § 129.77 or Chapter 130, Subchapter D (relating to control of emissions from the use or application of adhesives, sealants, primers and solvents; and adhesives, sealants, primers and solvents).

(b) *Existing RACT permit.* This section supersedes the requirements of a RACT permit issued to the owner or operator of a source subject to subsection (a) prior to January 1, 2015, under § § 129.91—129.95 (relating to stationary sources of NO_x and VOCs) to control, reduce or minimize VOCs from an offset lithographic printing press or a letterpress printing press, or both, except to the extent the RACT permit contains more stringent requirements.

(c) *Emission limits for cleaning solutions and fountain solutions used in or on printing presses subject to this section.*

(1) *Cleaning solutions.* Beginning January 1, 2015, a person subject to subsection (a)(1)(i), (ii), (iii) or (iv) may not cause or permit the emission into the outdoor atmosphere of VOCs from cleaning solutions used in or on an offset lithographic printing press or a letterpress printing press unless the following conditions are met:

(i) The cleaning solutions used must meet one or both of the following VOC limits:

(A) A VOC composite partial vapor pressure less than 10 millimeters of mercury at 68°F (20°C).

(B) A VOC content less than 70% by weight.

(ii) The use of one or more cleaning solutions with a higher VOC composite partial vapor pressure or higher VOC content, or both, than is listed in subparagraph (i) is limited to 110 gallons per year, combined, of all cleaning solutions that exceed the limits in subparagraph (i).

(2) *Fountain solutions.* Except as specified in paragraph (3), beginning January 1, 2015, a person subject to subsection (a)(1)(i), (iii) or (iv) may not cause or permit the emission into the outdoor atmosphere of VOCs from a fountain solution used in an offset lithographic printing press unless the fountain solution meets one or more of the following VOC limits.

(i) For each heatset web offset lithographic printing press, the press-ready (as applied) fountain solution must meet one of the following limits:

(A) A VOC content of 1.6% or less by weight.

(B) A VOC content of 3% or less by weight if the fountain solution is refrigerated below 60°F (15.5°C).

(C) A VOC content of 5% or less by weight and no alcohol in the fountain solution.

(D) Another method that achieves a level of control of VOC emissions from the press-ready (as applied) fountain solution equal to or better than the methods listed in clauses (A)—(C).

(ii) For each sheet-fed offset lithographic printing press, the press-ready (as applied) fountain solution must meet one of the following limits:

(A) A VOC content of 5% or less by weight.

(B) A VOC content of 8.5% or less by weight if the fountain solution is refrigerated below 60°F (15.5°C).

(C) A VOC content of 5% or less by weight and no alcohol in the fountain solution.

(D) Another method that achieves a level of control of VOC emissions from the press-ready (as applied) fountain solution equal to or better than the methods listed in clauses (A)—(C).

(iii) For each non-heatset web offset lithographic printing press, the press-ready (as applied) fountain solution shall contain a VOC content of 5% or less by weight and no alcohol in the fountain solution.

(3) *Fountain solution exceptions.* The control requirements under paragraph (2) for a fountain solution do not apply to the owner or operator of either of the following:

(i) A sheet-fed offset lithographic printing press with maximum sheet size 11 x 17 inches or smaller.

(ii) An offset lithographic printing press with total fountain solution reservoir of less than 1 gallon.

(d) *Emission limits for heatset web offset lithographic printing presses and heatset web letterpress printing presses.*

(1) Except as specified in paragraph (2) or (3), beginning January 1, 2015, a person subject to subsection (a)(1)(i) may not cause or permit the emission into the outdoor atmosphere of VOCs from a heatset web offset lithographic printing press or a heatset web letterpress printing press, or both, unless the overall weight of VOCs emitted to the atmosphere from the heatset dryer is reduced through the use of vapor recovery or oxidation or another method that is authorized under § 129.51(a) (relating to general). The heatset dryer pressure must be maintained lower than the press room area pressure so that air flows into the heatset dryer at all times when the press is operating.

