1124 Control of Volatile Organic Compound Emissions

2.0 Definitions

~~01/11/2002~~xx/xx/2010

For the purpose of this regulation, the following definitions apply:

"Actual emissions" means the quantity VOCs emitted from a source during a particular time period.

"Adhesion primer" means a coating that is applied to thermoplastic olefin (TPO) parts to promote adhesion of subsequent coatings. An adhesion primer is clearly identified as an adhesion primer or adhesion promoter on its accompanying material safety data sheet.

"As applied" means including any dilution solvents added before application of the coating.

"Basecoat" means a pigmented topcoat that is the first coat applied as part of a multistage topcoat system.

"Bulk gasoline plant" means a gasoline storage and distribution facility with an average daily throughput of 76,000 liters (L) (20,000 gallons [gal]) of gasoline or less on a monthly average.

"Bulk gasoline terminal" means a gasoline storage facility that receives gasoline from refineries, delivers gasoline to bulk gasoline plants or to commercial or retail accounts, and has a daily throughput of more than 76,000 L (20,000 gal) of gasoline on a monthly average.

"Capture efficiency" means the weight per unit time of VOC entering a capture system and delivered to a control device divided by the weight per unit time of total VOC generated by a source of VOC, expressed as a percentage.

"Capture system" means all equipment (including, but not limited to, hoods, ducts, fans, booths, ovens, dryers, etc.) that contains, collects, and transports an air pollutant to a control device.

"Carbon absorber" means an add-on control device that uses activated carbon to absorb VOCs from a gas stream.

"Carbon adsorption system" means a carbon adsorber with an inlet and outlet for exhaust gases and a system to regenerate the saturated adsorbent.

"Clearcoat" means a topcoat that contains no pigments or only transparent pigments and that is the final coat applied as part of a multistage topcoat system.

"Coating" means a material applied onto or impregnated into a substrate for protective, decorative, or functional purposes. Such materials include, but are not limited to, paints, varnishes, sealants, adhesives, inks, maskants, and temporary protective coatings.

"Coating unit" means a series of one or more coating applicators and any associated drying area or oven wherein a coating is applied, dried, or cured. A coating unit ends at the point where the coating is dried or cured, or prior to any subsequent application of a different coating. It is not necessary to have an oven or a flash-off area in order to be included in this definition.

"Continuous vapor control system" means a vapor control system that treats vapors displaced from tanks during filling on a demand basis without intermediate accumulation.

"Control device" means equipment (such as an incinerator or carbon adsorber) used to reduce, by destruction or removal, the amount of air pollutant or pollutants in an air stream prior to discharge to the ambient air.

"Control system" means a combination of one or more capture system or systems and control device or devices working in concert to reduce discharges of pollutants to the ambient air.

"Day" means a period of 24 consecutive hours beginning at midnight local time, or beginning at a time consistent with a facility's operating schedule.

"Destruction or removal efficiency" means the amount of VOC destroyed or removed by a control device expressed as a percent of the total amount of VOC entering the device.

"Dip coating" means the application method of a coating material to a substrate by dipping the part into a tank of coating material.

"Double block-and-bleed system" means two block valves connected in series with a bleed valve or line that can vent the line between the two block valves.

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"Electric-insulating and thermal-conducting coating" means a coating that displays an electrical insulation of at least 1000 volts DC per mil on a flat test plate and an average thermal conductivity of at least 0.27 BTU per hour-foot-degree Fahrenheit.

"Electrostatic spray" means a method of applying a spray coating in which opposite electric charges are applied to the substrate and the coating. The coating is attracted to the substrate by the electrostatic potential between them.

"Exempt compounds" means any of the compounds listed in 2.0 of 7 DE Admin. Code 1101 - Definitions, "Volatile Organic Compounds," which have been determined to have negligible photochemical reactivity.

For determining compliance with emission limits, VOCs will be measured according to the procedures in Methods 25 and 25A of Appendix A of 40 CFR, Part 60, and the procedures and equations in §60.755. Where such a method also measures compounds with negligible photochemical reactivity, an owner or operator may exclude these negligibly-reactive compounds when determining compliance with an emission standard. However, the Department may require such owner or operator, as a precondition to excluding these compounds for purposes of determining compliance, to provide monitoring methods and monitoring results demonstrating, to the satisfaction of the Department, the amount of negligibly-reactive compounds in the sources emissions.

In addition to the procedures for requesting a satisfactory compliance determination, where the Department proposes to allow the use of a test method for excluding negligibly-reactive compounds that is different or not specified in the approved SIP, such change shall be submitted to the U.S. EPA for approval as part of a SIP revision.

"External floating roof" means a cover over an open-top storage tank consisting of a double deck or pontoon single deck that rests upon and is supported by the volatile organic liquid being contained and is equipped with a closure seal or seals to close the space between the roof edge and tank shell.

"Extreme high-gloss coating" means a coating which, when tested by ASTM International Method D-523, adopted in 1980, shows a reflectance of 75 or more on a 60^0 meter.

"Extreme performance coating" means a coating used on a metal surface where the coated surface is, in its intended use, subject to the following; (a) chronic exposure to corrosive, caustic or acidic agents, chemicals, chemical fumes, chemical mixtures or solutions: or (b) repeated exposure to temperatures in excess of $250\ ^0$F; or (c) repeated heavy abrasion, including mechanical wear and repeated scrubbing with industrial grade solvents, cleansers of scouring agents.

"Facility" means all of the pollutant-emitting activities, excluding pollutant-emitting activities from mobile sources that are located on one or more contiguous or adjacent properties, and are under the control of the same person (or person under common control).

"First attempt at repair" means to take rapid action for the purpose of stopping or reducing leakage of organic material to the atmosphere using best practices.

"Flash-off area" means the space between the coating application area and the oven.

"Flow coating" means the application of a coating material to a substrate by pouring the coating over the suspended part.

"Gasoline tank truck" means a delivery tank truck used at bulk gasoline plants, bulk gasoline terminals, or gasoline dispensing facilities that is loading or unloading gasoline or that has loaded or unloaded gasoline on the immediately previous load.

"Gloss flattener" means a low-gloss coating that is formulated to eliminate glare on the interior surfaces of a vehicle for safety purposes, as specified under the U.S. Department of Transportation Motor Vehicle Safety Standards.

"Hand application" means a method of applying coatings by non-mechanical hand-held equipment, including, but not limited to, paint brushes, hand rollers, caulking guns, trowels, spatulas, syringe daubers, rags and sponges.

"Heat resistant coating" means a coating that must withstand a temperature of at least $400\ ^0$F during normal use.

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"Heavy-duty truck" means any motor vehicle rated at greater than 3,864 kg (8,500 lb) gross weight designed primarily to transport property.

"High-volume, low-pressure (HVLP) spray equipment" means spray equipment that is used to apply coatings using a spray gun that operates less than or equal to 10 psig of atomized air pressure at the air cap.

"Incinerator" means a combustion apparatus in which solid, semisolid, liquid, or gaseous combustible wastes are ignited and burned and from which the solid and gaseous residues contain little or no combustible material.

"Intermittent vapor control system" means a vapor control system that employs an intermediate vapor holder to accumulate vapors displaced from tanks during filling. The control device treats the accumulated vapors only during automatically controlled cycles.

"Internal Floating Roof" means a cover or roof in a fixed-roof tank that rests upon or is floated upon, the liquid being contained, and is equipped with a closure seal or seals to close the space between the roof edge and the tank shell.

"Knife coating" means the application of a coating material to a substrate by means of drawing the substrate beneath a knife that spreads the coating evenly over the full width of the substrate.

"Leak" means a VOC emission indicated by an instrument calibrated according to Method 21 of 40 CFR, Part 60, Appendix A, using zero air (less than 10 parts per million [ppm] of hydrocarbon in air) and a mixture of methane or n-hexane and air at a concentration of about, but less than, 10,000 ppm methane or n-hexane.

"Lease custody transfer" means the transfer of produced crude oil or condensate, after processing or treating in the producing operations, from storage tanks or automatic transfer facilities to pipelines or any other forms of transportation.

"Liquid-mounted seal" means a primary seal mounted in continuous contact with the liquid between the tank wall and the floating roof around the circumference of the tank.

"Loading rack" means an aggregation or combination of gasoline loading equipment arranged so that all loading outlets in the combination can be connected to a tank truck or trailer parked in a specified loading space.

"Lower explosive limit" (LEL) means the concentration of a compound in air below which a flame will not propagate if the mixture is ignited.

"Maximum theoretical emissions" means the quantity of VOC that theoretically could be emitted by a source without control devices based on the design capacity or maximum production capacity of the source and 8,760 hours of operation per year. The design capacity or maximum production capacity includes use of coatings and inks with the highest VOC content used in practice by the source for the two preceding years.

"Maximum true vapor pressure" means the equilibrium partial pressure exerted by a stored liquid at the temperature equal to:

1. for liquids stored above or below the ambient temperature, the highest calendar-month average of the liquid storage temperature, or
2. for liquids stored at the ambient temperature, the local maximum monthly average temperature as reported by the National Weather Service. This pressure shall be determined by one of the following:
    i. In accordance with methods described in American Petroleum Institute Bulletin 2517, "Evaporation Loss From External Floating Roof Tanks."
    ii. By using standard reference texts.
    iii. By ASTM D2879-83.
    iv. By any other method approved by the Department as part of the State Implementation Plan (SIP) Revision.

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"Metallic coating" means a coating which contains more than 5 grams of metal particles per liter of coating, as applied. Metal particles are pieces of a pure elemental metal or a combination of elemental metals.

"Mold-seal coating" means the initial coating applied to a new mold or a repaired mold to provide a smooth surface which, when coated with a mold release coating prevents products from sticking to the mold.

"Multi-component coating" means a coating which is packaged in two or more parts, which parts are combined before application, and where a coreactant from one part of the coating chemically reacts, at ambient conditions, with a coreactant from another part of the coating.

"One-component coating" means a coating that is ready for application as it comes out of its container to form an acceptable dry film. A thinner, necessary to reduce the viscosity, is not considered a component.

"Open-ended valve or line" means any valve, except safety relief valves, having one side of the valve seat in contact with process fluid and one side open to the atmosphere, either directly or through open piping.

"Organic compound" means any carbon-containing chemical compound excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate.

"Oven" means a chamber which is used to bake, cure, polymerize, or dry a coating.

"Overall emission reduction efficiency" means the weight per unit time of VOC removed or destroyed by a control device divided by the weight per unit time of VOC generated by a source, expressed as a percentage. The overall emission reduction efficiency can also be calculated as the product of the capture efficiency and the control device destruction or removal efficiency.

"Owner or Operator" means any person who owns, leases, controls, operates or supervises a facility, a source, or air pollution control or monitoring equipment.

"Person" means any individual, partnership, copartnership, firm, company, corporation, association, joint stock company, trust, estate, political subdivision, or any other legal entity, or their legal representative, agent, or assigns.

"Petroleum" means the crude oil removed from the earth and the oils derived from tar sands, shale and coal.

"Petroleum Liquid" means petroleum condensate, and any finished or intermediate products manufactured in a petroleum refinery.

