STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JOHN ELIAS BALDACCI
GOVERNOR

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COMMISSIONER

MEMORANDUM

TO: Board of Environmental Protection

FROM: Jeff Crawford, Bureau of Air Quality

DATE: September 2, 2010

RE: Post to 30-day Comment Period: Chapter 129 Surface Coating Facilities including Appendix A

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Statutory and Regulatory Reference:

A. Statutory authority.

38 MRSA Section 585-A provides that the Board of Environmental Protection "may establish and amend regulations to implement ambient air quality standards and emission standards. These regulations shall be designed to achieve and maintain ambient air quality standards and emission standards within any region and prevent air pollution."

B. Specific legal mandates requiring adoption.

Section 184 of the Clean Air Act requires states to implement or update reasonably available control technology (RACT) controls on all major VOC and NOx emission sources and on source categories covered by a Control Technique Guideline (CTG) document.

EPA developed updated CTG: *Control Technique Guidelines for Metal Furniture Coatings (September 2007) and Control Technique Guidelines for Flat Wood Paneling Coatings (September 2006).*

Location/Applicability:

The proposed amendments will apply statewide.

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Description:

Section 184 of the Clean Air Act requires states to implement or update reasonably available control technology (RACT) controls on all major VOC and NOx emission sources and on source categories covered by a Control Technique Guideline (CTG) document. EPA defines RACT as the lowest emission limit that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility. In the late 1970's, EPA published CTGs recommending VOC controls for flat wood paneling and metal furniture, which were updated in September 2006 and September 2007, respectively. The Department is proposing to include these updates in Chapter 129 and amend Appendix A, accordingly.

Flat wood paneling: Most flat wood coating facilities apply stains and varnishes to natural plywood panels used for wall coverings, as well as fillers, sealers, primers, basecoats, inks, and topcoats. This category also includes tileboard and exterior siding made of solid wood, hardwood, or waferboard.

- The Department's proposal expands the types of paneling regulated by Chapter 129 to include exterior siding and tileboard. Emission limits for these two categories were not addressed in the 1978 CTG document.
- The amendments lower the threshold above which sources are subject to the rule to 15 lbs/day of VOC (from 10 tons per year).
- VOC emission limits are expressed in weight per volume units instead of a weight per surface area coated in the existing rule.

Metal furniture: Metal furniture coatings include paints and adhesives and are typically applied without a primer.

- The amendments provide VOC limits for eight types of coatings used on metal furniture and list 6 coatings that are not subject to the rule.
- The amendments lower the threshold to 15 lbs/day (from 10 tons per year) above which sources are subject to VOC controls.

The Department is proposing these amendments as part of its effort to satisfy the RACT requirements mandated under the CAA and regulations related to the 1997 8-hour ozone NAAQS. According to the EPA's Final Rule to Implement the 8-Hour Ozone NAAQS (70 FR 71612, November 29, 2005), areas classified as "moderate" nonattainment or higher[1] must submit a revision to the SIP rules for all CTG categories. The proposed amendments to Chapter 129 will fulfill Maine's obligation to promulgate rules and implement controls incorporating the CTG recommendations for metal furniture and flat wood paneling coatings.

[1] Maine is treated as a moderate nonattainment area under the Clean Air Act by way of its inclusion in the Ozone Transport Region.

Environmental Issues:

Volatile organic compounds contribute to ground-level ozone formation or smog which aggravates respiratory ailments such as asthma, bronchitis, and emphysema. The presence of ozone impedes the breathing of even healthy people.

Departmental Recommendation:

The Department recommends that the Board post the proposed Chapter 129, including Appendix A, to a 30-day comment period.

Estimated Time of Presentation:

10 minutes

CHAPTER 129: SURFACE COATING FACILITIES

SUMMARY: This regulation establishes consistent requirements for testing, evaluating and limiting the emissions of volatile organic compounds (VOC) and Hazardous Air Pollutants (HAP) from selected surface coating operations. VOC surface coating facilities can select one of three compliance methods: low solvent content coating technology, daily-weighted averaging, and add-on air pollution control devices.

