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VIRGINIA DEPARTMENT OF
ENVIRONMENTAL QUALITY

FACT SHEET

**FINAL REGULATION
9 VAC Chapter 40
Article 45
(RULE 4-45)**

AFFECTING:

**LITHOGRAPHIC PRINTING
PROCESSES**

Prepared by:

Quality

Virginia Department of Environmental

Small Business Assistance Program
Office of Small Business Assistance
629 E. Main Street
Richmond, VA 23219

Contact:

Richard
Rasmussen
[804] 698-4394
Gordon Kerby
[804] 698-4305
Tamera Thompson
[804] 698-4502

or

1-800-592-5482
Fax [804] 698-4510

FACT SHEET

for the

DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE AIR POLLUTION CONTROL BOARD REGULATION FOR:

LITHOGRAPHIC PRINTING PROCESSES 9 VAC 5 Chapter 40 Article 45 (RULE 4-45)

EFFECTIVE DATE of RULE:

April 1, 1996.

COMPLIANCE DATE:

All affected facilities must be in full compliance by April 1, 1998.

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

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 Part I and Appendix A.

THE RULE APPLIES TO

RULE APPLIES TO:

Any lithographic printing process(es) in the Northern Virginia and Richmond 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 - Lithographic printing processes which have a potential to emit less than 10 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 VOC Emission Control Area - Lithographic printing processes which have a potential to emit 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.

LITHOGRAPHIC 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. Photoprocessing, typesetting, and image setting equipment using water-based chemistry to develop silver halide images.

3. Platemaking equipment using water-based chemistry to remove unhardened image-producing material from an exposed plate.

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**TRANSMIS. ALONG ROWS FOR LAYER 8
READING ON UNIT 9 WITH FORMAT: (50F10.0)**

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	Iny one hour of not more than 60% opacity is allowed.	

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.

OTHER STANDARDS WHICH APPLY TO LITHOGRAPHIC PRINTING PROCESSES (Regulation Sections 9 VAC 5-40-7850 thru 7890) cont'd:

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 TESTING-MONITORING-RECORDKEEPING -REGISTRATION-EQUIPMENT MAINTENANCE and MALFUNCTION

COMPLIANCE (Regulation Section 9 VAC 5-40-7880)

All affected facilities must be in compliance with all of the provisions of the rule by April 1, 1998.

EMISSION TESTING (METHODS & PROCEDURES) (Regulation Sect. 9 VAC 5-40-7890)

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 (Regulation Section 9 VAC 5-40-7900)

1. The provisions of 9 VAC 5-40-40 apply to regulated printing facilities.
2. There will be monitoring requirements for the printing process either through a device such as a temperature recorder, keeping a log of temperatures, or monitoring the concentration of VOCs in the fountain solution. The type of monitoring required is specific to each process on a case-by-case basis. More information can be obtained from any Regional DEQ Air Office, or The Small Business Assistance Program (804)698-4394.

RECORDKEEPING, NOTIFICATION & REPORTS (Regulation Sect. 9 VAC 5-40-7910)

1. The provisions of 9 VAC 5-40-50 (Notification, records and reporting) apply.
2. The owner of any offset lithographic printing press must maintain a monthly record of the type of control device used to satisfy the monitoring requirements found in the fact sheet section "Monitoring" 2 and specified in the Regulation Section 9 VAC 5-40-7900 B.
3. Each parameter must be recorded on a daily basis and kept on site for two (2) years. Note: Facilities which will require operating permits will need to maintain their records for a period of five (5) years.
 - a. The operating parameters as found in the fact sheet section

"Monitoring" 2. Specified in Regulation Section 9 VAC 5-40-7900 B;

RECORDKEEPING, NOTIFICATION & REPORTS (Regulation Sect. 9 VAC 5-40-7910)

cont'd:

- b. The equipment standard selected to comply with the requirements as found in the fact sheet section "Volatile Organic Compound Standards" 2 a,b. Listed in Regulation Section 9 VAC 5-40-7820 B;
- c. The volatile organic compound content of the fountain and cleaning solutions, as found in the fact sheet section "Volatile Organic Compound Standards". See Regulation Section 9 VAC 5-40-7820;
- d. The temperature of the fountain solution, as found in the fact sheet section "Volatile Organic Compound Standards" 1, dealing with Fountain Solutions. See the Regulation Section 9 VAC 5-40-7820 A.;
- e. For manual cleaning, the amount of cleaning solution concentrate and water per batch of cleaning solution mixed;
- f. For automatic cleaning, the flow rates of cleaning solution concentrate and water, as specified in the fact sheet section "Volatile Organic Compounds Standards" 3. for cleaning solutions. See Regulation Section 9 VAC 5-40-7820 C; and
- g. Corrective actions taken when an exceedance of any parameter monitored occurs according to the requirements of the fact sheet sections Emissions Testing and Monitoring. See Regulation Section 9 VAC 5-40-7890 through 9 VAC 5-40-7900.

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.

"Alcohol" means any of the following compounds when used as a fountain solution additive: ethanol, n-propanol, and isopropanol.

"Alcohol substitute" means any non-alcohol additive that contains volatile organic compounds and is used in the fountain solution.

"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.

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

"Composite partial vapor pressure" means the sum of the partial pressures of the compounds defined as volatile organic compounds.

DEFINITIONS cont'd:

The "Composite partial vapor pressure" is calculated as follows:

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

where:

W_i	=	Weight of the "i"th VOC compound, in grams.
W_w	=	Weight of water, in grams.
W_e	=	Weight of exempt compound, in grams.
MW_i	=	Molecular weight of the "i"th VOC compound, in g/g-mole.
MW_w	=	Molecular weight of water, in g/g-mole.
MW_e	=	Molecular weight of exempt compound, in g/g-mole.
PP_c	=	VOC composite partial pressure at 20°C, in mm Hg.
VP_i	=	Vapor pressure of the "i"th VOC compound at 20°C, in mm Hg.

"Fountain solution" means any mixture of water, volatile and nonvolatile chemicals, and additives applied to a lithographic plate to repel ink from the non-image area on the plate.

"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.

"Heatset" means a lithographic printing process in which heat from a dryer is used to evaporate ink oils from the substrate.

"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.

DEFINITIONS cont'd:

"Non-heatset" means a lithographic printing process in which the printing inks are set and dried by absorption or oxidation rather than heat. For the purposes of this rule, UV-cured and electron beam-cured inks are considered non-heatset.

"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.

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

"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 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.

"Sheet-fed" means a lithographic printing process in which individual sheets of substrate are fed into the press sequentially.

"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.

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

DEFINITIONS cont'd:

"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 (TLV-C).

"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.

"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
Clarke	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
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.