"Plastisol" means a coating made of a mixture of finely divided resin and a plasticizer. Plastisol is applied as a thick gel that solidifies when heated.

"Press-Ready Ink" means the ink, as applied to the substrate, after all solvents and diluents have been added.

"Pressure release" means the emission of materials resulting from system pressure being greater than set pressure of the pressure relief device.

"Pretreatment coating" means a coating which contains no more than 12% solids by weight, and at least 0.5% acid by weight, is used to provide surface etching, and is applied directly to metal surfaces to provide corrosion resistance, adhesion, and ease of stripping.

"Primer" means any coating applied prior to the application of a topcoat or color coat for the purposes of surface preparation, corrosion resistance, adhesion, and color uniformity.

"Process unit shutdown" means a work practice or operational procedure that stops production from a process unit or part of a process unit. An unscheduled work practice or operational procedure that stops production from a process unit or part of a process unit for less than 24 hours is not a process unit shutdown. The use of spare equipment and technically feasible bypassing of equipment without stopping production are not process unit shutdowns.

"Reid vapor pressure" means the absolute vapor pressure of volatile crude oil and volatile nonviscous petroleum liquids, except liquified petroleum gases, as determined by ASTM D323-82.

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"Repaired" means that equipment is adjusted, or otherwise altered, in order to eliminate a leak as indicated by one of the following: an instrument reading of 10,000 ppm or greater, indication of liquids dripping, or indication by a sensor that a seal or barrier fluid system has failed.

"Repair coating" means a coating used to re-coat portions of a previously coated product which has sustained mechanical damage to the coating following normal coating operations.

"Roll coating" means the application of a coating material to a moving substrate by means of hard rubber, elastomeric, or metal rolls.

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"Rotogravure coating" means the application of a coating material to a substrate by means of a roll coating technique in which the pattern to be applied is recessed relative to the non-image area, and the coating material is picked up in these recessed areas and is transferred to the substrate.

"Safety-indicating coatings" means a coating which changes physical characteristics, such as color, to indicate unsafe conditions.

"Shutdown" means the cessation of operation of a facility or of its emission control or emission monitoring equipment.

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"Solar-absorbent coating" means a coating which has as its prime purpose the absorption of solar radiation.

"Solid-film lubricant" means a very thin coating consisting of a binder system containing as its chief pigment material one or more of molybdenum disulfide, graphite, polytetraflouroethylene (PTFE) or other solids that act as a dry lubricant between faying surfaces.

"Source" means any building, structure, equipment (excluding mobile equipment temporarily in place), or installation that directly or indirectly releases or discharges, or has the potential to release or discharge, VOCs into the atmosphere.

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"Stage I Vapor Recovery System" means the control of gasoline vapor from any delivery vessel into any stationary storage vessel, where the vapor displaced by the liquid gasoline is returned to the delivery vessel and transported to the refinery.

"Stage II Vapor Recovery System" means a system that controls the emissions of gasoline vapor at the vehicle fill-pipe, where the vapor is captured and returned to a vapor-tight storage tank, or is destroyed; which achieves an overall control efficiency of at least 95%.

"Standard conditions" means a temperature of 20^{o}C (68^{o}F) and pressure of 760 mm Hg (29.92 in. Hg).

"Startup" means the setting in operation of a source or of its emission control or emission monitoring equipment.

"Stencil coating" means a coating which is rolled or brushed onto a template or stamp in order to add identifying letters, symbols or numbers.

"Storage Vessel" means each tank, reservoir or container used for the storage of Volatile Organic Liquids, but does not include:

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1. Frames, housing, auxiliary supports or other components that are not directly involved in the containment of liquids or vapors; or
2. Subsurface caverns or porous rock reservoirs.

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"Submerged fill" means the method of filling a delivery vessel or storage vessel where product enters within 150 millimeters (mm) (5.9 inches [in.]) of the bottom of the delivery or storage vessel. Bottom filling of delivery and storage vessels is included in this definition.

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"Substrate" means the surface onto which a coating is applied or into which a coating is impregnated.

"Throughput" means the amount of gasoline dispensed at a gasoline dispensing facility during a calendar month after November 15, 1990.

"Touch-up coating" means a coating used to cover minor coating imperfections appearing after the main coating operation.

"Transfer efficiency" means the ratio of the amount of coating solids adhering to the object being coated to the total amount of coating solids used in the application process, expressed as a percentage.

"Two-component paint" means a coating that is manufactured in two components that are mixed shortly before use. When mixed, the two liquids rapidly crosslink to form a solid composition.

"Vacuum-metalizing coating" means the undercoat applied to the substrate on which the metal is deposited or the overcoat applied directly to the metal film. Vacuum metalizing/physical vapor deposition (PVD) is the process whereby metal is vaporized and deposited on a substrate in a vacuum chamber.

"Vapor collection system" means all piping, seals, hoses, connections, pressure-vacuum vents, and other equipment between the gasoline tank truck and the vapor processing unit or the storage tanks and vapor holder.

"Vapor control system" means a system that limits or prevents release to the atmosphere of organic compounds in the vapors displaced from a tank during the transfer of gasoline.

"Vapor-mounted seal" means a primary seal mounted so there is an annular vapor space underneath the seal. The annular vapor space is bounded by the bottom of the primary seal, the tank wall, the liquid surface and the floating roof.

"Vapor recovery system" means a vapor-gathering system capable of collecting VOC vapors and gases emitted during the operation of any transfer, storage, or process equipment.

"Vapor-tight" means equipment that allows no loss of vapors. Compliance with vapor-tight requirements can be determined by checking to ensure that the concentration at a potential leak source is not equal to or greater than 100% of the LEL when measured with a combustible gas detector, calibrated with propane, at a distance of 2.54 centimeters (cm) (1 inch)from the source.

"Vapor-tight gasoline tank truck" means a gasoline tank truck that has demonstrated within the 12 preceding months that its product delivery tank will sustain a pressure change of not more than 75 mm (3.0 in.) of water within five minutes (min) after it is pressurized to 450 mm (18 in.) of water; or when evacuated to 150 mm (5.9 in.) of water, the same tank will sustain a pressure change of not more than 75 mm (3.0 in.) of water within 5 min. This capability is to be demonstrated using the test procedures specified in Method 27 of Appendix A of 40 CFR, Part 60 (July 1, 1992).

"Volatile Organic Liquid" (VOL) means any organic liquid which can emit any Volatile Organic Compound into the atmosphere (see definition of "Volatile Organic Compound" of this regulation).

"Volatile Organic Compound" (VOC) means any carbon-containing compound excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate, which participates in atmospheric photochemical reactions. This includes any organic compounds other than those defined as "Exempt Compounds", which have been determined to have negligible photochemical reactivity (see definition of "Exempt Compounds" of this regulation). In addition to the procedures for requesting a satisfactory compliance demonstration, where the Department proposes to allow the use of a test method for excluding negligibly reactive compounds that is different from or not specified in the approved SIP, such change shall be submitted to the Environmental Protection Agency (U.S. EPA) for approval as part of a SIP Revision.

"Web coating line" means all of the coating applicator or applicators, drying area or areas, or oven or ovens, located between an unwind station and a rewind station, that are used to apply coating onto a continuous strip of substrate (the web). A web coating line need not have a drying oven.

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16.0 Paper Coating
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16.1 Applicability
16.1.1 The provisions of 16.0 of this regulation apply to any paper coating unit.
16.1.2 The provisions of 16.0 of this regulation do not apply to any paper coating unit within a facility whose actual emissions without control devices from all paper coating units within the facility are less than 6.8 kilograms (kg) (15 pounds [lb]) of volatile organic compounds (VOCs) per day.
16.1.3 An owner or operator of a facility whose emissions are below the applicability threshold in 16.1.2 of this regulation shall comply with the certification, recordkeeping, and reporting requirements of 16.7.1 of this regulation.
16.1.4 Any facility that becomes or is currently subject to the provisions of 16.0 of this regulation by exceeding the applicability threshold in 16.1.2 of this regulation will remain subject to these provisions even if its emissions later fall below the applicability threshold.
16.1.5 Any facility that is currently subject to a state or federal rule promulgated pursuant to the Clean Air Act Amendments of 1977 by exceeding an applicability threshold is and will remain subject to these provisions, even if its throughput or emissions have fallen or later fall below the applicability threshold.
16.2 Definitions. As used in 16.0 of this regulation, all terms not defined herein shall have the meaning given them in the November 15, 1990 Clean Air Act Amendments (CAAA), or in 2.0 of this regulation.

"Paper coating line" means a web coating line where coating is applied to paper. Printing presses are not considered paper coating lines. Products produced on a paper coating line include, but are not limited to, adhesive tapes and labels, book covers, post cards, office copier paper, drafting paper, and pressure sensitive tapes. Paper coating lines include, but are not limited to, application by impregnation or saturation or by the use of roll, knife, or rotogravure coating.

"Paper coating unit" means a coating application station and its associated flashoff area, drying area, or oven wherein coating is applied and dried or cured on a paper coating line. A paper coating line may include more than one paper coating unit.
16.3 Standards
16.3.1 No owner or operator of a paper coating unit subject to 16.0 of this regulation shall cause, allow, or permit the application of any coating on that unit with VOC content in excess of 0.35 kilograms per liter (kg/L) (2.9 pounds per gallon [lb/gal]) of coating, excluding water and exempt compounds, as applied.
16.3.2 As an alternative to compliance with the emission limit in 16.3.1 of this regulation, an owner or operator of a paper coating unit subject to 16.0 of this regulation may meet the requirements of 16.4 or 16.5 of this regulation.
16.4 Daily-weighted average limitation. No owner or operator of a paper coating unit subject to 16.0 of this regulation shall apply, during any day, coatings on that unit whose daily-weighted average VOC content, calculated in accordance with the procedure specified in Appendix C of this regulation, exceeds the emission limit in 16.3.1 of this regulation.
16.5 Control devices

16.5.1 An owner or operator of a paper coating unit subject to 16.0 of this regulation may comply with 16.0 of this regulation by:
16.5.1.1 Installing and operating a capture system on that unit.
16.5.1.2 Installing and operating a control device on that unit.
16.5.1.3 Determining for each day the overall emission reduction efficiency needed to demonstrate compliance. The overall emission reduction needed for a day is the lesser of the value calculated according to the procedure in 3.0 of Appendix C of this regulation for that day or 95%.
16.5.1.4 Demonstrating each day that the overall emission reduction efficiency achieved for that day, as determined in 3.0 of Appendix D of this regulation, is greater than or equal to the overall emission reduction efficiency required for that day.
16.5.2 An owner or operator of a paper coating unit subject to 16.0 of this regulation shall ensure that:
16.5.2.1 A capture system and control device are operated at all times the coating unit is in operation, and the owner or operator demonstrates compliance with 16.0 of this regulation through the applicable coating analysis and capture system and control device efficiency test methods specified in Appendix B, Appendix D and Appendix E of this regulation and in accordance with the capture efficiency test methods in Appendix D of this regulation.
16.5.2.2 The control device is equipped with the applicable monitoring equipment specified in 2.0 of Appendix D of this regulation, and the monitoring equipment is installed, calibrated, operated, and maintained according to the vendor's specifications at all times the control device is in use.
16.6 Test methods. The test methods found in Appendix A through Appendix D of this regulation shall be used to determine compliance with 16.0 of this regulation.
16.7 Recordkeeping and reporting
16.7.1 An owner or operator of a paper coating unit that is exempt from the emission limitations in 16.3 of this regulation shall comply with the certification, recordkeeping, and reporting requirements in 4.2 of this regulation.
16.7.2 An owner or operator of a paper coating unit subject to 16.0 of this regulation and complying with 16.3 of this regulation by the use of complying coatings shall comply with the certification, recordkeeping, and reporting requirements in 4.3 of this regulation.
16.7.3 An owner or operator of a paper coating unit subject to 16.0 of this regulation and complying with 16.4 of this regulation by daily-weighted averaging shall comply with the certification, recordkeeping, and reporting requirements in 4.4 of this regulation.
16.7.4 An owner or operator of a paper coating unit subject to 16.0 of this regulation and complying with 16.5 of this regulation by the use of control devices shall comply with the testing, reporting, and recordkeeping requirements in 4.5 of this regulation.

