



DEQ

VIRGINIA DEPARTMENT OF
ENVIRONMENTAL QUALITY

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FACT SHEET

**FINAL REGULATION
9 VAC Chapter 40
Article 36
(RULE 4-36)**

AFFECTING:

**FLEXOGRAPHIC,
ROTOGRAVURE, AND
PUBLICATION
ROTOGRAVURE PRINTING
LINES**

Prepared by:

Quality

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FACT SHEET

for the

DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE AIR POLLUTION CONTROL BOARD REGULATION FOR:

FLEXOGRAPHIC, PACKAGING ROTOGRAVURE, AND PUBLICATION ROTOGRAVURE PRINTING LINES

9 VAC 5-40

Article 36

(RULE 4-36)

EFFECTIVE DATE: November 30, 1979 **AMENDED DATE:** April 1, 1996

COMPLIANCE DATES:

. For facilities which were subject to this rule prior to the amendment date April 1, 1996 must currently be in compliance with this rule.

. For existing facilities in the Northern Virginia Volatile Organic Compound (VOC) Emission Control Area [See Appendix B] who have a potential to emit between 25 and 50 tons of VOCs per year are now subject to this rule.

These facilities must be in compliance by April 1, 1997

. If this Rule brings your facility into regulation for non-VOC pollutants, i.e. hazardous air pollutants or others, check with your local Regional Office [See Appendix C] for a determination of compliance time frames outlined in 9 VAC 5-40-20 and Appendix N of the State Air Pollution Control Board regulations.

PERMITS, DEFINITIONS, AND THE RULE APPLIES TO

PERMITS

A PERMIT MAY BE REQUIRED IF YOU ARE COVERED BY THIS REGULATION --- CHECK WITH YOUR LOCAL DEQ REGIONAL OFFICE.[See Appendix C]

DEFINITIONS

Definitions of terms and phrases for all rules cited by this regulation can be found in Appendix A of this fact sheet.

RULE 4-36 APPLIES TO:

Any flexographic, packaging rotogravure, or publication rotogravure printing line(s) in the Northern Virginia, Richmond, and Hampton Roads Volatile Organic Compound (VOC) Emission Control Areas [See Appendix B], which use a substrate other than textile and which is not exempt from this regulation. See Exemptions below.

EXEMPTIONS AND FACILITIES NOT REGULATED

EXEMPTIONS:

1. Northern Virginia VOC Emission Control Area - Flexographic, packaging rotogravure, and publication rotogravure facilities which have a potential to emit of less than 25 tons per year of VOCs are exempt. Normally permit conditions and efficiencies of control equipment and devices can be considered in determining the potential to emit and actually help to reduce the maximum potential annual emissions of a unit or facility.
2. Richmond and Hampton Roads VOC Emission Control Area - Flexographic, packaging rotogravure, and publication rotogravure facilities which have a potential to emit of less than 100 tons per year of VOCs are exempt. Normally permit conditions and efficiencies of control equipment and devices can be considered in determining the potential to emit and actually help to reduce the maximum potential annual emissions of a unit or facility.

FLEXOGRAPHIC, PACKAGING, ROTOGRAVURE, AND PUBLICATION ROTOGRAVURE PRINTING LINE FACILITIES NOT REGULATED:

1. Printing processes used exclusively for determination of product quality and commercial acceptance as long as:
 - a. the operation is not an integral part of the production process;
 - b. the emissions from all product quality printing processes do not exceed 400 pounds in any 30 day period; and
 - c. the exemption is approved by the Board.
2. Lithography or letterpress printing.
3. Electrostatic duplication.

STANDARDS

VOLATILE ORGANIC COMPOUND STANDARDS:

1. An ink or surface coating containing Volatile Organic Compounds, in each packaging rotogravure, publication rotogravure or flexographic printing line, cannot be used unless it meets one of the following requirements:
 - a. It is a waterborne ink or surface coating as it is applied to the substrate; or
 - b. It is a high-solids ink or surface coating as it is applied to the substrate; or
 - c. It is a low-solvent ink or surface coating as it is applied to the substrate; or
 - d. An emission control system is installed and operates such that it meets the following requirements to reduce the VOCs:
 1. 75 percent by weight of VOCs of all non-compliant inks and surface coatings in a publication rotogravure process;
 2. 65 percent by weight of VOCs of all non-compliant inks and surface coatings in a packaging rotogravure process;
 3. 60 percent by weight of VOCs of all non-compliant inks and surface coatings in a flexographic process.
2. All units in a machine which has printing units and coating or laminating units are subject to this rule and exempt from Rule 4-31.

