

Chapter NR 466

NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FOR THE
PRINTING AND PUBLISHING INDUSTRY

NR 466.01	Applicability; purpose.	NR 466.08	Compliance dates.
NR 466.015	Designation of affected sources.	NR 466.09	Performance test methods.
NR 466.02	Definitions.	NR 466.10	Monitoring requirements.
NR 466.03	Symbols.	NR 466.11	Recordkeeping requirements.
NR 466.05	Standards: general.	NR 466.12	Reporting requirements.
NR 466.06	Standards: publication rotogravure printing.		
NR 466.07	Standards: product and packaging rotogravure and wide-web flexographic printing.		

NR 466.01 Applicability; purpose. (1) APPLICABILITY.

(a) This chapter applies to all of the following:

1. Each facility that is a major source of hazardous air pollutants at which publication rotogravure, product and packaging rotogravure, or wide-web flexographic printing presses are operated.

2. Each facility at which publication rotogravure, product and packaging rotogravure, or wide-web flexographic printing presses are operated for which the owner or operator, for purposes of establishing the facility to be an area source with respect to this chapter, chooses to commit to, and meets the following criteria:

a. Use less than 9.1 Mg (10 tons) per each rolling 12-month period of each HAP at the facility, including materials used for source categories or purposes other than printing and publishing.

b. Use less than 22.7 Mg (25 tons) per each rolling 12-month period of any combination of HAPs at the facility, including materials used for source categories or purposes other than printing and publishing.

(b) Each facility for which the owner or operator chooses to commit to and meets the criteria in par. (a) 2. shall be considered an area source, and is subject only to the provisions of ss. NR 466.11 (4) and 466.12 (2) (a).

(c) Each facility for which the owner or operator chooses to commit to and meets the criteria in par. (a) 2. may exclude, for the purpose of determining compliance with the usage restrictions in par. (a) 2., material used in routine janitorial or facility grounds maintenance, personal uses by employees or other persons, the use of products for the purpose of maintaining electric, propane, gasoline and diesel powered motor vehicles operated by the facility, and the use of HAP contained in intake water, used for processing or noncontact cooling, or intake air, used either as compressed air or for combustion.

(d) Each facility for which the owner or operator chooses to commit to and meets the criteria in par. (a) 2. to become an area source, but subsequently exceeds either of the thresholds in par. (a) 2. for any rolling 12-month period, without first obtaining and complying with other limits that keep its potential to emit HAP below major source levels, shall be considered in violation of its commitment for that 12-month period and shall be considered a major source of HAP beginning the first month after the end of the 12-month period in which either of the HAP-use thresholds was exceeded. As a major source of HAP, each facility is subject to this chapter as provided under par. (a) 1. and is no longer eligible to use the provisions of par. (a) 2., even if in subsequent 12-month periods the facility uses less HAP than the thresholds in par. (a) 2.

(e) An owner or operator of an affected source subject to par. (a) 2. who chooses to no longer be subject to par. (a) 2. shall notify the department of the change. If, by no longer being subject to par. (a) 2., the facility at which the affected source is located becomes a major source, the owner or operator shall continue to comply with the HAP usage provisions of par. (a) 2. until the source is in

compliance with all relevant requirements for a new MACT source or an existing source under this chapter.

(f) Nothing in this subsection is intended to preclude a facility from establishing area source status by limiting its potential to emit through other appropriate mechanisms.

(g) This chapter does not apply to research or laboratory equipment.

(2) PURPOSE. This chapter is adopted under ss. 285.27 (2) and 285.65, Stats., to establish emission standards for hazardous air pollutants for the printing and publishing industry in order to protect air quality.

Note: This chapter is based on the federal regulations contained in 40 CFR part 63 Subpart KK, created May 30, 1996.

History: Cr. Register, March, 2000, No. 531, eff. 4-1-00.

NR 466.015 Designation of affected sources.

(1) The affected sources subject to this chapter are all of the following:

(a) All of the publication rotogravure presses and all associated equipment, including proof presses, cylinder and parts cleaners, ink and solvent mixing and storage equipment, and solvent recovery equipment at a facility.

(b) All of the product and packaging rotogravure or wide-web flexographic printing presses at a facility plus any other equipment at that facility which the owner or operator chooses to include in accordance with sub. (2), except any of the following:

1. Proof presses.

2. Any product and packaging rotogravure or wide-web flexographic press which is used primarily for coating, laminating or other operations which the owner or operator chooses to exclude, provided that the owner or operator maintains records as required under s. NR 466.11 (6), and the sum of the total mass of inks, coatings, varnishes, adhesives, primers, solvents, thinners, reducers and other materials applied by the press using product and packaging rotogravure print stations and wide-web flexographic print stations in each month never exceeds 5% by weight of the total mass of inks, coatings, varnishes, adhesives, primers, solvents, thinners, reducers and other materials applied by the press in that month, including all inboard and outboard stations.

(2) The owner or operator of an affected source, as defined in sub. (1) (b), may elect to include in that affected source stand-alone coating equipment subject to all of the following provisions:

(a) All stand-alone coating equipment which is located at the facility, and which is described by any of the following, is included in the affected source:

1. The stand-alone coating equipment and one or more product and packaging rotogravure or wide-web flexographic presses are used to apply solids-containing materials to the same web or substrate.

2. The stand-alone coating equipment and one or more product and packaging rotogravure or wide-web flexographic presses apply a common solids-containing material.

3. A common control device is used to control organic HAP emissions from the stand-alone coating equipment and from one or more product and packaging rotogravure or wide-web flexographic printing presses.

(b) No product and packaging rotogravure or wide-web flexographic presses are excluded from the affected source under the provisions of sub. (1) (b) 2.

(3) Each product and packaging rotogravure or wide-web flexographic printing affected source at a facility that is a major source of HAP that complies with either of the following criteria on and after the applicable compliance date as specified in s. NR 466.08 is subject only to the requirements of ss. NR 466.11 (5) and 466.12 (2) (a):

(a) The owner or operator of the source applies no more than 500 kg (1102 pounds) per month, for every month, of inks, coatings, varnishes, adhesives, primers, solvents, thinners, reducers and other materials on product and packaging rotogravure or wide-web flexographic printing presses.

(b) The owner or operator of the source applies no more than 400 kg (882 pounds) per month, for every month, of organic HAP on product and packaging rotogravure or wide-web flexographic printing presses.

(4) Each product and packaging rotogravure or wide-web flexographic printing affected source at a facility that is a major source of HAP that does not comply with either criterion in sub. (3) in any month after the applicable compliance date as specified in s. NR 466.08 is, starting with that month, subject to all relevant requirements of this chapter and is no longer eligible to use the provisions of sub. (3), even if in subsequent months the affected source meets either of the criteria in sub. (3).

History: Cr. Register, March, 2000, No. 531, eff. 4-1-00.

NR 466.02 Definitions. For terms not defined in this section, the definitions contained in chs. NR 400 and 460 apply to the terms used in this chapter, with definitions in ch. NR 460 taking priority over definitions in ch. NR 400. If this section defines a term which is also defined in ch. NR 400 or 460, the definition in this section applies in this chapter.

(1) "Always-controlled work station" means a work station associated with a dryer from which the exhaust is delivered to a control device, with no provision for the dryer exhaust to bypass the control device. Sampling lines for analyzers and relief valves needed for safety purposes are not considered bypass lines.

(2) "Car-seal" means a seal that is placed on a device that is used to change the position of a valve or damper, for example, from open to closed, in a way that the position of the valve or damper cannot be changed without breaking the seal.

(3) "Certified product data sheet" or "CPDS" means documentation furnished by suppliers of inks, coatings, varnishes, adhesives, primers, solvents and other materials or by an outside laboratory that provides the organic HAP content of these materials, by weight, measured using Method 311 in 40 CFR Part 63, Appendix A, incorporated by reference in s. NR 484.04, or an equivalent or alternative method, or formulation data as provided for in s. NR 466.09 (2), and the solids content of these materials, by weight, determined in accordance with s. NR 466.09 (3).

(4) "Coating operation" means the application of a uniform layer of material across the entire width of a substrate.

(5) "Coating station" means a work station on which a coating operation is conducted.

(6) "Control device efficiency" means the ratio of organic HAP emissions recovered or destroyed by a control device to the total HAP emissions that are introduced into the control device, expressed as a percentage.

(7) "Facility" means all contiguous or adjoining property that is under common ownership or control, including properties that are separated only by a road or other public right-of-way.

(8) "Flexographic press" means an unwind or feed section, a series of individual work stations, one or more of which is a flexographic print station, any dryers, including interstage dryers and overhead tunnel dryers, associated with the work stations, and a rewind, stack or collection station. The work stations may be oriented vertically, horizontally or around the circumference of a single large impression cylinder. Inboard and outboard work stations, including those employing any other technology, such as rotogravure, are included if they are capable of printing or coating on the same substrate.

(9) "Flexographic print station" means a work station on which a flexographic printing operation is conducted. A flexographic print station includes a printing plate which is an image carrier made of rubber or other elastomeric material on which the image, type and art, to be printed is raised above the printing plate.

(10) "HAP applied" means the organic HAP content of all inks, coatings, varnishes, adhesives, primers, solvent and other materials applied to a substrate by a product and packaging rotogravure or wide-web flexographic printing affected source.