23.0 Coating of Flat Wood Paneling
01/11/1993
23.1 Applicability
23.1.1 The provisions of 23.0 of this regulation apply to any flat wood paneling coating line.
23.1.2 The provisions of 23.0 of this regulation do not apply to:
23.1.2.1 Any flat wood paneling coating line within any facility whose actual emissions without control devices from all flat wood paneling coating lines within the facility are less than 6.8 kilograms (kg) (15 pounds [lb]) of volatile organic compounds (VOCs) per day.
23.1.2.2 Class I hardboard paneling finishes, particle board used in furniture, insulation board, exterior siding, tileboard, and softwood plywood coating lines.
23.1.3 An owner or operator of a facility whose emissions are below the applicability threshold in 23.1.2.1 of this regulation shall comply with the certification, recordkeeping, and reporting requirements of 23.7.1 of this regulation.
23.1.4 Any facility that becomes or is currently subject to the provisions of 23.0 of this regulation by exceeding the applicability threshold in 23.1.2.1 of this regulation will remain subject to these provisions even if its emissions later fall below the applicability threshold.
23.1.5 Any facility that is currently subject to a state or federal rule promulgated pursuant to the Clean Air Act Amendments of 1977 by exceeding an applicability threshold is and will remain

subject to these provisions, even if its throughput or emissions have fallen or later fall below the applicability threshold.

23.2 Definitions. As used in 23.0 of this regulation, all terms not defined herein shall have the meaning given them in the November 15, 1990 Clean Air Act Amendments (CAAA), or in 2.0 of this regulation.

"Class I hardboard paneling finish" means finishes that meet the specifications for Class I of Voluntary Product Standard PS-59-73 as approved by the American National Standards Institute.

"Class II hardboard paneling finish" means finishes that meet the specifications for Class II of Voluntary Product Standard PS-59-73 as approved by the American National Standards Institute.

"Flat wood paneling coating line" means a coating line used to apply and dry or cure coatings applied to one of the following flat wood paneling product categories: printed interior panels made of hardwood plywood and thin particle board (i.e., less than or equal to 0.64 centimeter (cm) (0.25 inch [in.]) in thickness); natural finish hardwood plywood panels; and hardwood paneling with Class II finishes.

"Hardboard" is a panel manufactured primarily from inter-felted ligno-cellulosic fibers that are consolidated under heat and pressure in a hot press.

"Hardwood plywood" is plywood whose surface layer is a veneer of hardwood.

"Natural finish hardwood plywood panels" means panels whose original grain pattern is enhanced by essentially transparent finishes frequently supplemented by fillers and toners.

"Printed interior panels" means panels whose grain or natural surface is obscured by fillers and basecoats upon which a simulated grain or decorative pattern is printed.

"Thin particleboard" is a manufactured board that is 0.64 cm (0.25 in.) or less in thickness made of individual wood particles that have been coated with a binder and formed into flat sheets by pressure.

"Tileboard" means paneling that has a colored, waterproof surface coating.

23.3 Standards

23.3.1 No owner or operator of a flat wood paneling coating line subject to 23.0 of this regulation shall cause or allow, on any day, VOC emissions from the coating of any one of the following flat wood paneling product categories in excess of the emission limits in 23.3.1.1 though 23.3.1.2 of this regulation:

Flat wood paneling product category§		kg/100m^{2a}§	lb/1,000ft^{2a}§
23.3.1.1	Printed interior panels	2.9	6.0
23.3.1.2	Natural finish hardwood plywood panels	5.8	12.0
23.3.1.3 §	Class I finish on hardboard panels §	4.8 §	10.0 §

[a] VOC content values are expressed in units of mass of VOC (kg, lb) per area of coated finished product (100 square meters [m2], 1,000 square feet [ft2])

23.3.2 As an alternative to compliance with the emission limits in 23.3.1 of this regulation, an owner or operator of a flat wood paneling coating line may meet the requirements of 23.5 of this regulation.

23.4 [Reserved]

23.5 Control devices

23.5.1 An owner or operator of a flat wood paneling coating line subject to 23.0 of this regulation may comply with 23.0 of this regulation by:

23.5.1.1 Installing and operating a capture system on that line.

23.5.1.2 Installing and operating a control device on that line.

23.5.1.3 Determining for each day the overall emission reduction efficiency needed to demonstrate compliance. The overall emission reduction needed for a day is the lesser of the value calculated according to the procedure in 23.6.2 of this regulation for that day or 95%.

23.5.1.4 Demonstrating each day that the overall emission reduction efficiency achieved for that day, as determined in 5.0 of Appendix D of this regulation, is greater than or equal to the overall emission reduction efficiency required for that day.

23.5.2 An owner or operator of a flat wood paneling coating line subject to 23.0 of this regulation shall ensure that:

23.5.2.1 A capture system and control device are operated at all times that the line is in operation, and the owner or operator demonstrates compliance with 23.0 of this regulation through the applicable coating analysis and capture system and control device efficiency test methods specified in Appendix B, Appendix D and Appendix E of this regulation and in accordance with the capture efficiency test methods in Appendix D of this regulation.

23.5.2.2 The control device is equipped with the applicable monitoring equipment specified in 2.0 of Appendix D of this regulation, and the monitoring equipment is installed, calibrated, operated, and maintained according to the vendor's specifications at all times the control device is in use.

23.6

23.6.1 Test methods. The test methods found in 23.6 of this regulation and in Appendix A, Appendix B and Appendix D of this regulation shall be used to determine compliance.

23.6.2 Overall emission reduction efficiency for control systems. The required overall emission reduction efficiency of the control system for the day shall be calculated according to the following equation:

$$E = \left[\frac{(VOC_a - S)}{VOC_a}\right] \times 100$$

(23-1)

where:

E = The required overall emission reduction efficiency of the control system for the day.

VOC_a = The maximum VOC content of the coatings, as applied, used each day on a coating line in units of kg VOC/100 m^2 of coated finished product (lb VOC/ 1,000 ft^2), as determined by the applicable test methods and procedures specified in Appendix B of this regulation.

S = VOC emission limitation in terms of kg VOC/100 m^2 of coated finished product (lb VOC/1,000 ft^2).

23.7 Recordkeeping and reporting

23.7.1 Requirements for coating sources exempt from emission limitations. An owner or operator of a flat wood paneling coating line that is exempt from the emission limitations of 23.3 of this regulation because combined VOC emissions on any day from all flat wood paneling coating lines at the facility are below the applicability threshold specified in 23.1.2.1 of this regulation, before the application of capture systems and control devices, shall comply with the following:

23.7.1.1 Certification. By November 15, 1993, the owner or operator of a facility referenced in 23.7.1 of this regulation shall certify to the Department that the facility is exempt by providing the following:

23.7.1.1.1 The name and location of the facility.

23.7.1.1.2 The address and telephone number of the person responsible for the facility.

23.7.1.1.3 A declaration that the facility is exempt from the emission limitations of 23.3 of this regulation because combined VOC emissions on any day from all flat wood paneling coating lines at the facility are below the applicability threshold before the application of capture systems and control devices. The following equation shall be used to calculate total VOC emissions for that day:

$$T = \sum_{i=1}^{n} C_i D_i a$$

(23-2)

where:

T = Total VOC emissions from coating lines at the facility for each category of flat wood paneling (as specified in 23.3.1 of this regulation) before the application of capture systems and control devices in units of kg VOC/day (lb VOC/day).

n = Number of different coatings applied on each coating line at the facility.

i = Subscript denoting an individual coating.

C = Mass of VOC per area of coated finished product in units of kg VOC/100 m^2 (lb VOC/1,000 ft^2).

D = The surface area coated at the facility each day in units of m^2/day (ft^2/day).

a = Constant = 100 m^2 if using metric units.

= 1,000 ft^2 if using English units.

23.7.1.2 Recordkeeping. On and after November 15, 1993, the owner or operator of a facility referenced in 23.7.1 of this regulation shall collect and record all of the following information each day and maintain the information at the facility for a period of five years:

23.7.1.2.1 The name and identification number of each coating, as applied, used to coat each type of flat wood paneling product.

23.7.1.2.2 The volume of coating (i) (excluding water and exempt compounds), as applied, used each day to coat each type of flat wood paneling product (specified in 23.3.1 of this regulation), and the surface area coated each day of each type of flat wood paneling product.

23.7.1.2.3 The total VOC emissions at the facility, as calculated using the equation under 23.7.1.1.3 of this regulation.

23.7.1.3 Reporting. On and after November 15, 1993, the owner or operator of a facility referenced in 23.7.1 of this regulation shall notify the Department of any record showing that combined VOC emissions from all coating lines at the coating facility exceed 6.8 kg (15 lb) on any day, before the application of capture systems and control devices. A copy of such record shall be sent to the Department within 45 calendar days after the exceedance occurs. This requirement is in addition to any other exceedance reporting requirements mandated by the State of Delaware.

23.7.2 Requirements for coating sources using complying coatings. An owner or operator of a flat wood paneling coating line subject to 23.0 of this regulation and complying with 23.3 of this regulation by means of the use of complying coatings shall comply with the following:

23.7.2.1 Certification. By November 15, 1993, or upon startup of a new coating line, or upon changing the method of compliance for an existing coating line from control devices to the use of complying coatings, the owner or operator of a coating line referenced in 23.7.2 of this regulation shall certify to the Department that the coating line is or will be in compliance with the requirements of the applicable section of this regulation on and after November 15, 1993, or on and after the initial startup date. Such certification shall include:

23.7.2.1.1 The name and location of the facility.

23.7.2.1.2 The address and telephone number of the person responsible for the facility.

23.7.2.1.3 Identification of subject sources.

23.7.2.1.4 The name and identification number of each coating, as applied, used to coat each type of flat wood paneling product.

23.7.2.1.5 The mass of VOC per area of coated finished product for each type of flat wood paneling product (specified in 23.3.1 of this regulation) in terms of kg VOC/100 m2 (lb VOC/1,000 ft2) and the surface area coated each day of each type of flat wood paneling product.