1. Scope/Applicability

A. Source applicability. This Chapter applies~~shall apply~~ to all new and existing surface coating facilities under the following surface coating categories:

(1) Surface coating of cans;

(2) Surface coating of fabric;

(3) Surface coating of vinyl;

(4) Surface coating of metal furniture;

(5) Surface coating of flatwood paneling;

(6) Surface coating of miscellaneous metal parts and products; and

(7) Only Section 10 of this Chapter applies to the following surface coating categories:

(a) Aerospace Manufacturing and Rework Facilities.

(b) Shipbuilding and Ship Repair.

(c) Wood furniture and Manufacturing Operations.

~~NOTE: See definition of coating in Section 2 of this Chapter.~~

B. Testing and recordkeeping applicability. The owner or operator of a surface coating unit, line or operation subject to this Chapter shall comply with the testing and compliance procedures in Section 6, Test Methods and Compliance Procedures, and the certification and recordkeeping requirements in Section 7, Initial Compliance Certification and Recordkeeping Procedures, both of this Chapter.

C. Emission limitations applicability.

(1) Any surface coating unit, line or operation under categories 1 through ~~5~~3, as specified in Subsection 1(A) above and within this Chapter, whose maximum theoretical emissions of VOC from all coating units, lines or operations at the surface coating facility under the same

surface coating category are ten (10) tons VOC per year or greater, shall comply with the applicable emission limitations under Section 3 of this Chapter.

(2) Any surface coating unit, line or operation under category 4 (metal furniture), as specified in Subsection 1(A) above and within this Chapter, whose total actual emissions of VOC from all coating units, lines, or operations at the surface coating facility under the same surface coating category are fifteen (15) pounds per day (6.8 kg per day) of VOC or greater, shall comply with the applicable emission limitations under Section 3 of this Chapter.

(3) Any surface coating unit, line or operation under category 5 (flatwood paneling), as specified in Subsection 1(A) above and within this Chapter, whose total actual emissions of VOC from all coating units, lines, or operations at the surface coating facility under the same surface coating category are fifteen (15) pounds per day (6.8 kg per day) of VOC or greater, shall comply with the applicable emission limitations under Section 3 of this Chapter.

(4) Any surface coating unit, line or operation under category 6 (miscellaneous metal parts and products), as specified in Subsection 1(A) above and within this Chapter, whose total actual emissions of VOC from all coating units, lines or operations at the surface coating facility under the same surface coating category are fifteen (15) pounds (lb) VOC per day or greater, shall comply with the applicable emission limitations under Section 3 of this Chapter unless:

(~~1~~a) The maximum theoretical emissions from all surface coating operations are limited by permit or order of the Department to 1,666 lb or less in any calendar month;

(~~2~~b) The owner or operator of the surface coating facility subject to this Chapter is and has at all times been in compliance with the maximum theoretical emission limitation since the issuance of the permit or order of the Department; and

(~~3~~c) The total actual emissions from the surface coating facility have not exceeded 1,666 lb in any calendar month since January 1990.

D. Changes in applicability. Any surface coating unit, line or operation that becomes or is currently subject to these provisions under Subsection 1(C) of this Chapter remains~~shall remain~~ subject to the provisions, even if its emissions later decrease, except that any source which has reduced its actual VOC emissions below the applicability threshold established under Subsection 1(C) shall be exempt from the applicable emissions limitations established under Subsection 3 of this Chapter, provided that both of the following conditions are met:

(1) The owner or operator can demonstrate that the actual VOC emissions occurring in the consecutive 12-month period after said reduction was implemented were no more than 80% of the relevant applicability threshold; and

(2) The owner or operator accepts an enforceable permit containing restrictions which limit the combined actual VOC emissions, during any 12-month period from the source or all process operations associated with a specific classifiable process, below 80% of the relevant applicability threshold.