OTHER STANDARDS WHICH WILL APPLY TO FLEXOGRAPHIC, PACKAGING ROTOGRAVURE, AND PUBLICATION ROTOGRAVURE PRINTING LINES:

1. Visible emission standard (Rule 4-1).

Opacity of emissions must be below 20%. One six-minute period in any one hour of not more than 60% opacity is allowed..

OTHER STANDARDS WHICH WILL APPLY TO FLEXOGRAPHIC, PACKAGING ROTOGRAVURE, AND PUBLICATION ROTOGRAVURE PRINTING LINES cont'd:

2. Fugitive dust/emissions standard (Rule 4-1).

Reasonable precautions to prevent particulate matter from becoming airborne must be taken during handling, transporting, storing, using, constructing, altering, repairing, or demolishing any material or property.

3. Odor standard (Rule 4-2).

No owner or person shall cause or permit to be discharged into the atmosphere any emissions which cause an odor objectionable to individuals of ordinary sensibility.

4. Toxic pollutant standard (Rule 4-3).

- a. Most solvents contain VOCs. Several VOCs are toxic air pollutants and are included on EPA's List of Hazardous (Toxic) Air Pollutants.**
- b. Any facility emitting a hazardous air pollutant in excess of a specified percentage of the threshold limit value (TLV) for that particular pollutant will be required to employ control strategies - emission control equipment, process changes, substitution of less toxic or non-toxic materials, or operation and maintenance procedures - which lower or eliminate the toxic emission.**
- c. Because of the complexity of the exemption formulas it is highly recommended that contact for assistance with this particular regulation be made with your local Regional DEQ Air Office [See Appendix C]; The Small Business Assistance Program (804) 698-4394, or the DEQ's Air Toxics Section (804) 698-4303 or 698-4502.**

COMPLIANCE

COMPLIANCE

1. The standards for inks and surface coatings containing VOCs apply ink by ink and coating by coating or to the volume weighted average of inks or surface coatings where the inks and surface coatings are used on a single printing line and the inks and surface coatings are the same type and are used for the same function.

2. Inks and surface coatings containing VOCs that meet the standards may be used on the same printing line with non-compliant inks and surface coatings subject to the control requirements without installing add-on control equipment. If this is the case, compliant inks/surface coatings used must generate sufficient credits by reducing the VOC content below the maximum permissible level. Compliance is shown when the total credits in pounds of VOCs is equal to or greater than the total weight of VOC reductions required for the non-compliant inks in 24 hours or less. Since the required credits and the actual generated credits fluctuate with the quantity of inks/surface coatings used, the credit calculations can be very complex. We recommend that source contact the appropriate DEQ Regional Office (Attachment C) for assistance with the calculations.

3. Compliance must be demonstrated for:
 - a. Single Printing Line
 - 1) Each printing line; or
 - 2) Each part of a printing line individually designated by the owner.
 - b. Multiple printing lines controlled by one solvent recovery system.

If you choose this option, the most stringent standard applicable to any one line is applicable to all lines controlled by the same solvent recovery system.

4. The emission standard for inks and surface coatings containing VOCs apply to each successive compliance averaging period. This compliance averaging period shall not be longer than:

COMPLIANCE cont'd:

- a. 24 hours; or
- b. The minimum compliance averaging period acceptable to the Agency, provided that:
 - 1) It can be satisfactorily shown that 24 hours or less does not adequately represent the reduction of VOC emissions over the same time period, because of the physical or operational characteristics of an add-on control system; and
 - 2) It can be satisfactorily shown the minimum compliance averaging period being demonstrated adequately represents the reduction in VOC emissions; and
 - 3) The compliance can be determined for each day or partial day of operation using the minimum acceptable compliance averaging period.

TESTING-MONITORING-RECORDKEEPING REGISTRATION-EQUIPMENT MAINTENANCE and MALFUNCTION

EMISSION TESTING (METHODS & PROCEDURES)

Emission testing may be required to demonstrate compliance with this rule. The provisions of , 9 VAC 5-40-30 apply. Please check with your regional office concerning details of any testing requirements.

MONITORING

The provisions of , 9 VAC 5-40-40 apply to regulated printing facilities.