(12) "HAP used" means the organic HAP applied by a publication rotogravure printing affected source, including all organic HAP used for cleaning, parts washing, proof presses and all organic HAP emitted during tank loading, ink mixing and storage.

(13) "Intermittently-controllable work station" means a work station associated with a dryer with provisions for the dryer exhaust to be delivered to or diverted from a control device depending on the position of a valve or damper.

(14) "Month" means a calendar month or a prespecified period of 28 days to 35 days.

(15) "Never-controlled work station" means a work station which is not equipped with provisions by which any emissions, including those in the exhaust from any associated dryer, may be delivered to a control device.

(16) "Overall organic HAP control efficiency" means the total efficiency of a control system, determined either by the product of the capture efficiency and the control device efficiency or a liquid-liquid material balance.

(17) "Print station" means a work station on which a printing operation is conducted.

(18) "Printing operation" means the formation of words, designs and pictures on a substrate other than fabric through the application of material to that substrate.

(19) "Product and packaging rotogravure printing" means the production, on a rotogravure press, of any printed substrate not otherwise defined as publication rotogravure printing. This includes, but is not limited to, folding cartons, flexible packaging, labels and wrappers, gift wraps, wall and floor coverings, upholstery, decorative laminates and tissue products.

(20) "Proof press" means any device used only to check the quality of the image formation of rotogravure cylinders or flexographic plates, which prints only non-saleable items.

(21) "Publication rotogravure printing" means the production, on a rotogravure press, of any of the following saleable paper products:

(a) Catalogues, including mail order and premium.

(b) Direct mail advertisements, including circulars, letters, pamphlets, cards, and printed envelopes.

(c) Display advertisements, including general posters, outdoor advertisements, car cards, window posters; counter and floor displays; and point of purchase and other printed display material.

(d) Magazines.

(e) Miscellaneous advertisements, including brochures, pamphlets, catalog sheets, circular folders, announcements, package

inserts, book jackets, market circulars, magazine inserts and shopping news.

(f) Newspapers, magazine and comic supplements for newspapers, and preprinted newspaper inserts, including hi-fi and spectacolor rolls and sections.

(g) Periodicals.

(h) Telephone and other directories, including business reference services.

(22) "Research or laboratory equipment" means any equipment for which the primary purpose is to conduct research and development into new processes and products, where the equipment is operated under the close supervision of technically trained personnel and is not engaged in the manufacture of products for commercial sale in commerce, except in a de minimis manner.

(23) "Rotogravure press" means an unwind or feed section, a series of one or more work stations, one or more of which is a rotogravure print station, any dryers associated with the work stations, and a rewind, stack or collection section. Inboard and outboard work stations including those employing any other technology, such as flexography, are included if they are capable of printing or coating on the same substrate.

(24) "Rotogravure print station" means a work station on which a rotogravure printing operation is conducted. A rotogravure print station includes both a cylinder on which the image, type and art, to be printed is etched or engraved below the surface of the cylinder, and an ink supply.

(25) "Stand-alone coating equipment" means an unwind or feed section, a series of one or more coating stations and any associated dryers, and a rewind, stack or collection section that is not part of a product and packaging rotogravure or wide-web flexographic press, but is used to conduct one or more coating operations on a substrate. Stand-alone coating equipment may or may not do any of the following:

(a) Process substrate that is also processed by a product and packaging rotogravure or wide-web flexographic press.

(b) Apply solids-containing materials that are also applied by a product and packaging rotogravure or wide-web flexographic press.

(c) Utilize a control device that is also utilized by a product and packaging rotogravure or wide-web flexographic press.

Note: Stand-alone coating equipment is sometimes referred to as "off-line" coating equipment.

(26) "Wide-web flexographic press" means a flexographic press capable of printing substrates greater than 18 inches in width.

(27) "Work station" means a unit on a rotogravure or wide-web flexographic press where material is deposited onto a substrate.

History: Cr. Register, March, 2000, No. 531, eff. 4-1-00.

NR 466.03 Symbols. The symbols used in equations in this chapter have the following meanings:

(1) C_{ahi} is the monthly average, as-applied, organic HAP content of solids-containing material, i , expressed as a weight-fraction, in kg/kg (lb/lb).

(2) C_{asi} is the monthly average, as applied, solids content of solids-containing material, i , expressed as a weight-fraction, in kg/kg (lb/lb).

(3) C_{hi} is the organic HAP content of solids-containing material, i , expressed as a weight-fraction, in kg/kg (lb/lb).

(4) C_{hij} is the organic HAP content of solvent j , added to solids-containing material i , expressed as a weight-fraction, in kg/kg (lb/lb).

(5) C_{hj} is the organic HAP content of solvent j , expressed as a weight-fraction, in kg/kg (lb/lb).

(6) C_i is the organic volatile matter concentration in ppm, dry basis, of compound i in the vent gas, as determined by Method 25

or Method 25A in 40 CFR Part 60, Appendix A, incorporated by reference in s. NR 484.04.

(7) C_{si} is the solids content of solids-containing material, i , expressed as a weight-fraction, in kg/kg (lb/lb).

(8) C_{vi} is the volatile matter content of solids-containing material, i , expressed as a weight-fraction, in kg/kg (lb/lb).

(9) E is the organic volatile matter control efficiency of the control device, expressed as a percent.

(10) F is the organic volatile matter capture efficiency of the capture system as a percent.

(11) G_i is the mass fraction of each solids-containing material, i , which was applied at 20% by weight or greater solids content, on an as-applied basis, in kg/kg (lb/lb).

(12) H is the total monthly organic HAP applied, in kg (lb).

(13) H_a is the monthly allowable organic HAP emissions, in kg (lb).

(14) H_L is the monthly average, as-applied, organic HAP content of all solids-containing materials applied at less than 0.04 kg organic HAP per kg of material applied (0.04 lb/lb), in kg/kg (lb/lb).

(15) H_s is the monthly average, as-applied, organic HAP to solids ratio, kg organic HAP/kg solids applied (lb/lb).

(16) H_{si} is the as-applied, organic HAP to solids ratio of material i .

(17) L is the mass organic HAP emission rate per mass of solids applied, in kg/kg (lb/lb).

(18) M_{Bi} is the sum of the mass of solids-containing material, i , applied on intermittently-controllable work stations operating in bypass mode and the mass of solids-containing material, i , applied on never-controlled work stations, in a month, in kg (lb).

(19) M_{Bj} is the sum of the mass of solvent, thinner, reducer, diluent or other non-solids-containing material, j , applied on intermittently-controllable work stations operating in bypass mode and the mass of solvent, thinner, reducer, diluent or other non-solids-containing material, j , applied on never-controlled work stations, in a month, in kg (lb).

(20) M_{ci} is the sum of the mass of solids-containing material, i , applied on intermittently-controllable work stations operating in controlled mode and the mass of solids-containing material, i , applied on always-controlled work stations, in a month, in kg (lb).

(21) M_{cj} is the sum of the mass of solvent, thinner, reducer, diluent or other non-solids-containing material, j , applied on intermittently-controllable work stations operating in controlled mode and the mass of solvent, thinner, reducer, diluent or other non-solids-containing material, j , applied on always-controlled work stations in a month, in kg (lb).

(22) M_f is the total organic volatile matter mass flow rate, in kg/hr (lb/hr).

(23) M_{fi} is the organic volatile matter mass flow rate at the inlet to the control device, in kg/hr (lb/hr).

(24) M_{fo} is the organic volatile matter mass flow rate at the outlet of the control device, in kg/hr (lb/hr).

(25) M_{hu} is the mass of organic HAP used in a month, in kg (lb).

(26) M_i is the mass of solids-containing material, i , applied in a month, in kg (lb).

(27) M_{ij} is the mass of solvent, thinner, reducer, diluent or other non-solids-containing material, j , added to solids-containing material, i , in a month, in kg (lb).

(28) M_j is the mass of solvent, thinner, reducer, diluent or other non-solids-containing material, j , applied in a month, in kg (lb).

(29) M_{Lj} is the mass of solvent, thinner, reducer, diluent or other non-solids-containing material, j , added to solids-containing materials which were applied at less than 20% by weight solids content, on an as-applied basis, in a month, in kg (lb).

(30) M_{vr} is the mass of volatile matter recovered in a month, in kg (lb).

(31) M_{vu} is the mass of volatile matter, including water, used in a month, in kg (lb).

(32) MW_i is the molecular weight of compound i in the vent gas, kg/kg–mol.

(33) n is the number of organic compounds in the vent gas.

(34) p is the number of different inks, coatings, varnishes, adhesives, primers and other solids–containing materials applied in a month.

(35) q is the number of different solvents, thinners, reducers, diluents or other non–solids–containing materials applied in a month.

(36) Q_{sd} is the volumetric flow rate of gases entering or exiting the control device in dscm/hr, as determined by Method 2 in 40 CFR Part 60, Appendix A, incorporated by reference in s. NR 484.04.

(37) R is the overall organic HAP control efficiency as a percent.

(38) R_e is the overall effective organic HAP control efficiency for publication rotogravure as a percent.

(39) R_v is the organic volatile matter collection and recovery efficiency as a percent.

(40) S is the mass organic HAP emission rate per mass of material applied, in kg/kg (lb/lb).

(41) 0.0416 is the conversion factor for molar volume, kg–mol/m³, at standard conditions.

History: Cr. Register, March, 2000, No. 531, eff. 4–1–00.