If the source's emissions later increase to greater than 80% of the applicability threshold during any consecutive 12 month period, then the facility must immediately comply with the emission limitations of Section 3 of this Chapter.

E. Exemptions. The following surface coating operations are~~shall be~~ exempt from the requirements of this Chapter:

(1) Coating units, lines or operations whose total actual coatings usage from all coating units, lines or operations at the surface coating facility under the same surface coating category is less than 50 gallons per year of coatings. Non-VOC coatings are~~shall be~~ excluded when calculating compliance with this exemption;

(2) Facilities exclusively utilizing powder coatings or other non-VOC methods of coating are~~shall be~~ exempt from the requirements of this Chapter upon the Department's receipt of certification from the facility documenting its exclusive use of powder coatings or other non-VOC coating methods; and

(3) Surface coating of the following:

(a) Exterior of completely assembled aircraft,

(b) Exterior of major aircraft subassemblies,

(c) Automobile, light-duty truck, and heavy duty truck refinishing,

(d) Exterior of completely assembled marine vessels, and

(e) Exterior of major marine vessel subassemblies.

F. Applicable testing methods and compliance procedures. The testing methods and compliance procedures for determining compliance with this Chapter are described in Appendix A, which is incorporated into this Chapter by reference.

2. Definitions

A. General coating definitions

(1) Coating. "Coating" means a material applied in a thin layer to a surface as a protective, decorative, or functional film. This term often refers to paints such as lacquers or enamels, but also refers to films applied to other materials such as varnishes, sealants, adhesives, inks, maskants, and temporary protective coatings. Such materials include, but are not limited to, paints, varnishes, sealants, adhesives, inks, maskants, and temporary protective coatings.

(2) Coating unit. "Coating unit" means a series of one or more coating applicators and any associated drying area or oven wherein a coating is applied, dried, or cured. A coating unit ends at the point where the coating is dried or cured, or prior to any subsequent application of a different coating. A surface coating operation does not require an oven or flashoff area in order to be included in this definition.

(3) Control device. "Control device" means equipment used to reduce, by destruction or removal, the amount of air pollutant(s) in an air stream prior to discharge to the ambient air.

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

(5) Exempt compounds. See VOC definition in Chapter 100.

(6) Flashoff area. "Flashoff area" means the space between the coating application area and the oven.

(7) Maximum theoretical emissions. "Maximum theoretical emissions" means the quantity of VOC that theoretically could be emitted by a surface coating unit, line or operation without control devices and is based on one of the following:

(a) The design capacity or maximum production capacity of the surface coating facility and 8,760 hours of operation per year; or

(b) Hours of operation and/or design and/or process conditions, including operation rates, that are limited by enforceable permit conditions. Such permit conditions include short term limits (e.g., the number of operating hours per 30 day rolling average) and corresponding recordkeeping provisions.

The design capacity or maximum production capacity includes use of coatings and inks with the highest VOC content used in practice by the surface coating facility for the two (2) years preceding the effective date of this Chapter.

(8) Normally closed container. "Normally closed container" means a container that is closed unless an operator is actively engaged in activities such as emptying or filling the container.

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

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

(11) Prime coat. "Prime coat" means the first of two (2) or more coatings applied to a surface.

(12) Roller coating. "Roller coating" means the application of a coating to a substrate by means of hard rubber or metal rolls.

(13) Substrate. "Substrate" means the surface to which a coating is applied.

(14) Web coating line. "Web coating line" means all of the coating applicator(s), drying area(s), or oven(s), located between an unwind station and a rewind station, that are used to apply coating onto a continuous strip of substrate (the web). A web coating line need not have a drying oven in order to be included in this definition.