RECORDKEEPING, NOTIFICATION & REPORTING

The provisions of , 9 VAC 5-40-50 (Notification, records and reporting) apply.

REGISTRATION

The provisions of , 9 VAC 5-20-160 (Registration) apply.

FACILITY AND CONTROL EQUIPMENT MAINTENANCE OR MALFUNCTION

The provisions of , 9 VAC 5-20-180 (Facility and control equipment maintenance or malfunction) apply.

APPENDIX A- DEFINITIONS

DEFINITIONS:

The following is a list of definitions used in this rule which may be helpful.

"Batch" means a supply of fountain solution that is prepared and used without alteration until completely used or removed from the printing process.

"Best Available Control Technology (BACT)" means an emissions limitation (including a visible emissions standard) based on the maximum degree of reduction for each toxic pollutant which the Board, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant. If the Board determines that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible, a design, equipment, work practice, operational standard, or combination thereof, may be prescribed instead to satisfy the requirement for the application of best available control technology. Such standard shall, to the degree possible, set forth the emissions reduction achievable by implementation of such design, equipment, work practice or operation, and shall provide for compliance by means which achieve equivalent results.

"Carbon adsorption system" means a device containing activated carbon as the adsorbent material, an inlet and outlet for exhaust gases, and a system to regenerate the saturated adsorbent. The carbon adsorption system must provide for the proper disposal or reuse of all volatile organic compounds in the adsorbate.

"Cleaning solution" means any blanket or roller wash used to remove ink and debris from the operating surface of a printing press.

"Compliant ink or surface coating" means an ink or surface coating conforming to the definition of a high-solids, low-volatile organic compound or a waterborne ink or surface coating.

"Electrostatic duplication" means a process using a plate or takeoff sheet that is electrically charged to attract developer to the image area only.

"Flexographic printing" means the application of words, designs or pictures by a rubber or elastomeric image carrier in which the image area is raised above the

non-image area.

DEFINITIONS cont'd:

"Fugitive dust" means particulate matter composed of soil and/or other materials of natural origin. Fugitive dust may include emissions from haul roads, wind erosion of exposed surfaces and storage piles and other activities in which the material is either removed, stored, transported or redistributed.

"Fugitive emissions" means emissions which are generated by industrial or other activities and which do not pass through a stack, chimney, vent or other functionally equivalent opening, but which may escape from openings (such as windows, doors, ill-fitting closures or poorly maintained equipment) or material handling equipment.

"High-solids ink or surface coating" means an ink or surface coating image transfer elements fixed upon a metal backing.

"Letterpress printing" means a printing process which uses raised image transfer elements fixed upon a metal backing.

"Lithographic printing" means a planographic printing process in which the image and non-image areas are chemically differentiated with the image area being oil-receptive and the non-image area being water-receptive.

"Low-solvent ink or surface coating" means an ink or surface coating which contains not more than 0.5 pounds of volatile organic compounds per pound of non-volatile compounds and is used on a packaging rotogravure printing or flexographic printing press.

"Non-compliant ink or surface coating" means an ink or surface coating which does not conform to the definition of a high-solids, low-volatile organic compound or waterborne ink or surface coating.

"Opacity" means the degree to which emissions reduce the transmission of light and obscure the view of an object in the background, expressed as a percentage.

"Packaging rotogravure printing" means an intaglio printing process in which the ink is transferred from minute etched wells on an image carrier, typically a cylinder, to paper, paper board, metal foil, plastic film and other substrates, which are, in subsequent operations, formed into containers and labels for articles to be sold.

"Pesticide" means the same as the definition given in § 3.1-249.27 of the Virginia Pesticide Control Act.

DEFINITIONS cont'd:

"Potential To Emit (PTE)" means an emission rate based on the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical, operational, or air permit limitation is considered part of its design only if the limitation or the effect of the limitation on emissions is a state or federally enforceable condition. For example, a limitation on the capacity of the source to emit a pollutant might be air pollution control equipment, a restriction on the hours of operation or on the type or amount of material combusted, stored, or processed. These conditions are recognized as state and federally enforceable.

"Press" means a printing production assembly composed of one or more units to produce a printed substrate (sheet or web).

"Printing" means a photomechanical process in which a transfer of text, designs, and images occurs through contact of an image carrier with a substrate.