(i) The VOC control efficiency of an add-on air pollution control device for a heatset dryer, determined in accordance with subsection (h), must meet either of the following:

(A) At least 90% for an add-on air pollution control device whose first installation date was prior to January 1, 2015.

(B) At least 95% for an add-on air pollution control device whose first installation date is on or after January 1, 2015.

(ii) The first installation date is the first date of operation for a source or a control device. This date will not change if the source or control device is moved to a new location or if the control device is later used to control a new source.

(iii) The owner or operator of the printing press may request the Department's approval for an alternative limitation if the following requirements are met:

(A) The request is submitted to the Department in writing.

(B) The request demonstrates one of the following:

(I) The inlet VOC concentration to the control device is so low that compliance with the 90% or 95% overall efficiency in subparagraph (i) is not achievable.

(II) The press is using a combination dryer and oxidizer or other control equipment configuration that does not have an inlet that meets the requirement for testing specified in subsection (h).

(C) The request demonstrates the minimum outlet VOC concentration that the unit can achieve, not to exceed 20 ppm as hexane (40 ppm as propane) on a dry basis.

(iv) The alternative limitation requested under subparagraph (iii) must be approved by the Department in a plan approval, operating permit or Title V permit.

(2) This subsection does not apply for one or a combination of the following circumstances:

(i) The press is used for book printing.

(ii) The press has a maximum web width of 22 inches or less.

(iii) The press is operated with one or a combination of the following inks, coatings or varnishes:

(A) Waterborne coatings.

(B) Ultra-violet light or electron beam radiation cured materials.

(C) Sheet-fed or non-heatset web inks.

(D) Sheet-fed or non-heatset web varnishes.

(3) This subsection does not apply to the owner or operator of the press if the Department has issued a plan approval, operating permit or Title V permit to the owner or operator prior to January 1, 2015, establishing a Federally-enforceable limitation to limit the potential emissions of VOC from the offset lithographic printing press or the letterpress printing press below 25 tpy, before consideration of add-on controls.

(e) *Compliance and monitoring requirements.*

(1) *Add-on air pollution control device.* The owner or operator of a heatset web offset lithographic printing press or heatset web letterpress printing press subject to this section using an add-on air pollution control device in accordance with subsection (d) shall comply with the following requirements:

(i) The add-on air pollution control device shall be equipped with the applicable monitoring equipment and the monitoring equipment shall be installed, calibrated, operated and maintained according to manufacturer's specifications at all times the add-on air pollution control device is in use. If the add-on air pollution control device is a:

(A) Noncatalytic thermal oxidizer, the minimum combustion or operating temperature must be continuously monitored. The temperature reading shall be recorded in accordance with subsection (f)(1) at least once every 15 minutes while the noncatalytic thermal oxidizer is operating.

(B) Catalytic thermal oxidizer:

(I) The inlet gas temperature must be continuously monitored. The temperature reading shall be recorded in accordance with subsection (f)(1) at least once every 15 minutes while the thermal catalytic oxidizer is operating.

(II) A catalyst activity test shall be performed a minimum of one time per rolling 2-year period.

(C) Control device other than that specified in clause (A) or (B), parameters specific to the control device must be continuously monitored. The parameters shall be recorded in accordance with subsection (f)(1) at least once every 15 minutes while the control device is operating.

(ii) The add-on air pollution control device specified in subparagraph (i) must be operated at a 3-hour average temperature not lower than 50°F below the average temperature demonstrated during the most recent compliant source test approved by the Department.

(iii) The add-on air pollution control device specified in subparagraph (i) must be in operation at all times that the source is operating.

(iv) The negative dryer pressure shall be established during the initial test using an air flow direction indicator, such as a smoke stick or aluminum ribbons, or a differential pressure gauge. Capture efficiency testing and continuous dryer air flow monitoring are not required.

(v) The add-on air pollution control device shall be approved, in writing, by the Department in a plan approval, operating permit or Title V permit prior to use.