23.7.2.2 Recordkeeping. On and after November 15, 1993, or on and after the initial startup date, the owner or operator of a coating line referenced in 23.7.2 of this regulation and complying by the use of complying coatings shall collect and record all of the following information each day for each coating line and maintain the information at the facility for a period of five years:

23.7.2.2.1 The name and identification number of each coating, as applied, used to coat each type of flat wood paneling product.

23.7.2.2.2 The mass of VOC per area of coated finished product for each type of flat wood paneling product (specified in 23.3.1 of this regulation) for each coating used each day in terms of kg VOC/100 m2 (lb VOC/1,000 ft2) and the surface area coated each day of each type of flat wood paneling product.

23.7.2.3 Reporting. On and after November 15, 1993, the owner or operator of a flat wood paneling coating line referenced in 23.7.2 of this regulation shall notify the Department in either of the following instances:

23.7.2.3.1 Any record showing use of any noncomplying coatings shall be reported by sending a copy of such record to the Department within 45 calendar days following that use. This

reporting requirement is in addition to any other exceedance reporting mandated by the State of Delaware.

23.7.2.3.2 At least 30 calendar days before changing the method of compliance from the use of complying coatings to control devices, the owner or operator shall comply with all requirements of 23.7.3.1 of this regulation, as well as 7 DE Admin. Code 1102. Upon changing the method of compliance from the use of complying coatings to control devices, the owner or operator shall comply with all requirements of the section applicable to the coating line referenced in 23.7.3 of this regulation.

23.7.3 Requirements for coating sources using control devices. Any owner or operator of a flat wood paneling coating line subject to 23.0 of this regulation and complying with 23.3 of this regulation by the use of control devices shall comply with the following:

23.7.3.1 Testing of control equipment. By November 15, 1993, or upon startup of a new coating line, or upon changing the method of compliance for an existing coating line from the use of complying coatings to control devices, the owner or operator of the subject coating line shall perform a compliance test. Testing shall be performed within 90 days of startup, and pursuant to the procedures in Appendix A, Appendix B and Appendix D of this regulation and 23.6 of this regulation. The owner or operator of the subject coating line shall submit to the Department the results of all tests and calculations necessary to demonstrate that the subject coating line is or will be in compliance with the applicable section of this regulation on and after November 15, 1993, or on and after the initial startup date.

23.7.3.2 Recordkeeping. On and after November 15, 1993, or on and after the initial startup date, the owner or operator of a coating line referenced in 23.7.3 of this regulation shall collect and record all of the following information each day for each coating line and maintain the information at the facility for a period of five years:

23.7.3.2.1 The name and identification number of each coating used on each coating line, as applied, used to coat each type of flat wood paneling product.

23.7.3.2.2 The mass of VOC per area of coated finished product for each type of flat wood paneling product (specified in 23.3.1 of this regulation) in terms of kg VOC/100 m2 (lb VOC/1,000 ft2), and the surface area coated each day of each type of flat wood paneling product.

23.7.3.2.3 The maximum VOC content of the coatings, as applied, used each day (mass of VOC per area of coated finished product in terms of kg VOC/100 m2 [lb VOC/1,000 ft2]).

23.7.3.2.4 The required overall emission reduction efficiency for each day for each coating line as determined in 23.6.2 of this regulation.

23.7.3.2.5 The actual overall emission reduction efficiency achieved for each day for each coating line as determined in 3.0 of Appendix D of this regulation.

23.7.3.2.6 Control device monitoring data.

23.7.3.2.7 A log of operating time for the capture system, control device, monitoring equipment, and the associated coating line.

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

23.7.3.2.9 For thermal incinerators, all 3-hour periods of operation in which the average combustion temperature was more than 28°C (50°F) below the average combustion temperature during the most recent performance test that demonstrated that the facility was in compliance. The combustion chamber set-point shall be no less than that during the most recent performance test that demonstrated that the facility was in compliance.

23.7.3.2.10 For catalytic incinerators, all three-hour periods of operation in which the average temperature of the process vent stream immediately before the catalyst bed is more than 28°C (50°F) below the average temperature of the process vent stream immediately before the catalyst bed during the most recent performance test that demonstrated that the facility was in compliance. The set-point for the process vent stream immediately before the catalyst bed shall be no less than that during the most recent performance test that demonstrated that the facility was in compliance.

23.7.3.2.11 For carbon adsorbers, all three-hour periods of operation during which either the average VOC concentration or the reading of organics in the exhaust gases is more than 20% greater than the average exhaust gas concentration or reading measured by the organics

monitoring device during the most recent determination of the recovery efficiency of the carbon adsorber that demonstrated that the facility was in compliance.

23.7.3.3 Reporting. On and after November 15, 1993, the owner or operator of a subject coating line referenced in 23.7.3 of this regulation shall notify the Department in the following instances:

23.7.3.3.1 Any record showing noncompliance with the applicable requirements for control devices shall be reported by sending a copy of the record to the Department within 45 calendar days following the occurrence. This requirement is in addition to any other exceedance reporting mandated by the State of Delaware.

23.7.3.3.2 At least 30 calendar days before changing the method of compliance from control devices to the use of complying coatings, the owner or operator shall comply with all requirements of 23.7.2.1 of this regulation, and 7 DE Admin. Code 1102. Upon changing the method of compliance from control devices to the use of complying coatings, the owner or operator shall comply with all requirements of the Section applicable to the coating line referenced in 23.7.2 of this regulation.

37.0 Graphic Arts Systems

11/29/1994

37.1 Applicability

37.1.1 The provisions of 37.0 of this regulation apply to any packaging rotogravure, publication rotogravure, or flexographic printing press at any facility whose maximum theoretical emissions of volatile organic compounds (VOCs) (including solvents used to clean each of these printing presses) without control devices from all printing presses are greater than or equal to 7.7 tons per year.

37.1.2 An owner or operator of a facility whose emissions are below the applicability threshold in 37.1.1 of this regulation shall comply with the certification, recordkeeping, and reporting requirements of 37.7.1 of this regulation.

37.1.3 Any facility that becomes or is currently subject to the provisions of 37.0 of this regulation by exceeding the applicability threshold in 37.1.1 of this regulation will remain subject to these provisions even if its emissions later fall below the applicability threshold.

37.1.4 Any facility that is currently subject to a state or federal rule promulgated pursuant to the Clean Air Act Amendments of 1977 by exceeding an applicability threshold is and will remain subject to these provisions, even if its throughput or emissions have fallen or later fall below the applicability threshold.

37.2 Definitions. As used in 37.0 of this regulation, all terms not defined herein shall have the meaning given them in the November 15, 1990 Clean Air Act Amendments, or in 2.0 of this regulation.

“Flexographic printing press” means a printing press that uses 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.

“Packaging rotogravure printing press” means a rotogravure printing press used to print on paper, paper board, metal foil, plastic film, and other substrates that are, in subsequent operations, formed into packaging products and labels, and other nonpublication products.

“Press-Ready Ink” means ink, as applied to a substrate, after all solvents and diluents have been added.

“Printing press” means equipment used to apply words, pictures, or graphic designs to either a continuous substrate or a sheet. A continuous substrate consists of paper, plastic, or other material that is unwound from a roll, passed through coating or ink applicators and any associated drying areas. The press includes all coating and ink applicators and drying areas between unwind and rewind of the continuous substrate. A sheet consists of paper, plastic, or other material that is carried through the process on a moving belt. The press includes all coating and ink applicators and drying operations between the time that the sheet is put on the moving belt until it is taken off.

“Publication rotogravure printing press” means a rotogravure printing press on which the following paper products are printed:

1. Catalogues, including mail order and premium.

2. Direct mail advertisements, including circulars, letters, pamphlets, cards, and printed envelopes.

3. Display advertisements, including general posters, outdoor advertisements, car cards, window posters; counter and floor displays; points-of-purchase, and other printed display material.

4. Magazines, books.

5. Miscellaneous advertisements, including brochures, pamphlets, catalogue sheets, circular folders, announcements, package inserts, book jackets, market circulars magazine inserts, and shopping news.

6. Newspapers, magazine and comic supplements for newspapers, and preprinted newspaper inserts, including hi-fi and spectacolor rolls and Sections.

7. Periodicals.

8. Telephone and other directories, including business reference services.

"Roll printing" means the application of words, designs, and pictures to a substrate, usually by means of a series of rolls each with only partial coverage.

"Rotogravure printing press" means any printing press designed to print on a substrate using a gravure cylinder.

37.3 Standards

37.3.1 No owner or operator of a packaging rotogravure or flexographic printing press subject to 37.0 of this regulation shall apply any coating or ink unless the VOC content is equal to or less than one of the following:

37.3.1.1 40% VOC by volume of the coating or ink, excluding water and exempt compounds, as applied.

37.3.1.2 25% VOC by volume of the volatile content in the coating or ink, as applied.

37.3.1.3 0.5 kilogram (kg) VOC per kg (0.5 pound [lb] VOC per lb) coating solids, as applied.

37.3.2 No owner or operator of a publication rotogravure printing press subject to 37.0 of this regulation shall apply any coating or ink unless the VOC content is equal to or less than one of the following:

37.3.2.1 40% VOC by volume of the coating or ink, excluding water and exempt compounds, as applied.

37.3.2.2 25% VOC by volume of the volatile content in the coating or ink, as applied.

37.3.3 As an alternative to compliance with the limits in 37.3.1 or 37.3.2 of this regulation, an owner or operator of a packaging rotogravure, publication rotogravure, or flexographic printing press may comply with the requirements of this regulation by meeting the requirements of 37.4 or 37.5 of this regulation.

37.4 Daily-weighted average limitations

37.4.1 No owner or operator of a packaging rotogravure, publication rotogravure, or flexographic printing press shall apply, during any day, coatings or inks on the subject printing press unless the daily-weighted average, by volume, VOC content of all coatings and inks, as applied, each day on the subject printing press is equal to or less than the limitation specified in either 37.3.1.1 or 37.3.2.1 (as determined by 37.4.4); 37.3.1.2 or 37.3.2.2 (as determined by 37.4.5); or, in the case of packaging rotogravure or flexographic printing, 37.3.1.3 (as determined by 37.4.6) of this regulation.

37.4.2 An owner or operator may comply with the daily-weighted average limitation by grouping coatings or inks used on a printing press into two categories that meet the conditions in 37.4.2.1 and 37.4.2.2 of this regulation. Any use of averaging between the two categories of coating or inks used on a packaging rotogravure press or on a flexographic press requires compliance with the emission standard in 37.3.1.3 of this regulation, as determined by the equation in 37.4.6 of this regulation.

37.4.2.1 The daily-weighted average VOC content for the first category shall comply with 37.3.1.1 or 37.3.2.1 of this regulation, as determined by applying the equation in 37.4.4 of this regulation to the coatings or inks in this first category.

37.4.2.2 The daily weighted-average VOC content for the second category shall comply with 37.3.1.2 or 37.3.2.2 of this regulation, as determined by applying the equation in 37.4.5 of this regulation to the coatings or inks in this second category.