B. Surface coating of cans

(1) Can. "Can" means any cylindrical, single-walled container, with or without a top, cover, spout, or handle, that is manufactured from metal sheets thinner than 29 gauge (0.0141 inch (in)).

(2) Can coating unit. "Can coating unit" means a coating unit in which any coating is applied onto the surface of cans or can components.

(3) End sealing compound coat. "End sealing compound coat" means a compound applied onto can ends that functions as a gasket when the end is assembled onto the can.

(4) Exterior basecoat. "Exterior basecoat" means a coating applied to the exterior of a two-piece can body to provide protection to the metal, or to provide background for any lithographic or printing operation.

(5) Interior body spray coat. "Interior body spray coat" means a coating applied to the interior of the can body to provide a protective film between the product and the can.

(6) Over varnish. "Over varnish" means a coating applied directly over a design coating or directly over ink to reduce the coefficient of friction, to provide gloss, and to protect the finish against abrasion and corrosion.

(7) Sheet basecoat. "Sheet basecoat" means a coating applied to metal in sheet form to serve as either the exterior or interior of two-piece or three-piece can bodies or can ends.

(8) Side-seam spray coat. "Side-seam spray coat" means a coating applied to the seam of a three-piece can.

(9) Three-piece can. "Three-piece can" means a can that is made by rolling a rectangular sheet of metal into a cylinder that is soldered, welded, or cemented at the seam with two ends attached.

(10) Two-piece can. "Two-piece can" means a can whose body and one end are formed from a shallow cup and to which the other end is later attached.

(11) Two-piece can exterior end coat. "Two-piece can exterior end coat" means a coating applied by roller coating or spraying to the exterior end of a two-piece can to provide protection to the metal.

C. Surface coating of fabric

(1) Fabric coating line. "Fabric coating line" means a web coating line where coating is applied to fabric. A fabric printing line engaged in the dyeing and finishing of textiles as classified in Industrial Group 226 or Industry 2231 is not considered a fabric coating line.

(2) Fabric coating unit. "Fabric coating unit" means a coating application station and its associated flashoff area, drying area, or oven wherein coating is applied and dried or cured in a fabric coating line. A fabric coating line may include more than one fabric coating unit.

D. Surface coating of vinyl. Vinyl coating line. "Vinyl coating line" means a web coating line where a decorative, functional, or protective coating is applied to a continuous web coating line of vinyl or vinyl-coated fabric. Lines used for coating or printing on vinyl and coating or printing on urethane are considered vinyl coating lines.

E. Surface coating of metal furniture

(1) Metal furniture. "Metal furniture" means any furniture piece made of metal, or any metal part that will be assembled with other metal, wood, fabric, plastic or glass parts to form a furniture piece including, but not limited to, tables, chairs, waste baskets, beds, desks, lockers, benches, shelving, file cabinets and room dividers. This definition does ~~shall~~ not apply to the coating of miscellaneous metal parts and products as defined in Subsection 2(F)(5) of this Chapter.

(2) Metal furniture coating unit. "Metal furniture coating unit" means a coating unit in which a protective, decorative, or functional coating is applied onto the surface of metal furniture.

F. Surface coating of miscellaneous metal parts and products

(1) Air-dried coating. "Air-dried coating" means a coating that is dried by the use of air or forced warm air at temperatures up to 90 degrees Celsius (C) (194 degrees Fahrenheit (F)).

(2) Clear coating. "Clear coating" means a coating that (1) either lacks color and opacity or is transparent, and (2) uses the surface to which it is applied as a reflective base or undertone color.

(3) Drum. "Drum" means any cylindrical metal shipping container of thirteen (13)- to 110-gallon capacity.

(4) Extreme performance coating. "Extreme performance coating" means a coating intended for exposure to extreme environmental conditions, including but not limited to, the outdoors, temperatures above 95 degrees C or 203 degrees F, detergents, abrasive and scouring agents, solvents, and corrosive atmospheres.