"Printing line" means all of the equipment between a web feed input and the finished rolled or cut and stacked product wherein printing ink or a combination of printing inks and surface coatings are applied, dried, or cured and which is subject to the same emission standard. Such equipment may include decks, stations, press units, devices, ink stations, and any other equipment which applies, conveys, dries, or cures surface inks or surface coatings. Such equipment may include but is not limited to flow coaters, flashoff areas, air dryers, drying areas, and ovens. It is not necessary for a printing line to have an oven, flashoff area, or drying area to be included in this definition.

"Printing process" means any operation or system wherein printing ink or a combination of printing ink and surface coating is applied, dried or cured and which is subject to the same emission standard. May include any equipment which applies, conveys, dries or cures inks or surface coatings, including, but not limited to, flow coaters, flashoff areas, air dryers, drying areas and ovens. It is not necessary for a printing process to have an oven, flashoff area or drying area to be included in this definition.

"Publication rotogravure printing" means an intaglio printing process in which the ink is transferred from minute etched wells on an image carrier, typically a cylinder, to paper which is subsequently formed into books, magazines, catalogues, brochures, directories, newspaper supplements or any other types of printed materials not included under the definition or packaging rotogravure printing.

"Significant ambient air concentration" means the concentration of a toxic pollutant in the ambient air that if exceeded may have the potential to injure

human health.

DEFINITIONS cont'd:

"Six-minute period" means any one of the 10 equal parts of one-hour or a one-hour period, as may be applicable.

"Surface coating" means all non-ink liquids and liquid-solid mixtures containing volatile organic compounds which are applied to the substrate by printing units.

"Threshold limit value (TLV)" means the maximum airborne concentration of a substance to which the ACGIH believes that nearly all workers may be repeatedly exposed day after day without adverse effects and which is published in the American Conference of Governmental Industrial Hygienists (ACGIH) Handbook The TLV is divided into three categories: TLV-Time-Weighted Average (TLV-TWA), TLV-Short-Term Exposure Limit (TLV-STEL), and TLV-Ceiling (TLVC).

"TLV-TWA" means the time-weighted average concentration for a normal 8-hour workday and a 40-hour workweek, to which nearly all workers may be repeatedly exposed, day after day, without adverse effect (as defined in the ACGIH Handbook).

"TLV-STEL" means the concentration to which workers may be exposed continuously for a short period of time without suffering from irritation, chronic or irreversible tissue damage, or narcosis of sufficient degree to increase the likelihood of accidental injury, impair self-rescue or materially reduce work efficiency. The TLV-STEL supplements the TLV-TWA where there are recognized acute effects from a substance whose toxic effects are primarily of a chronic nature.

"TLV-C" means the concentration that should not be exceeded during any part of the working exposure.

"Toxic pollutant" means any air pollutant for which no ambient air quality standard has been established. Particulate matter and volatile organic compounds are not toxic pollutants as generic classes of substances but individual substances within these classes may be non-criteria toxic pollutants because of their toxic properties or because a TLV has been established.

"Unit" means the smallest complete printing component, composed of an inking and dampening system, of a printing press.

"Waterborne ink or surface coating" means an ink or surface coating whose volatile portion consists of 75 percent or more by volume of water and 25 percent or less by volume of volatile organic compounds.

"Web" means a continuous roll of printing substrate.

APPENDIX B - EMISSION CONTROL AREAS

VOLATILE ORGANIC COMPOUND AND NITROGEN OXIDES EMISSIONS CONTROL AREAS

Emissions Control Areas are geographically defined below by locality for the pollutants indicated.

A. Volatile Organic Compounds.

1. Northern Virginia Emissions Control Area.

Arlington County	Alexandria City
Fairfax County	Fairfax City
Loudoun County	Falls Church City
Prince William County	Manassas City
Stafford County	Manassas Park City

2. Richmond Emissions Control Area.

Charles City County	Colonial Heights
Chesterfield County	Hopewell City
Hanover County	Richmond City
Henrico County	

3. Hampton Roads Emissions Control Area.

James City County *	Poquoson City *
York County *	Portsmouth City
Chesapeake City	Suffolk City
Hampton City	Virginia Beach City
Newport News City	Williamsburg City *
Norfolk City	

B. Nitrogen Oxides.

1. Northern Virginia Emissions Control Area.

Arlington County	Alexandria City
Fairfax County	Fairfax City
Loudoun County	Falls Church City
Prince William County	Manassas City
Stafford County	Manassas Park City