(2) *Fountain solution.* The owner or operator of an offset lithographic printing press subject to this section that is required to meet one of the fountain solution VOC limits of subsection (c)(2) shall demonstrate compliance by using one or more of the following methods:

(i) Analysis of a sample of the press-ready (as applied) fountain solution for VOC content using EPA Reference Method 24, *Determination of Volatile Matter Content, Water Content, Density, Volume Solids, and Weight Solids of Surface Coatings*, codified in 40 CFR Part 60, Appendix A, including updates and revisions.

(ii) Maintenance onsite of MSDS, CPDS or other data provided by the manufacturer of the fountain solution that indicates the VOC content of the press-ready (as applied) fountain solution.

(iii) Calculation of the VOC content of the press-ready (as applied) fountain solution that combines the EPA Reference Method 24 analytical VOC content data for each of the concentrated components or additives used to prepare the press-ready fountain solution.

(A) The VOC content data for each of the concentrated components or additives shall be combined in the proportions in which the concentrated components or additives are mixed to make the batch of press-ready (as applied) fountain solution.

(B) The VOC content shall be calculated one time for each recipe of press-ready (as applied) fountain solution. The recipe name, VOC content for each concentrated component or additive and fountain solution mix ratio shall be recorded in a logbook.

(C) The EPA Reference Method 24 analysis of the concentrated components or additives used to prepare the press-ready (as applied) fountain solution may be performed by the supplier of the components or additives and these results provided to the owner or operator of the affected press.

(iv) Measurement of the recirculating reservoir temperature of a refrigerated press-ready (as applied) fountain solution specified in subsection (c)(2)(i)(B) or (ii)(B) with a thermometer or other temperature detection device capable of reading to 0.5°F (0.28°C) to ensure that the temperature of the refrigerated fountain solution containing alcohol is maintained below 60°F (15.5°C) at all times. The temperature on the thermometer or other temperature detection device shall be continuously monitored. The temperature reading shall be recorded at least once per operating day to verify that the refrigeration system is operating properly.

(v) Monitoring of the press-ready (as applied) fountain solution for alcohol concentration or VOC content with one or more of the following instruments:

(A) A refractometer or a hydrometer to monitor the fountain solution alcohol concentration. The instrument must:

(I) Be corrected for temperature one time per 8-hour shift.

(II) Have a visual, analog or digital readout with an accuracy of 0.5%.

(III) Be calibrated with a standard solution for the type of alcohol used in the fountain solution.

(B) A conductivity meter to determine the fountain solution VOC content. Reading for the fountain solution must be referenced to the conductivity of the incoming water.

(vi) Another method to determine compliance with the VOC content limits for fountain solutions in subsection (c)(2) if the following requirements are met:

(A) The facility owner or operator submits a request, in writing, to the appropriate regional office of the Department for approval of the alternative method.

(B) The request demonstrates that the alternative method provides results that accurately determine the fountain solution VOC content.

(C) The Department provides prior written approval of the alternative method.

(3) *Cleaning solution.* The owner or operator of an offset lithographic printing press or a letterpress printing press subject to this section shall demonstrate compliance with the VOC content limit or VOC composite partial vapor pressure limit for cleaning solutions in subsection (c)(1) by one or more of the following methods:

(i) Analysis of a sample of press-ready (as applied) cleaning solution for VOC content using EPA Reference Method 24.

(ii) Use of the equation in subsection (j) to calculate the composite partial vapor pressure of the press-ready (as applied) cleaning solution.

(iii) Use of the methods in subsection (k) to determine the VOC composite partial vapor pressure of a single concentrated component or additive used to prepare the press-ready (as applied) cleaning solution.

(iv) Maintenance onsite of MSDS, CPDS or other data provided by the manufacturer of the press-ready (as applied) cleaning solution that indicates the VOC content or the VOC composite partial vapor pressure, or both, of the press-ready (as applied) cleaning solution.

(v) Calculation of the VOC content or the VOC composite partial vapor pressure, or both, of the press-ready (as applied) cleaning solution that combines the EPA Reference Method 24 analytical VOC content data or analytical VOC composite partial vapor pressure data for each of the concentrated components or additives used to prepare the press-ready (as applied) cleaning solution.