NR 466.05 Standards: general. General provisions of ch. NR 460 apply to owners and operators of affected sources subject to this chapter as indicated in ch. NR 460 Appendix KK.

History: Cr. Register, March, 2000, No. 531, eff. 4–1–00.

NR 466.06 Standards: publication rotogravure printing. (1) COMPLIANCE DATES. Each owner or operator of any publication rotogravure printing affected source that is subject to the requirements of this chapter shall comply with this section on and after the compliance dates as specified in s. NR 466.08.

(2) **EMISSION LIMITATION.** The owner or operator of each publication rotogravure affected source shall limit organic HAP emissions to no more than 8% of the total volatile matter used each month.

(3) **COMPLIANCE METHODS.** The emission limitation in sub. (2) shall be achieved by any of the following methods:

(a) Overall control of at least 92% of organic HAP used.

(b) Substitution of non–HAP materials for organic HAP.

(c) A combination of capture and control technologies and substitution of materials.

(4) **COMPLIANCE DEMONSTRATION.** (a) *Solvent recovery.* Each owner or operator using a solvent recovery device to control emissions shall demonstrate compliance by showing that the HAP emission limitation is achieved by doing either of the following:

1. Perform a liquid–liquid material balance for each month according to the following procedures:

a. Measure the mass of each ink, coating, varnish, adhesive, primer, solvent and other material used by the affected source during the month.

b. Determine the organic HAP content of each ink, coating, varnish, adhesive, primer, solvent and other material used by the affected source during the month following the procedure in s. NR 466.09 (2) (a).

c. Determine the volatile matter content, including water, of each ink, coating, varnish, adhesive, primer, solvent and other material used by the affected source during the month following the procedure in s. NR 466.09 (3) (a).

d. Install, calibrate, maintain and operate, according to the manufacturer’s specifications, a device that indicates the cumulative amount of volatile matter recovered by the solvent recovery device on a monthly basis. The device shall be initially certified by the manufacturer to be accurate to within $\pm 2.0\%$.

e. Measure the amount of volatile matter recovered for the month.

f. Calculate the overall effective organic HAP control efficiency (R_e) for the month using Equation 1. For the purposes of this calculation, the mass fraction of organic HAP present in the recovered volatile matter is assumed to be equal to the mass fraction of organic HAP present in the volatile matter used.

$$R_e = (100) \frac{M_{vu} - M_{hu} + [(M_{vr})(M_{hu} / M_{vu})]}{M_{vu}} \quad \text{(Equation 1)}$$

2. Use continuous emission monitors, conduct an initial performance test of capture efficiency, and continuously monitor a site specific operating parameter to assure capture efficiency as specified in the following procedures:

a. Install continuous emission monitors to determine the total organic volatile matter mass flow rate at both the inlet to and the outlet from the control device, and calculate the percent efficiency (E) of the control device for each month.

b. Determine the percent capture efficiency (F) of the capture system according to s. NR 466.09 (5).

c. Calculate the overall effective organic HAP control efficiency (R_e) achieved for each month using Equation 2.

$$R_e = (100) \frac{M_{vu} - M_{hu} + [(E / 100) (F / 100) M_{hu}]}{M_{vu}} \quad \text{(Equation 2)}$$

d. Install, calibrate, operate and maintain the instrumentation necessary to measure continuously the site–specific operating parameter established in accordance with s. NR 466.10 (6) whenever a publication rotogravure printing press is operated.

e. Operate the capture device at an average value greater than, or less than, as appropriate, the operating parameter value established in accordance with s. NR 466.10 (6) for each 3–hour period.

(b) *Oxidation.* Each owner or operator using an oxidizer to control emissions shall demonstrate compliance by showing that the HAP emission limitation is achieved by doing either of the following:

1. Demonstrate initial compliance through performance tests and continuing compliance through continuous monitoring according to the following procedures:

a. Determine the oxidizer destruction efficiency (E) using the procedure in s. NR 466.09 (4).

b. Determine the capture efficiency (F) using the procedure in s. NR 466.09 (5).

c. Calculate the overall effective organic HAP control efficiency (R_e) achieved using Equation 2 in par. (a) 2. c.

d. Continuously monitor an appropriate oxidizer operating parameter in accordance with s. NR 466.10 (5), and continuously monitor an appropriate capture system monitoring parameter in accordance with s. NR 466.10 (6).

e. Operate the capture device at an average value greater than or less than, as appropriate, the operating parameter value established in accordance with s. NR 466.10 (6).

f. If an oxidizer other than a catalytic oxidizer is used, operate the oxidizer at an average combustion temperature for all 3–hour periods greater than or equal to the average combustion temperature established under s. NR 466.09 (4).

g. If a catalytic oxidizer is used, operate the oxidizer so that the average catalyst bed inlet temperature for all 3-hour periods is greater than or equal to the average catalyst bed inlet temperature established under s. NR 466.09 (4).

2. Use continuous emission monitors, conduct an initial performance test of capture efficiency and continuously monitor a site specific operating parameter to assure capture efficiency in accordance with the requirements of par. (a) 2.

(c) *Low HAP materials.* Each owner or operator demonstrating compliance without the use of a control device shall compare the mass of organic HAP used to the mass of volatile matter used each month, as specified in the following procedures:

1. Measure the mass of each ink, coating, varnish, adhesive, primer, solvent and other material used in the affected source during the month.

2. Determine the organic HAP content of each ink, coating, varnish, adhesive, primer, solvent and other material used during the month following the procedure in s. NR 466.09 (2) (a).

3. Determine the volatile matter content, including water, of each ink, coating, varnish, adhesive, primer, solvent and other material used during the month following the procedure in s. NR 466.09 (3) (a).

(d) *Compliance criteria.* 1. Under par. (a) 1., the affected source is in compliance for the month with the emission limitation if R_e is at least 92% for that month.

2. Under par. (a) 2., the affected source is in compliance for the month with the emission limitation if R_e is at least 92% for that month, and the capture device is operated at an average value greater than, or less than, as appropriate, the operating parameter value established in accordance with s. NR 466.10 (6) for each 3-hour period.

3. Under par. (b) 1., the affected source is in initial compliance with the emission limitation if R_e is at least 92%. The affected source is in continuing compliance with the emission limitation if par. (b) 1. e. and either par. (b) 1. f. or g. are satisfied.

4. Under par. (b) 2., the affected source is in compliance for the month with the emission limitation if the criteria of subd. 2. are satisfied.

5. Under par. (c), the affected source is in compliance for the month with the emission limitation if the mass of organic HAP used does not exceed 8% of the mass of volatile matter used.

History: Cr. Register, March, 2000, No. 531, eff. 4-1-00.

NR 466.07 Standards: product and packaging rotogravure and wide-web flexographic printing. (1) COMPLIANCE DATES. Each owner or operator of any product and packaging rotogravure or wide-web flexographic printing affected source that is subject to the requirements of this chapter shall comply with this section on and after the compliance dates as specified in s. NR 466.08.

(2) EMISSION LIMITATIONS. The owner or operator of each product and packaging rotogravure or wide-web flexographic printing affected source shall limit organic HAP emissions to no more than any one of the following:

(a) Five percent of the organic HAP applied for the month.

(b) Four percent of the mass of inks, coatings, varnishes, adhesives, primers, solvents, reducers, thinners and other materials applied for the month.

(c) Twenty percent of the mass of solids applied for the month.

(d) A calculated equivalent allowable mass based on the organic HAP and solids contents of the inks, coatings, varnishes, adhesives, primers, solvents, reducers, thinners and other materials applied for the month.

(3) COMPLIANCE METHODS. The owner or operator of each product and packaging rotogravure or wide-web flexographic

printing affected source shall demonstrate compliance with sub. (2) according to one of the following procedures:

(a) Demonstrate that each ink, coating, varnish, adhesive, primer, solvent, diluent, reducer, thinner and other material applied during the month contains no more than 0.04 weight-fraction organic HAP, on an as-purchased basis, as determined in accordance with s. NR 466.09 (2) (b).

(b) Demonstrate that each ink, coating, varnish, adhesive, primer and other solids-containing material applied during the month contains no more than 0.04 weight-fraction organic HAP, on a monthly average as-applied basis, as determined in accordance with the following procedures:

1. Determine the organic HAP content of each ink, coating, varnish, adhesive, primer, solvent, diluent, reducer, thinner and other material applied on an as-purchased basis in accordance with s. NR 466.09 (2) (b).

2. Calculate the monthly average as-applied organic HAP content (C_{ahi}) of each ink, coating, varnish, adhesive, primer and other solids-containing material using Equation 3.

$$C_{ahi} = \frac{(C_{hi} M_i + \sum_{j=1}^q C_{hij} M_{ij})}{M_i + \sum_{j=1}^q M_{ij}} \quad \text{(Equation 3)}$$

(c) Demonstrate that each ink, coating, varnish, adhesive, primer and other solids-containing material applied, contains no more than one of the following:

1. 0.04 weight-fraction organic HAP on a monthly average as-applied basis, when determined in accordance with par. (b).

