

REGULATION 6.29 Standard of Performance for Graphic Arts Facilities Using Rotogravure or Flexographic Printing

Air Pollution Control District of Jefferson County Jefferson County, Kentucky

Relates To: KRS Chapter 77 Air Pollution Control

Pursuant To: KRS Chapter 77 Air Pollution Control

Necessity and Function: KRS 77.180 authorizes the Air Pollution Control Board to adopt and enforce all orders, rules, and regulations necessary or proper to accomplish the purposes of KRS Chapter 77. This regulation provides for the control of volatile organic compound emissions from graphic arts facilities that use rotogravure or flexographic printing.

SECTION 1 Definitions

Terms used in this regulation that are not defined in this regulation shall have the meaning given to them in Regulation 1.02 *Definitions*.

- 1.1 "Affected facility" means a printing line for packaging rotogravure, publication rotogravure, specialty rotogravure, or flexographic printing.
- 1.2 "Applicator" means the mechanism or device used to apply an ink or coating.
- 1.3 "Coating" means the application of a uniform layer of material across the entire width or across a partial width of a substrate.
- 1.4 "Flashoff area" means the space between an applicator and the associated oven.
- 1.5 "Flexographic printing" means the application of words, designs, or pictures to a substrate by means of a roll printing technique in which the pattern to be applied is raised above the printing roll and the image carrier is made of rubber or other elastomeric materials.
- 1.6 "Packaging rotogravure printing" means rotogravure printing upon paper, paper board, metal foil, plastic film, or other substrate that is, in subsequent operations, formed into a packaging product or label, or both.
- 1.7 "Printing" means the formation of words, designs, or pictures, usually by a series of application rolls each with only partial coverage. This term applies to flexographic printing and publication, specialty, and packaging rotogravure printing.
- 1.8 "Printing line" means a series of processes, and the associated process equipment, used to apply, dry, and cure an ink containing a VOC. A printing line may also include one or more coating processes that are subject to this regulation. A printing line need not have an oven or flashoff area. A printing line shall include, but is not limited to, the following:
 - 1.8.1 Mixing operations,
 - 1.8.2 Process storage,
 - 1.8.3 Applicators,
 - 1.8.4 Drying operations including, but not limited to, flashoff area evaporation, oven drying, baking, curing, and polymerization,
 - 1.8.5 Clean up operations,
 - 1.8.6 Leaks, spills, and disposal of VOCs, and
 - 1.8.7 Processing and handling of recovered VOCs.
- 1.9 "Process storage" means mixing tanks, holding tanks, and other tanks, drums, or other containers that contain inks, coatings, solvents, or recovered VOC-containing materials but does not mean storage tanks that are subject to Regulation 6.13 *Standard of Performance for Existing Storage Vessels for Volatile Organic Compounds* or Regulation 7.13 *Standards of*

Performance for New Storage Vessels for Volatile Organic Compounds.

- 1.10 "Publication rotogravure printing" means rotogravure printing upon paper that is subsequently formed into books, magazines, catalogues, brochures, directories, newspaper supplements, or other types of printed materials.
- 1.11 "Roll Printing" means the application of words, designs, or pictures to a substrate usually by means of a series of hard rubber or steel rolls each with only partial coverage.
- 1.12 "Rotogravure printing" means the application of words, designs, or pictures to a substrate by means of a roll-printing technique that involves intaglio or recessed image areas in the form of cells.
- 1.13 "Specialty rotogravure printing" means all rotogravure printing except packaging rotogravure and publication rotogravure printing. Specialty rotogravure printing includes, but is not limited to, rotogravure printing on paper cups and plates, patterned gift wrap, wallpaper, or floor coverings.
- 1.14 "VOC net input" means the total amount of VOCs input to an affected facility minus the amount of VOCs that are not emitted into the atmosphere. VOCs that are prevented from being emitted to the atmosphere by the use of control devices shall not be subtracted from the total for the purposes of determining VOC net input. When the nature of any process or design of process equipment is such as to permit more than one interpretation of this definition, the interpretation that results in the minimum value for allowable emissions shall apply.

SECTION 2 Applicability

This regulation applies to each printing line for packaging rotogravure, publication rotogravure, specialty rotogravure, or flexographic printing. New or modified affected facilities shall comply with all standards upon commencing operation. Any affected facility that is ever subject to this regulation shall always be subject to this regulation, unless the process of the affected facility is changed to a process not covered by this regulation.