(A) The VOC content data or VOC composite partial vapor pressure data for each of the concentrated components or additives shall be combined in the proportions in which the concentrated components or additives are mixed to make the batch of press-ready (as applied) cleaning solution.

(B) The VOC content or VOC composite partial vapor pressure shall be calculated one time for each recipe of press-ready (as applied) cleaning solution. The recipe name, VOC content or VOC composite partial vapor pressure for each concentrated component or additive and cleaning solution mix ratio shall be recorded in a log book.

(C) The EPA Reference Method 24 analysis of the concentrated components or additives used to prepare the press-ready (as applied) cleaning solution may be performed or the VOC composite partial vapor pressure data may be determined by the supplier of the components or additives and these results provided to the owner or operator of the affected press.

(vi) Another method to determine compliance with the VOC content limits for cleaning solutions in subsection (c)(1) if the following requirements are met:

(A) The facility owner or operator submits a request, in writing, to the appropriate regional office of the Department for approval of the alternative method.

(B) The request demonstrates that the alternative method provides results that accurately determine the cleaning solution VOC content or VOC composite partial vapor pressure.

(C) The Department provides prior written approval of the alternative method.

(f) *Recordkeeping requirements.* Beginning January 1, 2015, the owner or operator of a printing press subject to this section shall maintain records sufficient to demonstrate compliance with this section. Records maintained for compliance demonstrations may include purchase, use, production and other records.

(1) An owner or operator using an add-on air pollution control device shall maintain records sufficient to demonstrate compliance with subsection (e), including the following:

(i) Temperature reading of the add-on air pollution control device.

(ii) Maintenance performed on the add-on air pollution control device and monitoring equipment, including the date and type of maintenance.

(iii) Catalyst activity test performed, if applicable.

(2) An owner or operator subject to subsection (a)(1)(i), (ii), (iii) or (iv) shall maintain records of cleaning solutions and fountain solutions used at the facility, including:

(i) The following parameters for each press ready blanket, roller or other cleaning solution:

(A) The name and identification number for the blanket, roller or other cleaning solution.

(B) The VOC content (weight %) or VOC composite partial vapor pressure of each cleaning solution as applied.

(C) The volume used of each cleaning solution as applied, if the owner or operator is using cleaning solutions which exceed the limits in subsection (c)(1)(i).

(D) Records of cleaning solution monitoring as required under subsection (e)(3).

(ii) The following parameters for each press-ready (as applied) fountain solution:

(A) The VOC content (weight %).

(B) Records of fountain solution monitoring as required under subsection (e)(2).

(3) An owner or operator claiming exemption from a VOC control provision of this section based on potential or actual VOC emissions, as applicable, shall maintain records that demonstrate to the Department that the press or facility is exempt.

(4) The owner or operator may group materials into classes using the highest VOC content in any material in a class to represent that class of material.

(g) *Reporting requirements.* Beginning January 1, 2015, the owner or operator of an offset lithographic printing press or a letterpress printing press subject to this section shall meet the following reporting requirements:

(1) The records required under subsection (f) shall be maintained onsite for 2 years unless a longer period is required by a plan approval or operating permit issued under Chapter 127 (relating to construction, modification, reactivation and operation of sources). The records shall be submitted to the Department in an acceptable format upon receipt of a written request.

(2) The owner or operator of an offset lithographic printing press or letterpress printing press required to demonstrate VOC control efficiency in accordance with subsection (d) shall submit reports to the Department in accordance with Chapter 139 (relating to sampling and testing).

(h) *Sampling and testing.*

(1) Sampling and testing shall be performed as follows:

(i) Sampling of an ink, varnish, coating, fountain solution or cleaning solution and testing for the VOC content of the ink, varnish, coating, fountain solution or cleaning solution shall be performed in accordance with the procedures and test methods specified in Chapter 139.

(ii) Sampling and testing of an add-on air pollution control device shall be performed in accordance with the procedures and test methods specified in Chapter 139 and meet one of the following:

(A) Sampling and testing shall be performed no later than 180 days after the compliance date of the press.