2. 0.20 kg (0.20 lb) of organic HAP per kg (lb) of solids applied, on a monthly average as-applied basis, when determined in accordance with the following procedures:

a. Determine the as-applied solids content following the procedure in s. NR 466.09 (3) (b) of all materials which do not meet the requirements of subd. 1.

b. Calculate the monthly average as-applied solids content of materials which are reduced, thinned or diluted prior to application, using Equation 4.

$$C_{asi} = \frac{C_{si} M_i}{M_i + \sum_{j=1}^q M_{ij}} \quad \text{(Equation 4)}$$

c. Calculate the as-applied organic HAP to solids ratio, H_{si} , for all materials which do not meet the requirements of subd. 1., using Equation 5.

$$H_{si} = \frac{C_{ahi}}{C_{asi}} \quad \text{(Equation 5)}$$

(d) Demonstrate that the monthly average as-applied organic HAP content, H_L , of all materials applied is less than 0.04 kg (0.04 lb) HAP per kg (lb) of material applied, using Equation 6.

$$H_L = \frac{\sum_{i=1}^p M_i C_{hi} + \sum_{j=1}^q M_j C_{hj}}{\sum_{i=1}^p M_i + \sum_{j=1}^q M_j} \quad \text{(Equation 6)}$$

(e) Demonstrate that the monthly average as-applied organic HAP content, H_S , is less than 0.20 kg (0.20 lb) HAP per kg (lb) solids applied using Equation 7.

$$H_s = \frac{\sum_{i=1}^p M_i C_{hi} + \sum_{j=1}^q M_j C_{hj}}{\sum_{i=1}^p M_i C_{si}} \quad (\text{Equation 7})$$

(f) Demonstrate that the total monthly organic HAP applied, H, as determined using Equation 8, is less than the calculated equivalent allowable organic HAP, H_a, as determined under sub. (6).

$$H = \sum_{i=1}^p M_i C_{hi} + \sum_{j=1}^q M_j C_{hj} \quad (\text{Equation 8})$$

(g) Operate a capture system and control device and demonstrate an overall organic HAP control efficiency of at least 95% for each month. If the affected source operates more than one capture system or more than one control device, and has only always-controlled work stations, the owner or operator shall demonstrate compliance in accordance with the provisions of sub. (7) or (9). If the affected source operates one or more never-controlled work stations or one or more intermittently-controllable work stations, the owner or operator shall demonstrate compliance in accordance with the provisions of sub. (7). Otherwise, the owner or operator shall demonstrate compliance in accordance with the procedure in sub. (4) when emissions from the affected source are controlled by a solvent recovery device or the procedure in sub. (5) when emissions are controlled by an oxidizer.

(h) Operate a capture system and control device and limit the organic HAP emission rate to no more than 0.20 kg (0.20 lb) organic HAP emitted per kg (lb) solids applied as determined on a monthly average as-applied basis. If the affected source operates more than one capture system, more than one control device, one or more never-controlled work stations, or one or more intermittently-controllable work stations, the owner or operator shall demonstrate compliance in accordance with the provisions of sub. (7). Otherwise, the owner or operator shall demonstrate compliance following the procedure in sub. (4) when emissions from the affected source are controlled by a solvent recovery device or the procedure in sub. (5) when emissions are controlled by an oxidizer.

(i) Operate a capture system and control device and limit the organic HAP emission rate to no more than 0.04 kg (0.04 lb) organic HAP emitted per kg (lb) material applied as determined on a monthly average as-applied basis. If the affected source operates more than one capture system, more than one control device, one or more never-controlled work stations, or one or more intermittently-controllable work stations, then the owner or operator shall demonstrate compliance in accordance with the provisions of sub. (7). Otherwise, the owner or operator shall demonstrate compliance following the procedure in sub. (4) when emissions from the affected source are controlled by a solvent recovery device or the procedure in sub. (5) when emissions are controlled by an oxidizer.

(j) Operate a capture system and control device and limit the monthly organic HAP emissions to less than the allowable emissions as calculated in accordance with sub. (6). If the affected source operates more than one capture system, more than one control device, one or more never-controlled work stations, or one or more intermittently-controllable work stations, the owner or operator shall demonstrate compliance in accordance with the provisions of sub. (7). Otherwise, the owner or operator shall demonstrate compliance following the procedure in sub. (4) when emissions from the affected source are controlled by a solvent recovery device or the procedure in sub. (5) when emissions are controlled by an oxidizer.

(4) COMPLIANCE DEMONSTRATION FOR A SOLVENT RECOVERY DEVICE. (a) To demonstrate the overall organic HAP control effi-

ciency required under sub. (3) (g), or the organic HAP emission limitation requirements in sub. (3) (h) to (j), each owner or operator using a solvent recovery device to control emissions shall do one of the following:

1. Perform a liquid-liquid material balance for each month according to the following procedures:

a. Measure the mass of each ink, coating, varnish, adhesive, primer, solvent and other material applied on the press or group of presses controlled by a common solvent recovery device during the month.

b. If demonstrating compliance with sub. (2) (b), (c) or (d), determine the organic HAP content of each ink, coating, varnish, adhesive, primer, solvent and other material applied during the month following the procedure in s. NR 466.09 (2) (b).

c. Determine the volatile matter content of each ink, coating, varnish, adhesive, primer, solvent and other material applied during the month following the procedure in s. NR 466.09 (3) (b).

d. If demonstrating compliance with sub. (2) (c) or (d), determine the solids content of each ink, coating, varnish, adhesive, primer, solvent and other material applied during the month following the procedure in s. NR 466.09 (3) (b).

e. Install, calibrate, maintain and operate according to the manufacturer's specifications, a device that indicates the cumulative amount of volatile matter recovered by the solvent recovery device on a monthly basis. The device shall be initially certified by the manufacturer to be accurate to within $\pm 2.0\%$.

f. Measure the amount of volatile matter recovered for the month.

g. Calculate the volatile matter collection and recovery efficiency, R_v, using Equation 9.

$$R_v = 100 \frac{M_{vr}}{\sum_{i=1}^p M_i C_{vi} + \sum_{j=1}^q M_j} \quad (\text{Equation 9})$$

h. If demonstrating compliance with sub. (2) (b), (c) or (d), calculate the organic HAP emitted during the month, H, using Equation 10.

$$H = \left[1 - \frac{R_v}{100} \right] \left[\sum_{i=1}^p \left(C_{hi} M_i + \sum_{j=1}^q C_{hij} M_{ij} \right) \right] \quad (\text{Equation 10})$$

i. If demonstrating compliance with sub. (2) (c), calculate the organic HAP emission rate based on solids applied, L, using Equation 11.

$$L = \frac{H}{\sum_{i=1}^p C_{si} M_i} \quad (\text{Equation 11})$$

j. If demonstrating compliance with sub. (2) (b), calculate the organic HAP emission rate based on material applied, S, using Equation 12.

$$S = \frac{H}{\sum_{i=1}^p \left[M_i + \sum_{j=1}^q M_{ij} \right]} \quad (\text{Equation 12})$$

2. Conduct continuous emission monitoring of the control device, conduct an initial performance test of capture efficiency, and continuously monitor a site specific operating parameter to assure capture efficiency according to the following procedures:

a. If demonstrating compliance with sub. (2) (b), (c) or (d), measure the mass of each ink, coating, varnish, adhesive, primer, solvent and other material applied on the press or group of presses controlled by a common control device during the month.

b. If demonstrating compliance with sub. (2) (b), (c) or (d), determine the organic HAP content of each ink, coating, varnish, adhesive, primer, solvent and other material applied during the month following the procedure in s. NR 466.09 (2) (b).

c. Install continuous emission monitors to determine the total organic volatile matter mass flow rate at both the inlet to and the outlet from the control device, and calculate the percent efficiency (E) of the control device for each month.

d. If demonstrating compliance with sub. (2) (c) or (d), determine the solids content of each ink, coating, varnish, adhesive, primer, solvent and other material applied during the month following the procedure in s. NR 466.09 (3) (b).

e. Install, calibrate, operate and maintain the instrumentation necessary to measure continuously the site-specific operating parameter established in accordance with s. NR 466.10 (6) whenever a product and packaging rotogravure or wide-web flexographic printing press is operated.

f. Determine the capture efficiency (F) in accordance with s. NR 466.09 (5) and (6).

g. Calculate the overall organic HAP control efficiency, (R), achieved for each month using Equation 13.

$$R = \frac{E F}{100} \quad (\text{Equation 13})$$

h. If demonstrating compliance with sub. (2) (b), (c) or (d), calculate the organic HAP emitted during the month, H, for each month using Equation 14.

$$H = \left[1 - \left(\frac{E F}{100} \right) \right] \left[\sum_{i=1}^p \left(C_{hi} M_i + \sum_{j=1}^q C_{hij} M_{ij} \right) \right] \quad (\text{Equation 14})$$

i. If demonstrating compliance with sub. (2) (c), calculate the organic HAP emission rate based on solids applied, L, using Equation 15.

$$L = \frac{H}{\sum_{i=1}^p C_{si} M_i} \quad (\text{Equation 15})$$

j. If demonstrating compliance with sub. (2) (b), calculate the organic HAP emission rate based on material applied, S, using Equation 16.

$$S = \frac{H}{\sum_{i=1}^p \left[M_i + \sum_{j=1}^q M_{ij} \right]} \quad (\text{Equation 16})$$

(b) 1. Under par. (a) 1., the affected source is in compliance with an emission limitation if one of the following is satisfied:

a. The organic volatile matter collection and recovery efficiency, R_v , is 95% or greater.

b. The organic HAP emission rate based on solids applied, L, is 0.20 kg (0.20 lb) organic HAP per kg (lb) solids applied or less.

c. The organic HAP emission rate based on material applied, S, is 0.04 kg (0.04 lb) organic HAP per kg (lb) material applied or less.

d. The organic HAP emitted during the month, H, is less than the calculated allowable organic HAP, H_a , as determined using sub. (6).