37.4.3 Compliance with 37.0 of this regulation shall be demonstrated through the applicable coating or ink analysis test methods and procedures specified in Appendix B of this regulation and the recordkeeping and reporting requirements specified in 37.7.3 of this regulation.
37.4.4 The following equation shall be used to determine if the weighted average VOC content of all coatings and inks, as applied, each day on the subject printing press exceeds the limitation specified in 37.3.1.1 or 37.3.2.1 of this regulation:

$$VOC_{(i)(A)} = \frac{\sum_{i=1}^{n} L_i V_{VOCi}}{\sum_{i=1}^{n} L_i (V_{si} + V_{VOCi})} \times 100$$

(37-1)

where:

$VOC_{(i)(A)}$ = The weighted average VOC content in units of percent VOC by volume of all coatings and inks (excluding water and exempt compounds) used each day.

i = Subscript denoting a specific coating or ink, as applied.

n = The number of different coatings or inks, as applied, each day on a printing press.

L_i = The liquid volume of each coating or ink, as applied, used that day in units of liters (L) (gallons [gal]).

V_{si} = The volume fraction of solids in each coating or ink, as applied.

V_{VOCi} = The volume fraction of VOC in each coating or ink, as applied.

37.4.5 The following equation shall be used to determine if the weighted average VOC content of all coatings and inks, as applied, each day on the subject printing press exceeds the limitation specified in 37.3.1.2 or 37.3.2.2 of this regulation:

$$VOC_{(i)(B)} = \frac{\sum_{i=1}^{n} L_i V_{VOCi}}{\sum_{i=1}^{n} L_i (V_{VCi})} \times 100$$

(37-2)

where:

$VOC_{(i)(B)}$ = The weighted average VOC content in units of percent VOC by volume of the volatile content of all coatings and inks used each day.

i = Subscript denoting a specific coating or ink, as applied.

n = The number of different coatings or inks, as applied, each day on each printing press.

L_i = The liquid volume of each coating or ink, as applied, in units of L (gal).

V_{VOCi} = The volume fraction of VOC in each coating or ink, as applied.

V_{VCi} = The volume fraction of volatile matter in each coating or ink, as applied.

37.4.6 The following equation shall be used to determine if the weighted average VOC content of all coatings and inks, as applied, each day on the subject printing press exceeds the limitation specified in 37.3.1.3 of this regulation:

$$VOC_{(i)(C)} = \frac{\sum_{i=1}^{n} L_i D_i W_{VOCi}}{\sum_{i=1}^{n} L_i D_i W_{si}}$$

(37-3)

where:

$VOC_{(i)(C)}$ = The weighted average VOC content in units of mass of VOC per mass of coating solids.

i = Subscript denoting a specific coating or ink, as applied.

n = The number of different coatings or inks, as applied, each day on a printing press.

L_i = The liquid volume of each coating or ink, as applied, used on the day in units of L (gal).

D_i = The density of each, as applied, in units of mass of coating or ink per unit volume of coating or ink.

W_{VOCi} = The weight fraction of VOC in each coating or ink, as applied.

W_{si} = The weight fraction of solids in each coating or ink, as applied.

37.5 Control devices

37.5.1 No owner or operator of a packaging rotogravure, publication rotogravure, or flexographic printing press equipped with a control system shall operate the printing press unless the owner or operator meets one of the requirements under 37.5.1.1 and 37.5.1.2 of this regulation.

37.5.1.1

37.5.1.1.1 A carbon adsorption control device is used that reduces the VOC emissions delivered from the capture system to the control device by at least 90% by weight.

37.5.1.1.2 An incineration control device is used to reduce VOC emissions delivered from the capture system to the control device by at least 90%, by weight.

37.5.1.1.3 Any other VOC emission control device is used to reduce the VOC emissions delivered from the capture system to the control device by at least 90%.

37.5.1.2 The printing press is equipped with a capture system and control device that provides an overall emission reduction efficiency of at least:

37.5.1.2.1 75% for a publication rotogravure printing press.

37.5.1.2.2 65% for a packaging rotogravure printing press.

37.5.1.2.3 60% for a flexographic printing press.

37.5.2 An owner or operator of a packaging rotogravure, publication rotogravure, or flexographic printing press equipped with a control system shall ensure that:

37.5.2.1 A capture system and control device are operated at all times that the printing press is in operation, and the owner or operator demonstrates compliance with 37.0 of this regulation through the applicable coating analysis and capture system and control device efficiency test methods specified in Appendix B, Appendix D and Appendix E of this regulation and in accordance with the capture efficiency test methods in Appendix D of this regulation.

37.5.2.2 The control device is equipped with the applicable monitoring equipment specified in 2.0 of Appendix D of this regulation, and the monitoring equipment is installed, calibrated, operated, and maintained according to the vendor's specifications at all times the control device is in use.

37.6 Test methods. The VOC content of each coating and ink and the efficiency of each capture system and control device shall be determined by the applicable test methods and procedures specified in Appendix A through Appendix D of this regulation to establish the records required under 37.7 of this regulation.

37.7 Recordkeeping and reporting

37.7.1 Requirements for exempt sources. By November 15, 1993, any owner or operator of a printing press that is exempt from the requirements of 37.0 of this regulation because of the criteria in 37.1 of this regulation shall comply with the following:

37.7.1.1 Initial certification. The owner or operator shall certify to the Department that the facility is exempt under the provisions of 37.1 of this regulation. Such certification shall include:

37.7.1.1.1 The name and location of the facility.

37.7.1.1.2 The address and telephone number of the person responsible for the facility.

37.7.1.1.3 A declaration that the facility is exempt from 37.0 of this regulation because of the criteria in 37.1 of this regulation.

37.7.1.1.4 Calculations demonstrating that total potential emissions of VOC from all flexographic and rotogravure printing presses at the facility are and will be less than 7.7 tons per year of press-ready ink, before the application of capture systems and control devices. Total potential emissions of VOC for a flexographic or rotogravure printing facility is the sum of potential emissions of VOC from each flexographic and rotogravure printing press at the facility. The following equation shall be used to calculate total potential emissions of VOC per calendar year before the application of capture systems and control devices for each flexographic and rotogravure printing press at the facility:

$$E_P = A \times B$$

(37-4)

where:

E_P = Total potential emissions of VOC from one flexographic or rotogravure printing press in units of kilograms per year (kg/yr) (pounds per year [lb/ yr]).

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

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

37.7.1.2 Recordkeeping. The owner or operator shall collect and record all of the following information each year for each printing press and maintain the information at the facility for a period of five years:

37.7.1.2.1 The name and identification number of each coating and ink, as applied, each year on each printing press.

37.7.1.2.2 The weight of VOC per volume of coating solids and the volume of solids of each coating and ink, as applied, each year on each printing press.

37.7.1.2.3 The total potential emissions as calculated in 37.7.1.1.4 of this regulation using VOC content for that year.

37.7.1.3 Reporting. Any record showing that total potential emissions of VOC from all printing presses exceed 7.7 tons per year of press-ready ink in any calendar year before the application of capture systems and control devices shall be reported by sending a copy of such record to the Department within 45 calendar days after the exceedance occurs. This requirement is in addition to any other State of Delaware exceedance reporting requirements.

37.7.2 Requirements for sources using complying coatings or inks. Any owner or operator of a printing press subject to 37.0 of this regulation and complying by means of use of complying coatings or inks, shall comply with the following:

37.7.2.1 Initial certification. By November 15, 1993, or upon initial startup of a new printing press, or upon changing the method of compliance for an existing subject printing press from daily-weighted averaging or control devices to use of complying coatings or inks, the owner or operator of a subject printing press shall certify to the Department that the printing press will be in compliance with 37.3.1 or 37.3.2 of this regulation on and after November 15, 1993, or on and after the initial startup date. Such certification shall include:

37.7.2.1.1 The name and location of the facility.

37.7.2.1.2 The address and telephone number of the person responsible for the facility.

37.7.2.1.3 Identification of subject sources.

37.7.2.1.4 The name and identification number of each coating and ink, as applied.

37.7.2.1.5 The VOC content of all coatings and inks, as applied.

37.7.2.2 Recordkeeping. By November 15, 1993, or on and after the initial startup date, the owner or operator of a printing press subject to the limitations of 37.0 of this regulation and complying by means of 37.3.1.1 or 37.3.2.1 of this regulation shall collect and record all of the following information each day for each printing press and maintain the information at the facility for a period of five years

37.7.2.2.1 The name and identification number of each coating and ink, as applied.

37.7.2.2.2 The VOC content of each coating and ink, as applied, expressed in units necessary to determine compliance.

37.7.2.3 Reporting.

37.7.2.3.1 Any record showing an exceedance of the VOC contents of 37.3.1 or 37.3.2 of this regulation shall be reported by the owner or operator of the subject printing press to the Department within 45 calendar days following the exceedance, in addition to complying with any other applicable reporting requirements.

37.7.2.3.2 At least 30 calendar days before changing the method of compliance with 37.0 of this regulation from the use of complying coatings to daily-weighted averaging or control devices, the owner or operator shall comply with all requirements of 37.7.3.1 or 37.7.4.1 of this regulation, respectively, as well as the requirements of 7 DE Admin. Code 1102. Upon changing the method

of compliance with 37.0 of this regulation from the use of complying coatings to daily-weighted averaging or control devices, the owner or operator shall comply with all requirements of 37.7.3 or 37.7.4 of this regulation, respectively.

37.7.3 Requirements for sources using daily-weighted averaging. Any owner or operator of a printing press subject to the limitations of 37.0 of this regulation and complying by means of daily-weighted averaging shall comply with the following:

37.7.3.1 Initial certification. By November 15, 1993, or upon initial startup of a new printing press, or upon changing the method of compliance for an existing subject press from use of complying coating or control devices to daily-weighted averaging, the owner or operator of the subject printing press shall certify to the Department that the printing press will be in compliance with 37.4 of this regulation on and after November 15, 1993, or on and after the initial startup date. Such certification shall include:

37.7.3.1.1 The name and location of the facility.

37.7.3.1.2 The address and telephone number of the person responsible for the facility.

37.7.3.1.3 The name and identification of each printing press that will comply by means of 37.4 of this regulation.

37.7.3.1.5 The name and identification number of each coating and ink available for use on each printing press.

37.7.3.1.6 The VOC content of each coating and ink, as applied, each day on each printing press, expressed in units necessary to determine compliance.

37.7.3.1.7 The instrument or method by which the owner or operator will accurately measure or calculate the volume of each coating and ink, as applied, each day on each printing press.

37.7.3.1.8 The method by which the owner or operator will create and maintain records each day as required in 37.7.3.2 of this regulation.

37.7.3.1.9 An example of the format in which the records required in 37.7.3.2 of this regulation will be kept.

37.7.3.2 Recordkeeping. On and after November 15, 1993, or on and after the initial startup date, the owner or operator of a printing press subject to the limitations of 37.0 of this regulation and complying by means of daily-weighted averaging shall collect and record all of the following information each day for each printing press and maintain the information at the facility for a period of five years:

37.7.3.2.1 The name and identification number of each coating and ink, as applied, on each printing press.

37.7.3.2.2 The VOC content and the volume of each coating and ink, as applied, each day on each printing press, expressed in units necessary to determine compliance.