(B) Sampling and testing shall have been performed within 5 years prior to January 1, 2015, and previously approved by the Department.

(2) The control efficiency shall be determined using one or more of the following methods, as applicable, subject to prior written approval by the Department. The method used to measure the

inlet concentration of VOC may be the same method used to determine the outlet concentration of VOC unless use of the same method is determined to be technically infeasible.

(i) EPA Reference Method 25, *Determination of Total Gaseous Nonmethane Organic Emissions as Carbon*, codified in 40 CFR Part 60, Appendix A, including updates and revisions. EPA Reference Method 25 may be used if the total gaseous nonmethane organic compound concentration is equal to or greater than 50 parts per million by volume, measured as carbon.

(ii) EPA Reference Method 25A, *Determination of Total Gaseous Organic Concentration Using a Flame Ionization Analyzer*, codified in 40 CFR Part 60, Appendix A, including updates and revisions. EPA Reference Method 25A may not be used if the total gaseous nonmethane organic compound concentration at the outlet of the add-on air pollution control device is equal to or greater than 50 parts per million by volume, measured as carbon.

(iii) EPA Reference Method 18, *Measurement of Gaseous Organic Compound Emissions by Gas Chromatography*, codified in 40 CFR Part 60, Appendix A, including updates and revisions. EPA Reference Method 18 may be used if the total gaseous nonmethane organic compound concentration is equal to or greater than 50 parts per million by volume, measured as carbon. EPA Reference Method 18 may be used in conjunction with EPA Reference Method 25A to subtract emissions of exempt VOCs.

(3) Other test methods demonstrated to provide results that are acceptable for purposes of determining compliance with this section may be used if prior approval is obtained in writing from the Department and the EPA.

(i) *Work practice requirements for cleaning activities.*

(1) Except as specified in paragraph (3), beginning January 1, 2015, the owner or operator of an offset lithographic printing press or a letterpress printing press subject to subsection (a)(1)(i), (ii), (iii) or (iv) shall comply with the following work practices for cleaning activities at the facility:

(i) Store all VOC-containing cleaning solutions, waste cleaning solutions and used shop towels in closed containers.

(ii) Ensure that mixing vessels and storage containers used for VOC-containing cleaning solutions, waste cleaning solutions and used shop towels are kept closed at all times, except when depositing or removing these solutions or shop towels.

(iii) Minimize spills of VOC-containing cleaning solutions and waste cleaning solutions and clean up spills immediately.

(iv) Convey VOC-containing cleaning solutions, waste cleaning solutions and used shop towels from one location to another in closed containers or pipes.

(2) The requirements in paragraph (1) apply to the following activities:

(i) Cleaning of a press, including blanket washing, roller washing, plate cleaners, metering roller cleaners, impression cylinder cleaners and rubber rejuvenators.

(ii) Cleaning of press parts, including press parts that have been removed from the press for cleaning.

(iii) Cleaning of ink, coating or adhesive from areas around a press.

(3) The requirements in paragraph (1) do not apply to the following activities:

(i) Cleaning electronic components of a press.

(ii) Cleaning in pre-press (for example, platemaking) operations.

(iii) Cleaning in post-press (for example, binding) operations.

(iv) Using janitorial supplies (for example, detergents or floor cleaners) for general cleaning around a press.

(v) The use of parts washers or cold cleaners at an offset lithographic printing or a letterpress printing facility. The use of parts washers and cold cleaners is regulated under § 129.63 (relating to degreasing operations).

(j) *Composite partial vapor pressure.* The composite partial vapor pressure of organic compounds in cleaning solutions shall be determined by one of the following procedures:

(1) Quantifying the amount of each compound in the blend using gas chromatographic analysis, using an appropriate and current ASTM test method with prior written approval by the Department.