2. Under par. (a) 2., the affected source is in compliance with an emission limitation if the capture system operating parameter is operated at an average value greater than or less than, as appropriate, the operating parameter value established in accordance with s. NR 466.10 (6) for each 3 hour period, and one of the following is satisfied:

a. The organic volatile matter collection and recovery efficiency, R_v , is 95% or greater.

b. The organic HAP emission rate based on solids applied, L, is 0.20 kg (0.20 lb) organic HAP per kg (lb) solids applied or less.

c. The organic HAP emission rate based on material applied, S, is 0.04 kg (0.04 lb) organic HAP per kg (lb) material applied or less.

d. The organic HAP emitted during the month, H, is less than the calculated allowable organic HAP, H_a , as determined using sub. (6).

(5) COMPLIANCE DEMONSTRATION FOR AN OXIDIZER. (a) To demonstrate the overall organic HAP control efficiency required under sub. (3) (g) or the organic HAP emission limitation requirements in sub. (3) (h) to (j), each owner or operator using an oxidizer to control emissions shall do one of the following:

1. Conduct initial performance tests of capture efficiency and control device efficiency and continuously monitor capture system and control device operating parameters according to the following procedures:

a. Determine the oxidizer destruction efficiency (E) using the procedure in s. NR 466.09 (4).

b. Determine the capture system capture efficiency (F) in accordance with s. NR 466.09 (5) and (6).

c. Calculate the overall organic HAP control efficiency, (R), achieved using Equation 13 in sub. (4) (a) 2. g.

d. If demonstrating compliance with sub. (2) (b), (c) or (d), measure the mass of each ink, coating, varnish, adhesive, primer, solvent and other material applied on the press or group of presses controlled by a common solvent recovery device during the month.

e. If demonstrating compliance with sub. (2) (b), (c) or (d), determine the organic HAP content of each ink, coating, varnish, adhesive, primer, solvent and other material applied during the month following the procedure in s. NR 466.09 (2) (b).

f. If demonstrating compliance with sub. (2) (c) or (d), determine the solids content of each ink, coating, varnish, adhesive, primer, solvent and other material applied during the month following the procedure in s. NR 466.09 (3) (b).

g. If demonstrating compliance with sub. (2) (b), (c) or (d), calculate the organic HAP emitted during the month, H, for each month using Equation 14 in sub. (4) (a) 2. h.

h. If demonstrating compliance with sub. (2) (c), calculate the organic HAP emission rate based on solids applied, L, for each month using Equation 15 in sub. (4) (a) 2. i.

i. If demonstrating compliance with sub. (2) (b), calculate the organic HAP emission rate based on material applied, S, using Equation 16 in sub. (4) (a) 2. j.

j. Install, calibrate, operate and maintain the instrumentation necessary to measure continuously the site-specific operating parameters established in accordance with s. NR 466.10 (5) and (6) whenever a product and packaging rotogravure or wide-web flexographic press is operating.

2. Conduct continuous emission monitoring of the control device, conduct an initial performance test of capture efficiency, and continuously monitor a site specific operating parameter to assure capture efficiency in accordance with the requirements in sub. (4) (a) 2.

(b) 1. Under par. (a) 1., the affected source is in compliance with an emission limitation if the oxidizer is operated such that the average operating parameter value is greater than the operating parameter value established in accordance with s. NR 466.10 (5)

for each 3–hour period, and the capture system operating parameter is operated at an average value greater than or less than, as appropriate, the operating parameter value established in accordance with s. NR 466.10 (6) for each 3–hour period, and one of the following is satisfied:

- a. The overall organic HAP control efficiency, R, is 95% or greater.
- b. The organic HAP emission rate based on solids applied, L, is 0.20 kg (0.20 lb) organic HAP per kg (lb) solids applied or less.
- c. The organic HAP emission rate based on material applied, S, is 0.04 kg (0.04 lb) organic HAP per kg (lb) material applied or less.
- d. The organic HAP emitted during the month, H, is less than the calculated allowable organic HAP, H_a , as determined using sub. (6).

2. Under par. (a) 2., the affected source is in compliance with an emission limitation if sub. (4) (b) 2. is satisfied.

(6) CALCULATING MONTHLY ALLOWABLE HAP EMISSIONS (H_a). Owners or operators shall calculate the monthly allowable HAP

$$H_a = 0.20 \left[\sum_{i=1}^p M_i G_i C_{si} \right] + 0.04 \left[\sum_{i=1}^p M_i (1 - G_i) + \sum_{j=1}^q M_{Lj} \right] \quad (\text{Equation 17})$$

(7) OPERATING MORE THAN ONE CAPTURE SYSTEM OR CONTROL DEVICE, OR ONE OR MORE NEVER–CONTROLLED OR INTERMITTENTLY–CONTROLLABLE WORK STATIONS. This subsection applies to owners or operators of product and packaging rotogravure or wide–web flexographic printing presses operating more than one capture system, more than one control device, one or more never–controlled work stations, or one or more intermittently–controllable work stations.

(a) The owner or operator of each solvent recovery system used to control one or more product and packaging rotogravure or wide–web flexographic presses for which the owner or operator chooses to perform a liquid–liquid material balance under sub. (4) (a) 1. shall determine the organic HAP emissions for those presses controlled by that solvent recovery system according to one of the following:

1. In accordance with sub. (4) (a) 1. a. to c. and e. to h., if the presses controlled by that solvent recovery system have only always–controlled work stations.
2. In accordance with subs. (4) (a) 1. b., c., e. and f. and (8), if the presses controlled by that solvent recovery system have one or more never–controlled or intermittently–controllable work stations.

(b) The owner or operator of each solvent recovery system used to control one or more product and packaging rotogravure or wide–web flexographic presses, for which the owner or operator chooses to conduct continuous emission monitoring of the control device, conduct an initial test of capture efficiency, and continuously monitor a site specific operating parameter to assure capture efficiency under sub. (4) (a) 2., shall do both of the following:

1. For each capture system delivering emissions to that solvent recovery system, monitor an operating parameter established in accordance with s. NR 466.10 (6) to assure capture system efficiency.
2. Determine the organic HAP emissions for those presses served by each capture system delivering emissions to that solvent recovery system according to one of the following:
 - a. In accordance with sub. (4) (a) 2. a. to c. and e. to h., if the presses served by that capture system have only always–controlled work stations.
 - b. In accordance with subs. (4) (a) 2. b., c. and e. to g. and (8), if the presses served by that capture system have one or more never–controlled or intermittently–controllable work stations.

(c) The owner or operator of each oxidizer used to control emissions from one or more product and packaging rotogravure

emissions, H_a , as required under sub. (3) (f), (4) (b) 1. d. or 2. d., or (5) (b) 1. d., according to the following procedures:

(a) Determine the as–purchased mass of each ink, coating, varnish, adhesive, primer and other solids–containing material applied each month, M_i .

(b) Determine the as–purchased solids content of each ink, coating, varnish, adhesive, primer and other solids–containing material applied each month, in accordance with s. NR 466.09 (3) (b), C_{si} .

(c) Determine the as–purchased mass fraction of each ink, coating, varnish, adhesive, primer and other solids–containing material which was applied at 20% by weight or greater solids content, on an as–applied basis, G_i .

(d) Determine the total mass of each solvent, diluent, thinner or reducer added to materials which were applied at less than 20% by weight solids content, on an as–applied basis, each month, M_{Lj} .

(e) Calculate the monthly allowable HAP emissions, H_a , using Equation 17.

or wide–web flexographic presses, for which the owner or operator chooses to conduct performance tests of capture efficiency and control device efficiency and continuously monitor capture system and control device operating parameters under sub. (5) (a) 1., shall do all of the following:

1. Monitor an operating parameter established in accordance with s. NR 466.10 (5) to assure control device efficiency.
2. For each capture system delivering emissions to that oxidizer, monitor an operating parameter established in accordance with s. NR 466.10 (6) to assure capture efficiency.
3. Determine the organic HAP emissions for those presses served by each capture system delivering emissions to that oxidizer according to one of the following:

- a. In accordance with sub. (5) (a) 1. a. to e. and g., if the presses served by that capture system have only always–controlled work stations.
- b. In accordance with subs. (5) (a) 1. a. to c. and e. and (8), if the presses served by that capture system have one or more never–controlled or intermittently–controllable work stations.

(d) The owner or operator of each oxidizer used to control emissions from one or more product and packaging rotogravure or wide–web flexographic presses, for which the owner or operator chooses to conduct continuous emission monitoring of the control device, conduct an initial performance test of capture efficiency and continuously monitor a site specific operating parameter to assure capture efficiency under sub. (5) (a) 2., shall do both of the following:

1. For each capture system delivering emissions to that oxidizer, monitor an operating parameter established in accordance with s. NR 466.10 (6) to assure capture efficiency.
2. Determine the organic HAP emissions for those presses served by each capture system delivering emissions to that oxidizer according to one of the following:
 - a. In accordance with sub. (4) (a) 2. a. to c. and e. to h., if the presses served by that capture system have only always–controlled work stations.
 - b. In accordance with subs. (4) (a) 2. b., c., e. to g. and (8), if the presses served by that capture system have one or more never–controlled or intermittently–controllable work stations.