37.7.3.2.3 The daily-weighted average VOC content of all coatings and inks, as applied, on each printing press.

37.7.3.3 Reporting. On and after November 15, 1993, the owner or operator of a subject printing press shall notify the Department in the following instances:

37.7.3.3.1 Any record showing noncompliance with 37.4 of this regulation shall be reported by sending a copy of such record to the Department within 45 calendar days following the occurrence. This requirement is in addition to any other State of Delaware exceedance reporting requirements.

37.7.3.3.2 At least 30 calendar days before changing the method of compliance with 37.0 of this regulation from daily-weighted averaging to use of complying coatings or control devices, the owner or operator shall comply with all requirements of this regulation, respectively, as well as 7 DE Admin. Code 1102. Upon changing the method of compliance with 37.0 of this regulation from daily-weighted averaging to use of complying coatings or control devices, the owner or operator shall comply with all requirements of 37.7.2 or 37.7.4 of this regulation, respectively.

37.7.4 Requirements for sources using control devices. Any owner or operator of a printing press subject to 37.0 of this regulation and complying by means of control devices shall comply with 4.5 of this regulation and the following:

37.7.4.1 Initial certification. By November 15, 1993, or upon initial startup of a new printing press, or upon changing the method of compliance for an existing printing press from use of complying coatings or daily-weighted averaging to control devices, the owner or operator of the subject printing press shall perform all tests and submit to the Department the results of all tests

and calculations necessary to demonstrate that the subject printing press will be in compliance with 37.5 of this regulation, on and after November 15, 1993, or on and after the initial startup date.

37.7.4.2 Recordkeeping. On and after November 15, 1993, or on and after the initial startup date, the owner or operator of a printing press subject to the limitations of 37.0 of this regulation and complying by means of control devices shall collect and record all of the following information each day for each printing press and maintain the information at the facility for a period of five years:

37.7.4.2.1 Control device monitoring data.

37.7.4.2.2 A log of operating time for the capture system, control device, monitoring equipment and the associated printing press.

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

37.7.4.3 Reporting. On and after November 15, 1993, the owner or operator of a subject printing press shall notify the Department in the following instances:

37.7.4.3.1 Any record showing non-compliance with 37.5 of this regulation shall be reported by sending a copy of such record to the Department within 45 calendar days following the occurrence. This requirement is in addition to any other State of Delaware exceedance reporting requirements.

37.7.4.3.2 At least 30 calendar days before changing the method of compliance with 37.0 of this regulation from control devices to use of complying coatings or daily-weighted averaging, the owner or operator shall comply with all requirements of 37.7.2.1 or 37.7.3.1 of this regulation, respectively, as well as 7 DE Admin. Code 1102. Upon changing the method of compliance with 37.0 of this regulation from control devices to use of complying coatings or daily-weighted averaging, the owner or operator shall comply with all requirements of 37.7.2 or 37.7.3 of this regulation, respectively.

45.0 Industrial Cleaning Solvents.

11/29/1994

45.1 Applicability.

45.1.1 The provisions of 45.0 of this regulation apply to all sources that use organic solvents for the purpose of cleaning. The provisions of 45.3, 45.4, and 45.5 of this regulation do not apply to the following sources:

45.1.1.1 Any source that is covered under 33.0, Solvent Metal Cleaning, of this regulation.

45.1.1.2 Any non-manufacturing area cleaning operation.

45.1.1.3 Any non-routine maintenance of manufacturing facilities and equipment.

45.1.1.4 Any source that uses less than 4,540 kilograms (five tons) of cleaning solvent per year.

45.1.2 Any facility that becomes or is currently subject to the provisions of 45.0 of this regulation by exceeding the applicability threshold in 45.1.1.4 of this regulation shall remain subject to these provisions even if its emissions later fall below the applicability threshold.

45.1.3 Any facility that is currently subject to a state or federal rule promulgated pursuant to the Clean Air Act Amendments of 1977 by exceeding an applicability threshold is and shall remain subject to these provisions, even if its throughput or emissions later fall below the applicability threshold.

45.1.4 Existing sources shall comply with this regulation upon promulgation. New, reconstructed, or modified sources shall comply with the requirements of this regulation beginning fifteen months after startup and shall follow the time schedule for the solvent usage study, screening tests, and trial evaluations as specified in 45.0 of this regulation.

45.2 Definitions. As used in 45.0 of this regulation, all terms not defined herein shall have the meaning given them in the November 15, 1990 Clean Air Act Amendments (CAAA), or in 2.0 this regulation.

“Cleaning activity” means the physical removal of foreign material from substrate that is being cleaned.

“Cleaning of external surface” means the act of applying a solvent to an external surface for cleaning. The cleaning activities may include, but are not limited to, wiping and spraying. Unit operation systems in this category include, but are not limited to, floor cleaning, equipment cleaning, large manufactured component cleaning, small manufactured component cleaning, and spray-booth cleaning.

“Cleaning of internal surface” means the act of applying a solvent to an interior surface for cleaning. The cleaning activities may include, but are not limited to, flushing, purging, and spraying. Unit operation systems in this category include, but are not limited to, line cleaning, tank cleaning, spray-gun cleaning, and spray-booth cleaning.

“Dipping” means immersing an item in a container of solvent to remove contaminants or residue.

“Equipment, facility, and procedural change” means the use of alternative cleaning techniques and procedures, such as the use of high-pressure water equipment to reduce solvent stripping, floor scrubbers, removable or replaceable equipment covers, improved containment of volatile organic compounds (VOCs) from materials in storage/transfer/use, improved reclaim/reuse/recycle procedures, etc.

“Flushing” means pumping a solvent from a reservoir through a pipe or hose or through equipment (e.g., pipes, hoses, tanks) to remove contaminants or residue.

“Material change” means the use of caustic cleaners, cleaners with a low VOC content or low vapor pressure, peelable-type equipment/structure coatings, etc.

“Non-manufacturing area cleaning” means the cleaning of cafeterias, laboratories, pilot facilities, restrooms, office buildings, etc.

“Parts cleaning” means the spraying or wiping of solvent on a part or the dipping of a part in solvent for cleaning. Unit operation systems in this category include, but are not limited to, small manufactured component cleaning, tool cleaning, and maintenance equipment cleaning.

“Purging” means the cleaning of the interior of a spray gun and other attached equipment (e.g., hoses, paint cups) cleaned simultaneously with the spray gun.

“Spraying” means the application of a cleaning solvent to a surface through a nozzle.

“Unit operation system (UOS)’ means the ensemble of equipment around which a material balance is performed. A UOS includes all possible points/sources that could result in losses to the atmosphere as a result of its being cleaned, including losses during dispensing of solvent, losses from residual solvent on or in cleaning tools (such as rags), losses from solvent storage, etc. An item of equipment used for cleaning parts by definition is a unit operation; therefore, carry-out losses during removal of cleaned parts shall be considered in a material balance. A UOS may include more than one cleaning activity that, by itself, could be classified as a UOS.

45.3 Standards.

45.3.1 Solvent Usage Study. An owner or operator of a source that uses organic solvents for the purpose of cleaning shall conduct a Solvent Usage Study in accordance with the following procedures:

45.3.1.1 Each type of cleaning operation involving the use of an organic solvent shall be categorized as one or more of the following operations:

45.3.1.1.1 Cleaning of internal surfaces.

45.3.1.1.2 Cleaning of external surfaces.

45.3.1.1.3 Parts cleaning.

45.3.1.2 Each type of cleaning operation involving the use of an organic solvent shall be defined as a UOS that has a theoretical system boundary such that all solvent inputs, outputs, and evaporative losses may be calculated using a simple mass balance equation. The owner or operator shall submit the following information for each UOS as part of the Solvent Usage Study:

45.3.1.2.1 Engineering drawings or sketches of all UOSs. The drawings or sketches shall indicate a system boundary, solvent input or inputs, solvent output or outputs, and solvent evaporative loss points.

45.3.1.2.2 One mass balance equation, or equivalent, per UOS. Each equation shall have variables sufficient for calculating total VOC emissions from the UOS.

45.3.1.2.3 A quantification of total VOC emissions from each UOS.

45.3.1.2.4 Any relevant assumptions or approximations made in defining each UOS.

45.3.1.3 The Solvent Usage Study shall be completed and submitted to the Department within three months of the promulgation of 45.0 of this regulation.

45.3.2 Screening Tests. An owner or operator of a source that uses organic solvents for the purpose of cleaning shall conduct Screening Tests to evaluate the performance of alternative (aqueous or lower VOC) cleaning solutions in accordance with the following procedures:

45.3.2.1 Screening Tests shall evaluate alternative cleaning solutions as possible substitutes for the current solvents used in the three cleaning operations, or UOSs, identified as the largest sources (or the number identified, if less than three) of uncontrolled VOC emissions by the Solvent Usage Study described in 45.3.1 of this regulation.

45.3.2.2 Screening Tests shall be performed using one, or a combination of, the test methods presented in 45.4 of this regulation. A Screening Test Plan shall be submitted to the Department for review within six months of the promulgation of 45.0 of this regulation. The Department will accept, modify, or reject the Screening Test Plan within 90 days of receiving the plan. The Department may refuse to accept any testing for which it has not had an opportunity to review the test protocol or to observe the test.

45.3.2.3 Once an owner or operator has a Screening Test Plan that has been accepted by the Department, Screening Tests shall be conducted. The results of such Screening Tests shall be submitted to the Department for review within twelve months of the promulgation of 45.0 of this regulation. The Department will accept or reject the Screening Tests results within 90 days of receiving the results. The Department may accept the results of tests conducted after January 1, 1990, but started prior to the adoption of 45.0 of this regulation, if review of the test methods and results show that a test protocol consistent with 45.4 of this regulation was used.

45.3.2.4 The Screening Tests results submitted to the Department shall include, at a minimum, the following information for each alternative cleaning solution examined:

45.3.2.4.1 The VOC content.

45.3.2.4.2 The results of the Screening Tests conducted using any of the methods presented in 45.4 of this regulation and accepted by the Department in an approved Screening Test Plan.

45.3.2.4.3 The results of any other relevant evaluations performed.

45.3.2.5 Identical or similar UOSs may be compared, for the purpose of screening tests and trial evaluations, by establishing with the Department such similarity and receiving Department approval, and as such shall not require separate screening tests and trial evaluations. The Department may consider the similarity of UOSs that are maintained by the owner or operator in a comparable facility or simulated pilot operation in another state.

45.3.3 Trial Evaluations. An owner or operator of a source that uses organic solvents for the purpose of cleaning shall conduct Trial Evaluations for the alternative solvents which show the greatest degree of emission reductions, considering technical and economical feasibility, based on the Screening Tests results accepted by the Department. The Trial Evaluations shall be conducted in accordance with the following procedures:

45.3.3.1 Trial data shall compare cleaning solvent usage both before and during the Trial Evaluations.

45.3.3.2 Each test trial shall evaluate potential material and equipment, facility, and procedural changes for reducing VOC emissions from cleaning solvent usage.

45.3.3.3 Following the Trial Evaluations, an owner or operator of the source shall prepare a Summary Report on the results of the Trial Evaluations. The Summary Report shall include the following information:

45.3.3.3.1 A brief description of the steps taken under 45.3.1 through 45.3.3 of this regulation to identify cleaning solvent usage and to evaluate material and equipment, facility, and procedural changes to reduce VOC emissions.