(5) Miscellaneous metal parts and products. "Miscellaneous metal parts and products" means any metal part or metal product, even if attached to or combined with a nonmetal part or product. Miscellaneous metal parts and products include, but are not limited to, the application of underbody anti chip materials (e.g. underbody plastisol) and surface coating operations other than prime coat, primer surface, topcoat and final repair operations at automobile and light-duty truck assembly plants, as well as including the following Industrial Classification Codes: Major Group 33 (primary metal industries), Major Group 34 (fabricated metal products), Major Group 35 (non electric machinery), Major Group 36 (electrical machinery), Major Group 37 (transportation equipment), Major Group 38 (miscellaneous instruments), and Major Group 39 (miscellaneous manufacturing industries).

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Miscellaneous metal products and parts does not include: 1) maintenance, repair or refinishing of machinery, production equipment, piping, storage vessels and similar parts where the part is to be used on site and not offered for sale; 2) shipbuilding operations; 3) the field application of coatings to stationary steel structures and their appurtenances; and 4) aerospace manufacturing, overhaul, and repair operations.

(6) Miscellaneous metal parts and products coating unit. "Miscellaneous metal parts and products coating unit" means a coating unit in which a coating is applied to any miscellaneous metal parts and products.

(7) Pail. "Pail" means any cylindrical metal shipping container of one (1) to twelve (12) gallon capacity and constructed of 29 gauge and heavier metal.

(8) Refinishing. "Refinishing" mean the repainting of used equipment.

G. Surface coating of flatwood paneling

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

(2) Flatwood paneling coating line. "Flatwood paneling coating line" means a coating line used to apply and dry or cure coatings applied to one of the following flatwood paneling categories: printed interior panels made of hardwood plywood and thin particleboard (i.e., less than or equal to 0.64 centimeter (cm) (0.25 in) thick; natural finish hardwood plywood panels; ~~and~~ Class II hardboard paneling finish; tileboard; and exterior siding. Flatwood paneling coating line does not include Class I hardwood panels, particle board used in furniture, insulation board, ~~exterior siding, tileboard,~~ and soft plywood coating lines.

(3) Hardboard. "Hardboard" means a panel manufactured primarily from wood fibers that are consolidated under heat and pressure in a hot press.

(4) Hardwood plywood. "Hardwood plywood" means plywood whose surface layer is a veneer of hardwood.

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

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

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

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

3. **Emission Limitations.** The owner or operator of a surface coating unit, line or operation subject to this Chapter shall comply with the applicable emission limitations in Subsections 3(A) through 3(F) of this Chapter below, by the use of Low Solvent Content Coating Technology, Daily-Weighted Averaging, or Add-On Air Pollution Control Devices, as specified in Section 5 of this Chapter. Emission limitations on VOC content for all surface coating categories~~, except flatwood paneling,~~ are expressed in units of mass of VOC in kilograms (kg) or lb per volume of coating in liters (l) or gallons (gal), excluding water and exempt compounds, as applied. ~~Emission limitations on VOC content for flatwood paneling are expressed in units of mass of VOC (kg or lb) per area of surface to which the coating is applied (100 square meters (m^2) or 1,000 square feet (ft^2)).~~ Emission limitations on VOC content for metal furniture and flatwood paneling are also expressed in units of mass of VOC in kilograms (kg) or lb per volume in liters (l) or gallons (gal) of solids, as applied.

If more than one surface coating category and emission limitation applies to a specific coating operation, then the least stringent emission limitation ~~shall~~ controls.