SECTION 3 Standard for Volatile Organic Compounds

- 3.1 A person shall not cause or allow the emission of VOC from any affected facility unless at least one of the following requirements is met:
 - 3.1.1 The volatile fraction of all inks and coatings, as applied to the substrate, used on the affected facility shall contain no more than 25% VOC by volume,
 - 3.1.2 The non-volatile fraction, minus water and exempt solvents, of all inks and coatings, as applied to the substrate, used on the affected facility shall be at least 60% by volume,
 - 3.1.3 All inks and coatings, as applied to the substrate, used on the affected facility shall contain no more than 0.5 pound of VOC per pound of solids, or
 - 3.1.4 The VOC emissions shall not exceed the following limit as applicable:
 - 3.1.4.1 For publication rotogravure printing, 25% by weight of the VOC net input into the affected facility,
 - 3.1.4.2 For packaging rotogravure printing or specialty rotogravure printing, 35% by weight of the VOC net input into the affected facility, and
 - 3.1.4.3 For flexographic printing, 40% by weight of the VOC net input into the affected facility.
- 3.2 Compliance with the requirements of section 3.1 shall be based upon the inks and coatings, as applied, used by the affected facility during a calendar-day averaging period. The District may specifically authorize compliance to be based upon a longer averaging period that shall

not exceed one calendar month.

- 3.3 If more than one requirement of section 3.1 would be applicable for a specific affected facility, then the least stringent requirement shall apply.

SECTION 4 Compliance

- 4.1 In all cases, the design of any control system is subject to approval by the District.
- 4.2 Compliance with an emission limit in section 3.1.4 shall be determined based upon the control device efficiency and the control system capture efficiency. If so requested by the District, performance tests shall be conducted in order to determine the efficiency of the control device. The control system capture efficiency shall be measured according to the methods specified in Regulation 1.05 *Compliance with Emission Standards and Maintenance Requirements*.
- 4.3 The VOC content and density of inks and coatings, as applied, shall be determined by the applicable EPA Method 24A or Method 24.
- 4.4 Whenever deemed necessary by the District, the District may obtain samples of the inks and coatings, as applied, used at an affected facility to verify compliance with the requirements of section 3.1.1 to section 3.1.3.
- 4.5 When an affected facility uses add-on controls, compliance shall be determined by EPA Method 25.
- 4.6 For the purposes of determining compliance with this regulation, if any process equipment or process could be considered to be a part of more than one printing line, its VOC emissions shall be assigned to each printing line of which it is a part proportionally to the throughput of VOCs the process or process equipment receives from or distributes to each printing line.

SECTION 5 Deviations

Deviation with the standard and limitations contained in this regulation, when supported by adequate technical information, shall be considered by the District on a case-by-case basis to allow for technological or economic circumstances that are unique to an affected facility. However, these deviations shall require federal approval pursuant to Regulation 1.08 *Administrative Procedures*.

SECTION 6 Monitoring and Recordkeeping

- 6.1 An owner or operator of an affected facility subject to this regulation shall maintain records of operations for the approved averaging period for the most recent five-year period. The records shall be made available to the District, the Cabinet, and the EPA upon request. The records shall include, but not be limited to, the following:
- 6.1.1 The regulation and section number applicable to the affected facility for which the records are being maintained,
- 6.1.2 The application method and substrate type (metal, plastic, paper, etc.),
- 6.1.3 The amount and type of each ink, coating, and solvent used at each point of application, including exempt compounds, during the averaging period. The District shall approve a written request for the usage record to reflect a period longer than the compliance averaging period if the material usage is prorated for each compliance averaging period by using a measurable indicator that is determined by the District to be directly and proportionally related to material usage, such as linear feet or area of substrate printed. In this case, the usage period shall not exceed 1 calendar month,
- 6.1.4 The VOC content as applied in each ink, coating, and solvent,
- 6.1.5 The date for each application of each ink, coating, and solvent, and

- 6.1.6 Oven temperature, where applicable.
- 6.2 When an affected facility uses add-on controls to achieve compliance, monitoring, recordkeeping, and the maintenance of certain documentation shall be required. Examples of some controls and related information are:
 - 6.2.1 Thermal incineration - combustion temperature, inlet and outlet VOC concentration from emission tests, how and when these concentrations were determined, destruction or removal efficiency, and manufacturer data,
 - 6.2.2 Catalytic incinerator - exhaust gas temperature, change in temperature across catalyst bed, date of last change of catalyst bed, inlet and outlet VOC concentration from emission tests, how and when these concentrations were determined, destruction or removal efficiency, and manufacturer data, and
 - 6.2.3 Condenser - inlet temperature of cooling medium, outlet temperature of cooling medium, inlet and outlet VOC concentration from emission tests, how and when these concentrations were determined, removal efficiency, and manufacturer data.

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