45.3.3.3.2 The results of the Trial Evaluations. The Department may accept the results of any Trial Evaluations conducted after January 1, 1990, but started prior to the adoption to 45.0 of this regulation, if review of the test methods and results show that a test protocol consistent with 45.4 of this regulation was used.

45.3.3.3.3 A Cleaning Solvent Proposal for the adoption of those material and equipment, facility, and procedural changes demonstrated to be feasible and reasonable in reducing VOC emissions. The Summary Report shall include a proposed schedule for implementing the Cleaning Solvent Proposal as soon as practicable, but no later than November 1, 1996.

45.3.3.4 Trial Evaluations shall be completed, and the Summary Report and the Cleaning Solvent Proposal shall be submitted to the Department for review, within twenty months of the promulgation of 45.0 of this regulation, unless an owner or operator demonstrates to the Department that such timing is unreasonable.
45.3.3.5 Identical or similar UOSs may be compared, for the purpose of screening tests and trial evaluations, by establishing with the Department such similarity and receiving Department approval, and as such shall not require separate screening tests and trial evaluations. The Department may consider the similarity of UOSs that are maintained by the owner or operator in a comparable facility or simulated pilot operation in another state.
45.3.3.6 After receipt of the Summary Report and the Cleaning Solvent Proposal, the Department shall approve the report as soon as practicable, or shall notify the owner or operator of any concerns to be addressed.
45.3.3.7 After final Department approval of the Summary Report, the changes will be incorporated into the permit conditions. The owner or operator shall implement the Cleaning Solvent Proposal and the approved schedule. Implementation shall be completed no later than November 1, 1996, unless the owner or operator demonstrates to the Department that such timing is unreasonable.
45.3.3.8 An owner or operator may implement changes to its cleaning solvent proposal that have been approved and implemented under 45.3.3.6 and 45.3.3.7 of this regulation, if the change results in no increase in emissions. In such case, no notification to the Department shall be required. The change, however, shall still be subject to any preconstruction permitting and operating permit approvals that may apply.
45.4 Test Methods. Compliance with 45.3.2.4 of this regulation shall be achieved by applying any of the following test methods:
45.4.1 American Society for Testing and Materials (ASTM) Method D-4828 for determining the practical washability of organic coatings.
45.4.2 Method for determining the performance of alternative cleaning fluids found in Appendix M of this regulation.
45.4.3 Any site-specific evaluation test, accepted by the Department, that is designed to compare cleaning solvent usage through material or procedural changes to potentially reduce VOC emissions.
45.5 Recordkeeping. An owner or operator of a source that uses organic solvents for the purpose of cleaning shall maintain the following records in a readily accessible location for at least five years and shall make these records available to the Department upon verbal or written request:
45.5.1 Detailed records of organic solvent usage for each UOS incorporated in a permit in accordance with the requirements listed in 45.3 of this regulation.
45.5.2 Records of organic solvent usage and monthly VOC emission calculations for each UOS incorporated in a permit.
45.6 Reporting and Certification. An owner or operator of a source that uses organic solvents for the purpose of cleaning shall initially report to the Department the total quantity of solvent that it used for the calendar year prior to the promulgation date of 45.0 of this regulation. This initial report shall be submitted to the Department within three months of the promulgation of 45.0 of this regulation. Each year, the owner or operator shall submit subsequent reports to the Department by the promulgation date (month, day) of 45.0 of this regulation. The initial and subsequent reports shall include the following information:
45.6.1 The name and location of the facility.
45.6.2 The address and telephone number of the person responsible for the facility.
45.6.3 The tons of solvent used during the calendar year prior to the promulgation date of 45.0 of this regulation and a copy of the calculations that were performed to estimate the amounts.
45.6.4 A certification that the source is in compliance with 45.3, 45.4, and 45.5 of this regulation or that these paragraphs do not apply based on the exclusions of 45.1.1 of this regulation.

47.0 Offset Lithographic Printing.
11/29/1994
47.1 Applicability.

47.1.1 The provisions of 47.0 of this regulation apply to any offset lithographic printing facility, including heatset web, non-heatset web (non-newspaper), non-heatset sheet-fed, and newspaper (non-heatset web) facilities.
47.1.2 The provisions of 47.0 of this regulation do not apply to any offset lithographic printing facility whose total actual volatile organic compound (VOC) emissions from all lithographic printing operations (including emissions from cleaning solutions used on lithographic printing presses) are less than 6.8 kilograms (kg) (15 pounds [lb]) VOCs per day before the application of capture systems and control devices.
47.1.3 The provisions of 47.0 of this regulation do not apply to other types of printing operations, such as flexography, rotogravure, or letterpress.
47.1.4 Existing sources affected by 47.0 of this regulation shall comply with the provisions of 47.0 of this regulation as soon as practicable, but no later than April 1, 1996. New, modified, or reconstructed sources affected by 47.0 of this regulation shall comply with the provisions of 47.0 of this regulation upon startup.
47.1.5 Any facility that becomes or is currently subject to the provisions of 47.0 of this regulation by exceeding the applicability threshold in 47.1.2 of this regulation shall remain subject to these provisions even if its emissions later fall below the applicability threshold.
47.1.6 Any facility that is currently subject to a state or federal rule promulgated pursuant to the Clean Air Act Amendments of 1977 by exceeding an applicability threshold is and shall remain subject to these provisions, even if its throughput or emissions have fallen or later fall below the applicability threshold.
47.2 Definitions. As used in 47.0 of this regulation, all terms not defined herein shall have the meaning given them in the November 15, 1990 Clean Air Act Amendments (CAAA), or in 2.0 of this regulation.

“Alcohol” means a chemical compound consisting of the hydroxyl (OH) group attached to an alkyl radical and having the general formula CnH2n+1OH, such as ethanol, n-propanol, and iso-propanol.

“Alcohol substitute” means a non-alcohol additive that contains VOCs and is used in the fountain solution to reduce the surface tension of water or to prevent piling (ink build-up).

“Batch” means a supply of fountain solution that is prepared continuously or as a batch and that is used without alteration until completely used or removed from the printing process.

“Cleaning solution” means a liquid that is used to remove ink and debris from the operating surfaces of the printing press and its parts.

“Dampening system” means equipment that is used to deliver the fountain solution to the lithographic plate.

“Fountain solution” means a mixture of water and non-volatile printing chemicals, and additives which reduce the surface tension of the water. The fountain solution wets the non-image areas so that the ink is maintained within the image areas.

“Heatset” means any operation in which heat is required to evaporate ink oil from the printing ink.

“Lithography” means a printing process in which the image and non-image areas are chemically differentiated; the image area is oil-receptive and the non-image area is water-receptive. This method differs from other printing methods, in which the image is a raised or recessed surface.

“Non-heatset” means any operation in which printing inks are set without the use of heat. For the purposes of 47.0 of this regulation, ultraviolet-cured and electron beam-cured inks are considered non-heatset operations.

“Offset” means a printing process in which the ink film is transferred from the lithographic plate to an intermediary surface (blanket), which, in turn, transfers the ink film to the substrate.

“Press” means a printing production assembly that is composed of one or many units to produce a printed sheet or web.

“Sheet-fed” means a printing operation in which individual sheets of substrate are fed to the press sequentially.

“Total actual VOC emissions” means the quantity of VOCs emitted from all lithographic printing presses during a particular time period.

“Unit” means the smallest complete printing component of a printing press.

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

47.3 Standards.

47.3.1 No owner or operator of a heatset offset lithographic printing press shall operate the printing press unless the owner or operator reduces VOC emissions from the press dryer exhaust vent by 90% (weight) of the uncontrolled total organics (minus methane and ethane), or maintains a maximum dryer exhaust outlet concentration of 20 parts per million by volume (ppmv) as methane (as C1), whichever is less stringent when the press is in operation.

47.3.2 No owner or operator of an offset lithographic printing press that uses alcohol in the fountain solution shall operate the printing press unless the owner or operator meets one of the requirements listed under 47.3.2..1, 47.3.2.2, 47.3.2.3, and 47.3.2.4 of this regulation.

47.3.2.1 For heatset web offset lithographic printing presses, the fountain solution alcohol content shall be maintained at 1.6% or less (by volume). Alternatively, a standard of 3% or less (by volume) alcohol may be used if the fountain solution containing alcohol is refrigerated to less than 15.6 degrees Celsius (°C) (60 degrees Fahrenheit [°F]).

47.3.2.2 For non-heatset web offset lithographic printing presses, the alcohol content in the fountain solution shall be eliminated. Alternatively, non-alcohol additives or alcohol substitutes may be used to accomplish the total elimination of alcohol use.

47.3.2.3 For sheet-fed offset lithographic printing presses, the alcohol content in the fountain solution shall be maintained at 5% or less (by volume). Alternatively, a standard of 8.5% or less (by volume) alcohol may be used if the fountain solution is refrigerated to below 15.6°C (60°F).

47.3.2.4 Any type of offset lithographic printing press shall be considered in compliance with this regulation if the only VOCs in the fountain solution are in non-alcohol additives or alcohol substitutes, so that the concentration of VOCs in the fountain solution is 3.0% or less (by weight). (The fountain solution shall not contain any alcohol.)

47.3.3 No owner or operator of an offset lithographic printing press shall operate the printing press unless the owner or operator reduces VOC emissions from cleaning solutions by using a cleaning solution with a 30% or less (as used) VOC content. Alternatively, the use of cleaning solutions with a VOC composite partial vapor pressure less than 10 millimeters (mm) mercury (Hg) (0.4 inches [in] Hg) at 20°C (68°F) may be used. The VOC composite partial pressure is calculated as follows:

$$PP_C = \sum_{i=1}^{n} \frac{\frac{(W_i)(VP_i)}{MW_i}}{\frac{W_w}{MW_w} + \frac{W_e}{MW_e} + \sum_{i=1}^{n} \frac{W_i}{MW_i}}$$

(47-1)

Where:

W_i = Weight of the Ith VOC compound, in grams (g);

W_w = Weight of water, in g;

W_e = Weight of exempt compound, in g;

MW_i = Molecular weight of the Ith VOC compound, in grams per gram-mole $\left(\frac{g}{g-mole}\right)$;

MW_w = Molecular weight of water, in $\left(\frac{g}{g-mole}\right)$;

MW_e = Molecular weight of exempt compound, in $\left(\frac{g}{g-mole}\right)$;

PP_C = VOC composite partial pressure at 20°C, in mmHg

VP_i = Vapor pressure of the Ith VOC compound at 20°C, in mmHg

47.4 Control Devices. An owner or operator of an offset lithographic printing press equipped with a control system shall ensure that:

47.4.1 The capture system and control device are operated at all times that the printing press is in operation, and the owner or operator demonstrates compliance with 47.0 of this regulation through the applicable coating analysis and capture system and control device efficiency test

methods specified in Appendix B, Appendix D, and Appendix E of this regulation and in accordance with the capture efficiency test methods specified in Appendix D of this regulation.
47.4.2 The control device is equipped with the applicable monitoring equipment specified in 2.0 of Appendix D of this regulation, and the monitoring equipment is installed, calibrated, operated, and maintained according to the vendor's specifications at all times the control device is in use.
47.5 Test Methods and Procedures.
47.5.1 The VOC content of each ink, the alcohol content of each fountain solution, and the efficiency of each capture system and control device shall be determined by the applicable test methods and procedures specified in Appendix A through Appendix D of this regulation to establish the records required under 47.6 of this regulation.
47.5.2 To demonstrate compliance with the emission control requirements of 47.0 of this regulation, the affected facility shall be run at maximum operating conditions and flow rates during any emission testing.
47.5.3 Emission tests for facilities using an add-on dryer exhaust control device shall include an initial test when the control device is installed and operating that demonstrates compliance with either the 90% (by weight) reduction or the 20 ppmv emission limit.
47.5.4 To determine compliance with 47.3.2 of this regulation, the owner or operator of an offset lithographic printing facility shall perform the following procedures:
47.5.4.1 A sample shall be taken of the fountain solution (as used) from the fountain tray or reservoir that contains a fresh batch of fountain solution (after mixing), for each unit or centralized reservoir, to determine the alcohol content of the fountain solution in accordance with 47.3.2.1 through 47.3.2.3 of this regulation, before the fountain solution is used.
47.5.4.2 A direct measurement of the alcohol content of the fountain solution sample or samples shall be performed in accordance with the method specified in Appendix L of this regulation.
47.5.4.3 Alternatively, a sample of the fountain solution (as used) may be taken from the fountain tray or reservoir of fountain solution during use and measured with a hydrometer or refractometer that has been standardized with tests performed in accordance with 47.5.4.1 and 47.5.4.2 of this regulation. The unit shall be considered in compliance with 47.3.2.1 through 47.3.2.3 of this regulation if the refractometer or hydrometer measurement is less than or equal to the measurement obtained by the method specified in Appendix L of this regulation plus 10%.
47.5.4.4 The VOC content of a fountain solution containing alcohol substitutes or non-alcohol additives shall be established with proper recordkeeping and the manufacturer's laboratory analysis of the VOC content of the concentrated alcohol substitute and included in facility records. Records shall include the amount of concentrated substitute added per quantity of fountain water; the date and time of preparation if the fountain solution is mixed as a batch; and the calculated VOC content of the final solution to fulfill the requirements listed in 47.3.2.4 of this regulation.
47.5.5 To determine compliance with 47.3.2.1 and 47.3.2.3 of this regulation, an owner or operator of an offset lithographic printing facility shall use a thermometer or other temperature detection device capable of reading to 0.28°C (0.5°F) to ensure that a refrigerated fountain solution containing alcohol is below 15.6°C (60°F) at all times.
46.5.6 To determine compliance with 47.3.3 of this regulation, an owner or operator of an offset lithographic printing press shall:
47.5.6.1 Take a sample of the cleaning solution (as used) to demonstrate compliance with the cleaning solution VOC content limitations listed in 47.3.3 of this regulation. If the cleaning solution is used as received from the supplier without dilution or alteration, the manufacturer's technical information may be used to demonstrate compliance.
47.5.6.2 Use the method specified in Appendix L of this regulation to determine the VOC content of the cleaning solution (as used). Alternatively, the VOC content and VOC partial pressure of the cleaning solution may be established using the manufacturer's technical data. If the cleaning solution is prepared through the dilution of concentrated materials, the blending ratio and VOC content of the concentrate may be used to determine the "as used" VOC content of the cleaning solution.
47.6 Recordkeeping and Reporting.

47.6.1 Requirements for Sources Below Threshold Emission Limit. Any owner or operator of any offset lithography printing press that emits less than the threshold limit according to 47.1 of this regulation shall comply with the following requirements:
47.6.1.1 Initial Certification. The owner or operator shall certify to the Department that the facility emits less than the threshold limit according to 47.1 of this regulation. Such certification shall include the following information:
47.6.1.1.1 The name and location of the facility.
47.6.1.1.2 The address and telephone number of the person responsible for the facility.
47.6.1.1.3 A declaration that the facility is not subject to the requirements of 47.0 of this regulation because of the criteria listed in 47.1 of this regulation.
47.6.1.1.4 The calculations demonstrating that total actual VOC emissions from all offset lithographic printing presses at the facility are and will be less than 6.8 kg (15 lb) per day before the application of capture systems and control devices.
47.6.1.1.5 A description of the instrument or method by which the owner or operator accurately measured or calculated the volume of ink applied and the amount that can potentially be applied each year on each printing press.
47.6.1.2 Recordkeeping. The owner or operator shall collect and record all of the following information each year for each offset lithographic printing press and maintain the information at the facility for a period of five years:
47.6.1.2.1 The name and identification number of each ink, as applied, each year on each printing press.
47.6.1.2.2 The weight of VOC per volume of coating solids and the volume of solids of each ink, as applied, each year on each printing press.
47.6.1.2.3 The total actual VOC emissions as calculated in 47.6.1.1.4 of this regulation using the VOC content for that year.
47.6.1.3 Reporting. Upon promulgation of 47.0 of this regulation, any record showing that total actual emissions of VOCs from all offset lithographic printing presses exceed 6.8 kg (15 lb) per day before the application of capture systems and control devices shall be reported by sending a copy of the record to the Department within 45 calendar days after the exceedance occurs. This requirement is in addition to any other State of Delaware exceedance reporting requirements.
47.6.2 Requirements for Sources Above Threshold Emission Limit. Any owner or operator of any offset lithography printing press that emits greater than the threshold limit according to 47.1 of this regulation shall comply with the following requirements:
47.6.2.1 Initial Certification. The owner or operator shall certify to the Department that the facility emits greater than the threshold limit according to 47.1 of this regulation. Such certification shall include the following information:
47.6.2.1.1 The name and location of the facility.
47.6.2.1.2 The address and telephone number of the person responsible for the facility.
47.6.2.1.3 The calculations demonstrating that total actual VOC emissions from all offset lithographic printing presses at the facility are and shall be greater than 6.8 kg (15 lb) per day before the application of capture systems and control devices.
47.6.2.1.4 A description of the instrument or method by which the owner or operator accurately measured or calculated the volume of ink applied and the amount that can potentially be applied each year on each printing press.
47.6.2.2 Recordkeeping. The owner or operator shall collect and record all of the following information each year for each offset lithographic printing press and maintain the information at the facility for a period of five years:
47.6.2.2.1 The name and identification number of each ink, as applied, each year on each printing press.
47.6.2.2.2 The weight of VOCs per volume of coating solids and the volume of solids of each ink, as applied, each year on each printing press.
47.6.2.2.3 The total actual VOC emissions as calculated in 47.6.1.1.4 of this regulation using the VOC content for that year.
47.6.3 Requirements for Sources Using an Add-On Dryer Exhaust Control Device.
47.6.3.1 The owner or operator of a heatset offset lithographic printing press shall install, calibrate, maintain, and operate a temperature monitoring device, according to the

manufacturer's instructions, at the outlet of the control device. The monitoring temperature shall be set during the testing required to certify compliance with the requirements of 47.4 of this regulation. Monitoring shall be performed only when the unit is operational.

47.6.3.2 The temperature monitoring device shall be equipped with a continuous recorder and shall have an accuracy of 0.28°C (0.5°F).

47.6.3.3 The dryer pressure shall be maintained lower than the press room area pressure such that air flows into the dryer at all times when the press is operating. A 100% emissions capture efficiency for the dryer shall be demonstrated using an air flow direction measuring device.

47.6.4 Requirements for Monitoring Fountain Solution VOC Concentration. The alcohol concentration in the fountain solution shall be monitored to provide data that can be correlated to the amount of material used when the fountain solution complies with the limits listed in 47.3.2.1 through 47.3.2.4 of this regulation. One of the following methods shall be used to frequently measure the concentration of alcohol in the fountain solution:

47.6.4.1 The owner or operator of any offset lithographic printing press shall monitor the alcohol concentration of the fountain solution with a refractometer that is corrected for temperature at least once per 8-hour shift or once per batch, whichever is longer. The refractometer shall have a visual, analog, or digital readout with an accuracy of 0.5%. A standard solution shall be used to calibrate the refractometer for the type of alcohol used in the fountain. Alternatively, the refractometer shall be standardized with measurements performed to determine compliance, according to the procedures described in 47.5.4.1 and 47.5.4.2 of this regulation.

47.6.4.2 Alternatively, the owner or operator of any offset lithographic printing press shall monitor the alcohol concentration of the fountain solution with a hydrometer equipped with a temperature correction at least once per eight-hour shift or once per batch, whichever is longer. The hydrometer shall have a visual, analog, or digital readout with an accuracy of 0.5%. A standard solution shall be used to calibrate the hydrometer for the type of alcohol used in the fountain. Alternatively, the hydrometer shall be standardized with measurements performed to determine compliance, according to the procedures described in 47.5.4.1 and 47.5.4.2 of this regulation.

47.6.4.3 The VOC content of the fountain solution may be monitored with a conductivity meter if it is determined that a refractometer or hydrometer cannot be used for the type of VOCs in the fountain solution. The conductivity meter reading for the fountain solution shall be referenced to the conductivity of the incoming water.

47.6.4.4 If, through recordkeeping for a period of 6 months or more, the printing process is shown to consistently meet the requirements in 47.3.2.4 and 47.5.4 of this regulation, the monitoring requirement may be waived or extended to a longer period of time upon prior approval by the Department.

47.6.5 Requirements for Monitoring Fountain Solution Temperature.

47.6.5.1 The owner or operator of any offset lithographic printing press using refrigeration equipment on the fountain shall install, maintain, and continuously operate a temperature monitor of the fountain solution reservoir.

47.6.5.2 The temperature monitor shall be attached to a continuous recording device such as a strip chart, recorder, or computer.

47.6.6 Requirements for Monitoring Cleaning Solution. For any offset lithographic printing press with continuous cleaning equipment, flow meters shall be used to monitor the water and cleaning solution flow rates. The flow meters shall be calibrated so that the VOC content of the mixed solution is accurately measured to fulfill the requirements of 47.3.3 of this regulation.

47.6.7 Requirements for Monitoring Other Key Parameters. The owner or operator of any offset lithographic printing press shall record daily, and make available to the Department upon verbal or written request, the following key parameters:

47.6.7.1 The type of control device operating on the heatset offset lithographic printing press and the operating parameters specified in 47.5.3 of this regulation.

47.6.7.2 The equipment standard selected to comply with the requirements listed in 47.3.2.1 through 47.3.2.4 and 47.3.3 of this regulation.

47.6.7.3 The VOC content of the fountain and cleaning solutions, to comply with the requirements listed in 47.5.4, 47.6.4, and 47.6.6 of this regulation.

47.6.7.4 The temperature of the fountain solution, to comply with the requirements listed in 47.6.5 of this regulation, if applicable.
47.6.7.5 For manual cleaning methods, the amount of cleaning solution and the amount of water added per batch of cleaning solution mixed.
47.6.7.6 For automatic cleaning methods, the flow rates of water and cleaning solution concentrate, as specified in 47.6.6 of this regulation.
47.6.7.7 Corrective actions taken when exceedances of any parameters monitored according to the requirements of 47.4 or 47.5 of this regulation, occur.