(e) The owner or operator of one or more uncontrolled product and packaging rotogravure or wide–web flexographic printing presses shall determine the organic HAP applied on those presses using Equation 8 in sub. (3) (f). For the purpose of a determination under this paragraph, the organic HAP emitted from an uncon-

trolled press shall be considered equal to the organic HAP applied on that press.

(f) If demonstrating compliance with sub. (2) (c) or (d), the owner or operator shall determine the solids content of each ink, coating, varnish, adhesive, primer, solvent and other material applied during the month following the procedure in s. NR 466.09 (3) (b).

(g) The owner or operator shall determine the organic HAP emissions for the affected source for the month by summing all organic HAP emissions calculated according to pars. (a), (b) 2., (c) 3., (d) 2. and (e).

(h) Under this subsection, the affected source is in compliance for the month with an emission limitation, if all operating parameters required to be monitored under pars. (b) to (d), were maintained at the appropriate values, and one of the following is satisfied:

1. The total mass of organic HAP emitted by the affected source was not more than 4% of the total mass of inks, coatings, varnishes, adhesives, primers, solvents, diluents, reducers, thinners and other materials applied by the affected source.

2. The total mass of organic HAP emitted by the affected source was not more than 20% of the total mass of solids applied by the affected source.

3. The total mass of organic HAP emitted by the affected source was not more than the equivalent allowable organic HAP emissions for the affected source, H_a , calculated in accordance with sub. (6).

4. The total mass of organic HAP emitted by the affected source was not more than 5% of the total mass of organic HAP applied by the affected source. The total mass of organic HAP applied by the affected source in the month shall be determined by the owner or operator using Equation 8 in sub. (3) (f).

$$H = \left[\sum_{i=1}^p M_{Ci} C_{hi} + \sum_{j=1}^q M_{Cj} C_{hj} \right] \left[1 - \frac{M_{vr}}{\sum_{i=1}^p M_{Ci} C_{vi} + \sum_{j=1}^q M_{Cj}} \right] + \left[\sum_{i=1}^p M_{Bi} C_{hi} + \sum_{j=1}^q M_{Bj} C_{hj} \right] \quad \text{(Equation 18)}$$

(f) For each press or group of presses for which the owner or operator uses the provisions of sub. (7) (b) 2. b., (c) 3. b. or (d) 2. b., the owner or operator shall calculate the organic HAP emitted during the month using Equation 19.

$$H = \left[\sum_{i=1}^p M_{Ci} C_{hi} + \sum_{j=1}^q M_{Cj} C_{hj} \right] \left[1 - \left(\frac{E}{100} \frac{F}{100} \right) \right] + \left[\sum_{i=1}^p M_{Bi} C_{hi} + \sum_{j=1}^q M_{Bj} C_{hj} \right] \quad \text{(Equation 19)}$$

(9) OPERATING MORE THAN ONE CAPTURE SYSTEM OR CONTROL DEVICE AND NO NEVER-CONTROLLED AND NO INTERMITTENTLY CONTROLLABLE WORK STATIONS. If the owner or operator of an affected source operates more than one capture system or more than one control device, and has no never-controlled work stations and no intermittently-controllable work stations, the affected source is in compliance with the 95% overall organic HAP control efficiency requirement for the month if for each press or group of presses controlled by a common control device one of the following is satisfied:

(a) The organic volatile matter collection and recovery efficiency, R_v , as determined by sub. (4) (a) 1. a., c. and e. to g., is equal to or greater than 95%.

(b) The overall organic HAP control efficiency as determined by sub. (4) (a) 2. c. and e. to g., for each press or group of presses served by that control device and a common capture system, is equal to or greater than 95% and the average capture system operating parameter value for each capture system serving that control device is greater than or less than, as appropriate, the operating

(8) OPERATING NEVER-CONTROLLED OR INTERMITTENTLY CONTROLLABLE WORK STATIONS. Owners or operators determining organic HAP emissions from a press or group of presses having one or more never-controlled or intermittently-controllable work stations and using the procedures specified in sub. (7) (a) 2., (b) 2. b., (c) 3. b. or (d) 2. b., shall do the following for that press or group of presses:

(a) Determine the sum of the mass of all inks, coatings, varnishes, adhesives, primers and other solids-containing materials which are applied on intermittently-controllable work stations in bypass mode and the mass of all inks, coatings, varnishes, adhesives, primers and other solids-containing materials which are applied on never-controlled work stations during the month, M_{Bi} .

(b) Determine the sum of the mass of all solvents, reducers, thinners and other diluents which are applied on intermittently-controllable work stations in bypass mode and the mass of all solvents, reducers, thinners and other diluents which are applied on never-controlled work stations during the month, M_{Bj} .

(c) Determine the sum of the mass of all inks, coatings, varnishes, adhesives, primers and other solids-containing materials which are applied on intermittently-controllable work stations in controlled mode and the mass of all inks, coatings, varnishes, adhesives, primers and other solids-containing materials which are applied on always-controlled work stations during the month, M_{Ci} .

(d) Determine the sum of the mass of all solvents, reducers, thinners and other diluents which are applied on intermittently-controllable work stations in controlled mode and the mass of all solvents, reducers, thinners and other diluents which are applied on always-controlled work stations during the month, M_{Cj} .

(e) For each press or group of presses for which the owner or operator uses the provisions of sub. (7) (a) 2., calculate the organic HAP emitted during the month using Equation 18.

parameter value established for that capture system in accordance with s. NR 466.10 (6) for each 3-hour period.

(c) The overall organic HAP control efficiency as determined by sub. (5) (a) 1. a. to c. and j., for each press or group of presses served by that control device and a common capture system, is equal to or greater than 95%, the oxidizer is operated such that the average operating parameter value is greater than the operating parameter value established in accordance with s. NR 466.10 (5) for each 3-hour period, and the average capture system operating parameter value for each capture system serving that control device is greater than or less than, as appropriate, the operating parameter value established for that capture system in accordance with s. NR 466.10 (6) for each 3-hour period.

History: Cr. Register, March, 2000, No. 531, eff. 4-1-00.

NR 466.08 Compliance dates. (1) The owner or operator of an existing source subject to this chapter shall comply with the provisions of this chapter on or before May 30, 1999.

(2) The owner or operator of a new MACT source subject to this chapter shall comply with the provisions of this chapter immediately upon startup of the affected source, or May 30, 1996, whichever is later.

(3) Affected sources which have undergone reconstruction are subject to the requirements for new MACT sources. The costs associated with the purchase and installation of air pollution control equipment are not considered in determining whether the affected source has been reconstructed. Additionally, the costs of retrofitting and replacement of equipment that is installed specifically to comply with this chapter are not considered reconstruction costs.

Note: Compliance dates are federally enforceable under 40 CFR 63.826 prior to the effective date of this section.

History: Cr. Register, March, 2000, No. 531, eff. 4-1-00.

NR 466.09 Performance test methods. (1) INITIAL PERFORMANCE TEST EXCEPTIONS FOR CONTROL DEVICES. An owner or operator using a control device to comply with the requirements of s. NR 466.06 or 466.07 is not required to conduct an initial performance test to demonstrate compliance as is otherwise required under ss. NR 466.06 (4) (a) 2., (b) 1. and 2. and 466.07 (4) (a) 2. and (5) (a) 1. and 2. if any of the following criteria are met:

(a) The control device was in operation prior to May 30, 1996 and is equipped with continuous emission monitors for determining inlet and outlet total organic volatile matter concentration; capture efficiency has been determined in accordance with the requirements of this chapter such that an overall HAP control efficiency can be calculated; and the continuous emission monitors are used to demonstrate continuous compliance in accordance with s. NR 466.10.

(b) The owner or operator has met the requirements of either s. NR 460.06 (4) (b) 3. or (7).

(c) The control device is a solvent recovery system and the owner or operator chooses to comply by means of a monthly liquid-liquid material balance as provided for in s. NR 466.06 (4) (a) 1. and 466.07 (4) (a) 1.

(2) ORGANIC HAP WEIGHT-FRACTION. (a) For the purpose of meeting the requirements of s. NR 466.06, the organic HAP weight-fraction of each ink, coating, varnish, adhesive, primer, solvent and other material used in a publication rotogravure affected source shall be determined in accordance with one of the following procedures:

1. Use Method 311 in 40 CFR Part 63, Appendix A, incorporated by reference in s. NR 484.04, or obtain the results of a Method 311 test performed by the manufacturer of the material. If the organic HAP weight-fraction for any material cannot be determined using Method 311, the owner or operator shall submit an alternate method to the U.S. environmental protection agency for approval by the administrator. The recovery efficiency of the proposed technique shall be determined for all of the target organic HAP and a correction factor, if necessary, shall be determined and applied.

2. Determine the volatile matter content of the material in accordance with sub. (3) (a), and use this value for the organic HAP content for all compliance purposes.

3. Use formulation data provided by the manufacturer of the material on a CPDS if the manufacturer has done both of the following:

a. Included in the organic HAP content determination all HAP present at a level greater than 0.1% in any raw material used, weighted by the mass fraction of each raw material used in the material.

b. Determined the HAP content of each raw material present in the formulation by Method 311 in 40 CFR Part 63, Appendix A, incorporated by reference in s. NR 484.04, or by an alternate method approved by the administrator, or by reliance on a CPDS from a raw material supplier prepared in accordance with subpar. a.