(2) Calculating the composite partial vapor pressure using the following equation:

n

$\sum (W_i)(VP_i)/MW_i$

$i=1$

$PP_c =$

kn

$W_w/MW_w + \sum W_e/MW_e + \sum W_i/MW_i$

$$e=1i=1$$

Where:

PP_c = VOC composite partial vapor pressure at 20°C, in mm mercury

W_i = Weight of the “i”th VOC compound, in grams

W_w = Weight of water, in grams

W_e = Weight of the “e”th exempt compound, in grams

MW_i = Molecular weight of the “i”th VOC compound, in grams per g-mole, as given in chemical reference literature

MW_w = Molecular weight of water, in grams per g-mole (18 grams per g-mole)

MW_e = Molecular weight of the “e”th exempt compound, in grams per g-mole, as given in chemical reference literature

VP_i = Vapor pressure of the “i”th VOC compound at 20°C, in mm mercury, as determined by subsection (k)

(k) *Determination of vapor pressure of single organic compounds in cleaning solutions.* The vapor pressure of each single component compound shall be determined from one or more of the following:

(1) An appropriate and current ASTM test method with prior written approval by the Department.

(2) The most recent edition of one or more of the following sources:

(i) *Vapour Pressures of Pure Substances*, Boublik, Elsevier Scientific Publishing Company, New York.

(ii) *Perry’s Chemical Engineers’ Handbook*, Green and Perry, McGraw-Hill Book Company.

(iii) *CRC Handbook of Chemistry and Physics*, CRC Press.

(iv) *Lange’s Handbook of Chemistry*, McGraw-Hill Book Company.

(v) Additional sources approved by the Department.

(l) *VOC retention factors and capture efficiency factors.* As specified in subsection (a)(2), if:

(1) A portion of the VOCs contained in the ink or cleaning solution, or both, is retained in the printed web substrate or in the shop towels used for cleaning, the following VOC emission retention factors shall be used, as applicable:

(i) A 20% VOC emission retention factor for a petroleum ink oil-based heatset ink printed on an absorptive substrate, meaning 80% of the petroleum ink oil content is emitted as VOC during the printing process and is available for capture and control by an add-on air pollution control device. The petroleum ink oil content of a heatset ink may be determined from formulation data included on a CPDS or MSDS.

(ii) A 95% VOC emission retention factor for a petroleum ink oil-based non-heatset web or non-heatset sheet-fed ink, meaning 5% of the petroleum ink oil content is emitted as VOC during the printing process and is available for capture and control by an add-on air pollution control device. The petroleum ink oil content of a non-heatset web or non-heatset sheet-fed ink may be determined from formulation data included on a CPDS or MSDS.

(iii) A 100% VOC emission retention factor for vegetable ink oil-based heatset and non-heatset inks.

(iv) A 50% VOC emission retention factor for low VOC composite vapor pressure cleaning solutions in shop towels if both of the following conditions are met:

(A) The VOC composite vapor pressure of the cleaning solution is less than 10mm Hg at 20°C (68°F).

(B) The cleaning solutions and used shop towels are kept in closed containers.

(2) A portion of the VOCs contained in one or more of the ink, fountain solution or automatic blanket wash materials is captured in the press dryer for control by the add-on air pollution control device, the following capture efficiency factors shall be used, as applicable:

(i) A 100% VOC emission capture efficiency for volatilized ink oils for oil-based heatset paste inks and varnishes as specified in paragraph (1) if both of the following conditions are met:

(A) The press dryer is operating at negative pressure relative to the surrounding pressroom.

(B) The air flow is into the press dryer.

(ii) A 70% VOC emission capture efficiency for a fountain solution that contains an alcohol substitute.

(iii) A 40% VOC emission capture efficiency for an automatic blanket wash if the VOC composite vapor pressure of the cleaning solution is less than 10mm Hg at 20°C (68°F).

Authority

The provisions of this § 129.67b issued under section 5(a)(1) and (8) of the Air Pollution Control Act (35 P.S. § 4005(a)(1) and (8)).

Source

The provisions of this § 129.67b adopted June 27, 2014, effective June 28, 2014, 44 Pa.B. 3929.

Cross References

This section cited in 25 Pa. Code § 121.1 (relating to definitions); 25 Pa. Code § 129.51 (relating to general); and 25 Pa. Code § 129.96 (relating to applicability).