VOLATILE ORGANIC COMPOUND AND NITROGEN OXIDES
EMISSIONS CONTROL AREAS cont'd:

	2.	Richmond Emissions Control Area.	
City		Charles City County	Colonial Heights
		Chesterfield County	Hopewell City
		Hanover County	Richmond City
		Henrico County	
	3.	Hampton Roads Emissions Control Area.	
		James City County	Poquoson City
		York County	Portsmouth City
		Chesapeake City	Suffolk City
		Hampton City	Virginia Beach City
		Newport News City	Williamsburg City
		Norfolk City	

* Emission standards for volatile organic compounds prescribed in Part IV of the regulations shall not be applicable in localities marked by an asterisk.

APPENDIX C - REGIONAL OFFICES

DEQ Regional Contacts

Southwest Regional Office- Abingdon

Rob Feagins - Small Business Contact
(540) 676-5582

Serves the following counties and cities:

Bland	Smyth
Buchanan	Tazewell
Carroll	Washington
Dickenson	Wise
Grayson	Wythe
Lee	Bristol
Russell	Galax
Scott	Norton

Roanoke Regional Office (West Central)

- Roanoke

Gail Steele - Small Business Contact
(540) 561-7000

Serves the following counties and cities:

Alleghany	Roanoke
Botetourt	Buena Vista
Craig	Clifton Forge
Floyd	Covington
Giles	Radford
Montgomery	Roanoke
Pulaski	Salem

Valley Regional Office - Bridgewater

Todd Hawes - Small Business Contact
(540) 828-2595

Serves the following counties and cities:

Augusta	Warren
Bath	Harrisonburg
Frederick	Lexington
Page	Staunton
Rockbridge	Waynesboro
Rockingham	Winchester
Shenandoah	

DEQ Regional Contacts cont'd:

Lynchburg Air Office - Lynchburg
Larry Leonard - Small Business Contact
(804) 582-5120

Serves the following counties and cities:

Amelia	Lunenburg
Amherst	Mecklenberg
Appomattox	Nottoway
Bedford	Patrick
Brunswick	Pittsylvania
Buckingham	Prince Edward
Campbell	Bedford
Charlotte	Danville
Cumberland	Lynchburg
Franklin	Martinsville
Halifax	South Boston
Henry	

Fredericksburg Air Office - Fredericksburg
Jim Lafratta - Small Business Contact
(540) 899-4600

Serves the following counties and cities:

Albemarle	King William
Caroline	Madison
Culpeper	Mathews
Essex	Middlesex
Fauquier	Northumberland
Fluvanna	Orange
Gloucester	Rappahannock
Greene	King George
Louisa	King and Queen
Nelson	Charlottesville
Spotsylvania	Fredericksburg
Stafford	Westmoreland
Lancaster	

DEQ Regional Contacts cont'd:

Piedmont Regional Office - Richmond

Dave Paylor - Small Business Contact
(804) 527-5278

Serves the following counties and cities:

Charles City	Prince George
Chesterfield	Surry
Dinwiddie	Sussex
Goochland	Colonial Heights
Greensville	Emporia
Hanover	Hopewell
Henrico	Petersburg
New Kent	Richmond
Powhatan	

Tidewater Regional Office - Chesapeake

David Sellers - Small Business Contact
(804) 424-6707

Serves the following counties and cities:

Accomack	Hampton
Isle of Wight	Newport News
James City	Norfolk
Northampton	Poquoson
Southampton	Portsmouth
York	Suffolk
Chesapeake	Virginia Beach
Franklin	Williamsburg

Northern VA Regional Office - Springfield

Terry Godar - Small Business Contact
(703) 644-0311

Serves the following counties and cities:

Arlington	Alexandria
Clarke	Fairfax
Fairfax	Falls Church
Loudoun	Manassas
Prince William	Manassas Park

DEQ Regional Contacts cont'd:

Central DEQ Office - Richmond

Office of Small Business Assistance

Richard Rasmussen - (804) 698-4394

Tamera Thompson - (804) 698-4502

Gordon Kerby - (804) 698-4305

Office of Pollution Prevention

Sharon Baxter - (804) 698-4344

Serves entire state

DEQ 800 Number

1-800-592-5482

Copies of the Air Regulations can be obtained from your local Regional Office or by calling Alma Jenkins at (804) 698-4070.