(b) For the purpose of meeting the requirements of s. NR 466.06, the organic HAP weight-fraction of each ink, coating, varnish, adhesive, primer, solvent, thinner, reducer, diluent and other material used in a product and packaging rotogravure or wide-web flexographic affected source shall be determined in accordance with one of the following procedures:

1. Use Method 311 in 40 CFR Part 63, Appendix A, incorporated by reference in s. NR 484.04, or obtain the results of a Method 311 test performed by the manufacturer of the material. If the organic HAP weight-fraction for any material cannot be determined using Method 311, the owner or operator shall submit an alternate method to the U.S. environmental protection agency for approval by the administrator. The recovery efficiency of the proposed technique shall be determined for all of the target organic HAP and a correction factor, if necessary, shall be determined and applied.

2. Determine the volatile matter content of the material in accordance with sub. (3) (b), and use this value for the organic HAP content for all compliance purposes.

3. Use formulation data provided by the manufacturer of the material on a CPDS if the manufacturer has done both of the following:

a. Included in the organic HAP content determination all organic HAP present at a level greater than 0.1% in any raw material used, weighted by the mass fraction of each raw material used in the material.

b. Determined the organic HAP content of each raw material present in the formulation by Method 311 in 40 CFR Part 63, Appendix A, incorporated by reference in s. NR 484.04, or by an alternate method approved by the administrator, or by reliance on a CPDS from a raw material supplier prepared in accordance with subpar. a.

(c) In the event of any inconsistency between the organic HAP content of a material determined using test data from Method 311 in 40 CFR Part 63, Appendix A, incorporated by reference in s. NR 484.04, and the organic HAP content of the same material determined using formulation data as allowed under par. (a) 3. or (b) 3., the Method 311 test data shall govern, unless after consultation, an owner or operator demonstrates to the satisfaction of the department that the formulation data are correct.

(3) VOLATILE MATTER WEIGHT-FRACTION. (a) For the purpose of meeting the requirements of s. NR 466.06, the volatile matter weight-fraction of each ink, coating, varnish, adhesive, primer, solvent, diluent, reducer, thinner and other material used in a publication rotogravure affected source shall be determined in accordance with one of the following procedures:

1. Use Method 24A in 40 CFR Part 60, Appendix A, incorporated by reference in s. NR 484.04, or obtain the results of a Method 24A test performed by the manufacturer of the material. If the volatile matter weight-fraction for any material cannot be determined using Method 24A, the owner or operator shall submit an alternate method to the U.S. environmental protection agency for approval by the administrator.

2. Use formulation data, or volatile matter content data provided by material suppliers.

(b) For the purpose of meeting the requirements of s. NR 466.07, the volatile matter and solids weight-fraction of each ink, coating, varnish, adhesive, primer, solvent, diluent, reducer, thinner and other material used in a product and packaging rotogravure or wide-web flexographic affected source shall be determined in accordance with one of the following procedures:

1. Use Method 24 in 40 CFR Part 60, Appendix A, incorporated by reference in s. NR 484.04, or obtain the results of a Method 24 test performed by the manufacturer of the material. If the volatile matter or solids weight-fraction for any material cannot be determined using Method 24, the owner or operator shall submit an alternate method to the U.S. environmental protection agency for approval by the administrator.

2. Use formulation data, or volatile matter and solids content data provided by material suppliers.

(c) In the event of any inconsistency between the volatile matter or solids content of a material determined using formulation data as allowed under par. (a) 2. or (b) 2., and the volatile matter or solids content of the same material using the results of Method 24 or 24A in 40 CFR Part 60, Appendix A, incorporated by reference in s. NR 484.04, the applicable test method shall govern, unless after consultation, the owner or operator can demonstrate to the satisfaction of the department that the formulation data are correct.

(4) CONTROL DEVICE DESTRUCTION EFFICIENCY. A performance test of a control device to determine destruction efficiency for the purpose of meeting the requirements of ss. NR 466.06 and 466.07, shall be conducted by the owner or operator in accordance with the following requirements:

(a) An initial performance test to establish the destruction efficiency of an oxidizer and the associated combustion zone temperature for a thermal oxidizer and the associated catalyst bed inlet temperature for a catalytic oxidizer shall be conducted and the data reduced in accordance with the following reference methods and procedure:

1. Use Method 1 or 1A in 40 CFR Part 60, Appendix A, incorporated by reference in s. NR 484.04, for sample and velocity traverses to determine sampling locations.

2. Use Method 2, 2A, 2C or 2D in 40 CFR Part 60, Appendix A, incorporated by reference in s. NR 484.04, to determine gas volumetric flow rate.

3. Use Method 3 in 40 CFR Part 60, Appendix A, incorporated by reference in s. NR 484.04, for gas analysis to determine dry molecular weight.

4. Use Method 4 in 40 CFR Part 60, Appendix A, incorporated by reference in s. NR 484.04, to determine stack gas moisture.

5. Perform Methods 2, 2A, 3 and 4 in 40 CFR Part 60, Appendix A, incorporated by reference in s. NR 484.04, as applicable, at least twice during each test period.

6. Use Method 25 in 40 CFR Part 60, Appendix A, incorporated by reference in s. NR 484.04, to determine organic volatile matter concentration, except as provided for in this subdivision. The owner or operator shall submit notice of the intended test method to the department for approval along with notice of the performance test required under s. NR 460.06 (2). The owner or operator may use Method 25A in 40 CFR Part 60, Appendix A, incorporated by reference in s. NR 484.04, if any of the following conditions are met:

a. An exhaust gas organic volatile matter concentration of 50 parts per million by volume (ppmv) or less is required to comply with the standards of s. NR 466.06 or 466.07.

b. The organic volatile matter concentration at the inlet to the control system and the required level of control are such to result in exhaust gas organic volatile matter concentrations of 50 ppmv or less.

c. Because of the high efficiency of the control device, the anticipated organic volatile matter concentration at the control device exhaust is 50 ppmv or less, regardless of inlet concentration.

7. Each performance test shall consist of 3 separate runs; each run conducted for at least one hour under the conditions that exist when the affected source is operating under normal representative operating conditions. Operations during periods of startup, shutdown and malfunction do not constitute representative conditions for the purpose of a performance test. For the purpose of determining organic volatile matter concentrations and mass flow rates, the average of results of all runs shall apply.

8. Organic volatile matter mass flow rates shall be determined using Equation 20:

$$M_f = Q_{sd} \left[\sum_{i=1}^n C_i MW_i \right] [0.0416] [10^{-6}] \quad (\text{Equation 20})$$

9. Emission control device efficiency shall be determined using Equation 21:

$$E = \frac{M_{fi} - M_{fo}}{M_{fi}} \quad (\text{Equation 21})$$

(b) The owner or operator shall record the process information necessary to determine the conditions of the performance test.

(c) For the purpose of determining the value of the oxidizer operating parameter that will demonstrate continuing compliance, the time-weighted average of the values recorded during the performance test shall be computed. For an oxidizer other than catalytic oxidizer, the owner or operator shall establish as the operating parameter the minimum combustion temperature. For a catalytic oxidizer, the owner or operator shall establish as the operating parameter the minimum gas temperature at the inlet to the catalyst bed. These minimum temperatures are the operating parameter values that demonstrate continuing compliance with the requirements of ss. NR 466.06 and 466.07.

(5) CAPTURE EFFICIENCY. Except as provided for in sub. (6), a performance test to determine the capture efficiency of each capture system venting organic emissions to a control device for the purpose of meeting the requirements of ss. NR 466.06 (4) (a) 2. and (b) and 466.07 (4) (a) 2., (5) (a), (7) (b) to (d) and (9) (b) and (c) shall be conducted by the owner or operator in accordance with the following procedures:

(a) For permanent total enclosures, capture efficiency shall be assumed as 100%. Method 204 in 40 CFR Part 51, Appendix M, incorporated by reference in s. NR 484.04, shall be used to confirm that an enclosure meets the requirements for permanent total enclosure.

(b) For temporary total enclosures, the capture efficiency shall be determined according to Method 204 and, as applicable, Methods 204A through 204F, in 40 CFR Part 51, Appendix M, incorporated by reference in s. NR 484.04. The owner or operator may exclude never-controlled work stations from the capture efficiency determinations.

(6) ALTERNATIVE CAPTURE EFFICIENCY. As an alternative to the procedures specified in sub. (5), an owner or operator required to conduct a capture efficiency test may use any capture efficiency protocol and test methods that satisfy the criteria of either the data quality objective (DQO) or the lower confidence limit (LCL) approach in 40 CFR Part 63, Subpart KK, Appendix A, incorporated by reference in s. NR 484.04. The owner or operator may exclude never-controlled work stations from the capture efficiency determinations.

History: Cr. Register, March, 2000, No. 531, eff. 4-1-00; CR 05-039: am. (1) Register February 2006 No. 602, eff. 3-1-06.

NR 466.10 Monitoring requirements. Following the date on which the initial performance test of a control device is completed, to demonstrate continuing compliance with the standard, the owner or operator shall monitor and inspect each control device required to comply with s. NR 466.06 or 466.07 to ensure proper operation and maintenance by implementing the applicable requirements in this section. Any excursion from the required operating parameters which are monitored in accordance with this section, unless otherwise excused, shall be considered a violation of the emission standard.

(1) Owners or operators of product and packaging rotogravure or wide-web flexographic presses with intermittently-controllable work stations shall implement one of the following procedures for each dryer associated with a work station:

(a) Install, calibrate, maintain and operate according to the manufacturer's specifications a flow control position indicator that provides a record indicating whether the exhaust stream from

the dryer was directed to the control device or was diverted from the control device. The time and flow control position shall be recorded at least once per hour, as well as every time the flow direction is changed. The flow control position indicator shall be installed at the entrance to any bypass line that could divert the exhaust stream away from the control device to the atmosphere.

(b) Secure any bypass line valve in the closed position with a car-seal or a lock-and-key type configuration. A visual inspection of the seal or closure mechanism shall be performed at least once every month to ensure that the valve or damper is maintained in the closed position and the exhaust stream is not diverted through the bypass line.

(c) Ensure that any bypass line valve or damper is in the closed position through continuous monitoring of the valve position. The monitoring system shall be inspected at least once every month to ensure that it is functioning properly.

(d) Use an automatic shutdown system in which the press is stopped when flow is diverted away from the control device to any bypass line. The automatic system shall be inspected at least once every month to ensure that it is functioning properly.

(2) All continuous emission monitors shall comply with performance specifications (PS) 8 or 9 in 40 CFR Part 60, Appendix B, incorporated by reference in s. NR 484.04. The requirements of 40 CFR Part 60, Appendix F, incorporated by reference in s. NR 484.04, shall also be followed. In conducting the quarterly audits required by Appendix F, owners or operators shall challenge the monitors with compounds representative of the gaseous emission stream being controlled.

(3) All temperature monitoring equipment shall be installed, calibrated, maintained and operated according to manufacturer's specifications. The calibration of the chart recorder, data logger or temperature indicator shall be verified every 3 months. The owner or operator shall replace the chart recorder, data logger or temperature indicator if either the owner or operator chooses not to perform the calibration, or the equipment cannot be calibrated properly.

(4) An owner or operator complying with s. NR 466.06 or 466.07 through continuous emission monitoring of a control device shall install, calibrate, operate and maintain continuous emission monitors to measure the total organic volatile matter concentration at both the control device inlet and outlet.

(5) An owner or operator complying with the requirements of s. NR 466.06 or 466.07 through the use of an oxidizer and demonstrating continuous compliance through monitoring of an oxidizer operating parameter shall do the following as appropriate:

(a) For an oxidizer other than a catalytic oxidizer, install, calibrate, operate and maintain a temperature monitoring device equipped with a continuous recorder. The device shall be accurate to within $\pm 1\%$ of the temperature being monitored in $^{\circ}\text{C}$ or $\pm 1^{\circ}\text{C}$, whichever is the greater value. The thermocouple or temperature sensor shall be installed in the combustion chamber at a location in the combustion zone.

(b) For a catalytic oxidizer, install, calibrate, operate and maintain a temperature monitoring device equipped with a continuous recorder. The device shall be accurate to within $\pm 1\%$ of the temperature being monitored in $^{\circ}\text{C}$ or $\pm 1^{\circ}\text{C}$, whichever is the greater value. The thermocouple or temperature sensor shall be installed in the vent stream at the nearest feasible point to the catalyst bed inlet.

(6) An owner or operator, complying with the requirements of s. NR 466.06 or 466.07 through the use of a control device and demonstrating continuous compliance by monitoring an operating parameter to ensure that the capture efficiency measured during the initial compliance test is maintained, shall do all of the following:

(a) Submit to the department, with the compliance status report required by s. NR 460.08 (8), a plan that does all of the following:

1. Identifies the operating parameter to be monitored to ensure that the capture efficiency measured during the initial compliance test is maintained.

2. Discusses why this parameter is appropriate for demonstrating ongoing compliance.

3. Identifies the specific monitoring procedures.

(b) Set the operating parameter value, or range of values, that demonstrate compliance with s. NR 466.06 or 466.07.

(c) Conduct monitoring in accordance with the plan submitted to the department unless comments received from the department require an alternate monitoring scheme.

History: Cr. Register, March, 2000, No. 531, eff. 4-1-00.

NR 466.11 Recordkeeping requirements.

(1) Recordkeeping requirements of ch. NR 460 apply to owners and operators of affected sources subject to this chapter as indicated in ch. NR 460 Appendix KK.

(2) Each owner or operator of an affected source subject to this chapter shall maintain on a monthly basis, in accordance with the requirements of s. NR 460.09 (2) (a), all of the following records:

(a) Records specified in s. NR 460.09 (2) (b), of all measurements needed to demonstrate compliance with this chapter, such as continuous emission monitor data, control device and capture system operating parameter data, material usage, HAP usage, volatile matter usage and solids usage that support data that the source is required to report.

(b) Records specified in s. NR 460.09 (2) (c) for each applicability determination performed by the owner or operator in accordance with the requirements of s. NR 466.01 (1) (a) to (f).

(c) Records specified in s. NR 460.09 (3) for each continuous monitoring system operated by the owner or operator in accordance with the requirements of s. NR 466.10 (intro.).

(3) Each owner or operator of an affected source subject to this chapter shall maintain records of all liquid-liquid material balances performed in accordance with the requirements of ss. NR 466.06 and 466.07. The records shall be maintained in accordance with the requirements of s. NR 460.09 (2).

(4) The owner or operator of each facility which commits to the criteria of s. NR 466.01 (1) (a) 2. shall maintain records of all required measurements and calculations needed to demonstrate compliance with these criteria, including the mass of all HAP containing materials used and the mass fraction of HAP present in each HAP containing material used, on a monthly basis.

(5) (a) The owner or operator of each facility which meets the criteria of s. NR 466.015 (3) (a) shall maintain records of the total volume of each material applied on product and packaging rotogravure or wide-web flexographic printing presses during each month.

(b) The owner or operator of each facility which meets the criteria of s. NR 466.015 (3) (b) shall maintain records of the total volume and organic HAP content of each material applied on product and packaging rotogravure or wide-web flexographic printing presses during each month.

(c) The records required under pars. (a) and (b) shall be maintained for 5 years and, upon request, submitted to the department.

(6) The owner or operator choosing to exclude from an affected source a product and packaging rotogravure or wide-web flexographic press which meets the limits and criteria of s. NR 466.015 (1) (b) 2. shall maintain the following records for 5 years and submit them to the department upon request:

(a) The total mass of each material applied each month on the press, including all inboard and outboard stations.

(b) The total mass of each material applied each month on the press by product and packaging rotogravure or wide-web flexographic printing operations.

History: Cr. Register, March, 2000, No. 531, eff. 4-1-00.

NR 466.12 Reporting requirements. (1) Except as provided in this section, reporting requirements of ch. NR 460 apply to owners and operators of affected sources subject to this chapter as indicated in ch. NR 460 Appendix KK.

(2) Each owner or operator of an affected source subject to this chapter shall submit the following reports to the department:

(a) An initial notification as required in s. NR 460.08 (2).

1. Initial notifications for existing sources shall have been submitted no later than June 1, 1998.

2. Initial notifications for new MACT sources and reconstructed sources shall be submitted as required in s. NR 460.08 (2).

3. For the purpose of this chapter, a permit application for approval of construction or reconstruction under ch. NR 406 may be used in lieu of the initial notification required under s. NR 460.08 (2), provided the same information is contained in the permit application as required by s. NR 460.08 (2).

4. Permit applications shall be submitted by the same due dates as those specified for the initial notifications.

(b) A notification of performance tests as specified in ss. NR 460.06 and 460.08 (5). This notification, and the site-specific test plan required under s. NR 460.06 (2), shall identify the operating parameter to be monitored to ensure that the capture efficiency measured during the performance test is maintained. The operating parameter identified in the site-specific test plan shall be considered to be approved unless explicitly disapproved, or unless comments received from the department require monitoring of an alternate parameter.

(c) A notification of compliance status as specified in s. NR

460.08 (8).

(d) Performance test reports as specified in s. NR 460.09 (4) (b).

(e) Startup, shutdown and malfunction reports as specified in s. NR 460.09 (4) (e), but only if a control device is used to comply with this chapter.

1. If actions taken by an owner or operator during a startup, shutdown or malfunction of an affected source, including actions taken to correct a malfunction, are not completely consistent with the procedures specified in the source's startup, shutdown and malfunction plan as specified in s. NR 460.05 (4) (c), the owner or operator shall state the information in the report. The startup, shutdown or malfunction report shall consist of a letter containing the name, title and signature of the responsible official who is certifying its accuracy, that shall be submitted to the department.

2. Separate startup, shutdown or malfunction reports are not required if the information is included in the report specified in par. (f).

(f) A summary report shall be submitted in accordance with s. NR 460.09 (5) (c). In addition to a report of operating parameter exceedances as required by s. NR 460.09 (5) (c) 1., the summary report shall include the following, as applicable:

1. Exceedances of the standards in ss. NR 466.06 and 466.07.

2. Exceedances of either of the criteria in s. NR 466.01 (1) (a) 2. a. or b.

3. Exceedances of the criterion in s. NR 466.015 (3) (a) and (b) in the same month.

4. Exceedances of the criterion of

History: Cr. Register, March, 2000, No. 531, eff. 4-1-00.