A. **Emission limitations for surface coating of cans.** This subsection applies to any can coating unit subject to emission limitations as specified in Sections 1 and 2 of this Chapter, and used to apply the following coatings: sheet basecoat, exterior basecoat, over varnish, interior body spray coat, side-seam-spray coat, two-piece can exterior end coat and end sealing compound coat. The owner or operator of a can coating unit subject to this subsection ~~shall~~ may not cause or allow the release of VOC that exceeds the following emission limitations:

Category	kg/l	lb/gal
1. Sheet basecoat	0.34	2.8
2. Exterior basecoat	0.34	2.8
3. Over varnish	0.34	2.8
4. Interior body spray coat	0.51	4.2
5. Side-seam spray coat	0.66	5.5
6. Two piece can exterior end coat	0.51	4.2
7. End sealing compound coat	0.44	3.7

B. **Emission limitations for surface coating of fabric.** This subsection applies to any fabric coating unit or line subject to emission limitations as specified in Sections 1 and 2 of this Chapter. The owner or operator of a fabric coating unit or line subject to this subsection ~~shall~~ may not cause or allow the release of VOC that exceeds the following emission limitation:

0.35 kg/l (2.9 lb/gal)

C. **Emission limitations for surface coating of vinyl.** This subsection applies to any vinyl coating line subject to emission limitations as specified in Sections 1 and 2 of this Chapter. This subsection does not apply to the application of vinyl plastisol to fabric to form the substrate that is subsequently coated. The owner or operator of a vinyl coating line subject to this subsection ~~shall~~ may not cause or allow the release of VOC that exceeds the following emission limitation:

0.45 kg/l (3.8 lb/gal)

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D. Emission limitations for surface coating of metal furniture.

(1) This subsection applies to any metal furniture coating unit subject to emission limitations as specified in Sections 1 and 2 of this Chapter. By January 1, 2012, ~~T~~the owner or operator of a metal furniture coating unit subject to this subsection ~~shall not cause or allow the release of~~ shall meet the VOC ~~that exceeds the following~~ emission limitations in either Table 1 or Table 2.~~:~~

~~0.36 kg/l (3.0 lb/gal)~~

Table 1: Emission limits expressed in terms of mass of VOC per volume of coating (excluding water and exempt compounds, as applied)

Coating Type	Baked		Air Dried	
	Kg/l	lb/gal	kg/l	lb/gal
General, One Component	0.275	2.3	0.275	2.3
General, Multi-Component	0.275	2.3	0.340	2.8
Extreme High Gloss	0.360	3.0	0.340	2.8
Extreme Performance	0.360	3.0	0.420	3.5
Heat Resistant	0.360	3.0	0.420	3.5
Metallic	0.360	3.0	0.360	3.0
Pretreatment Coatings	0.360	3.0	0.360	3.0
Solar Absorbent	0.360	3.0	0.420	3.5

Table 2: Emission limits expressed in terms of mass of VOC per volume of solids, as applied

Coating Type	Baked		Air Dried	
	Kg/l	lb/gal	kg/l	lb/gal
General, One Component	0.40	3.3	0.40	3.3
General, Multi-Component	0.40	3.3	0.55	4.5
Extreme High Gloss	0.61	5.1	0.55	4.5
Extreme Performance	0.61	5.1	0.80	6.7
Heat Resistant	0.61	5.1	0.80	6.7
Metallic	0.61	5.1	0.80	6.7
Pretreatment Coatings	0.61	5.1	0.80	6.7
Solar Absorbent	0.61	5.1	0.80	6.7

(2) The following types of coatings and coating operations for metal furniture are exempt from the VOC content limits:

(a) Stencil coatings;

(b) Safety-indicating coatings;.

(c) Solid-film lubricants;

(d) Electric-insulating and thermal-conducting coatings;

(e) Touch-up and repair coatings; and

(f) Coating application utilizing hand-held aerosol cans.

E. Emission limitations for surface coating of flatwood paneling. This subsection applies to any flatwood paneling coating line subject to emission limitations as specified in Sections 1 and 2 of this Chapter. By January 1, 2012, ~~T~~the owner or operator of a flatwood paneling coating line subject to this subsection ~~shall~~ may not cause or allow the release of VOC that exceeds the following applicable emission limitations:

Category	~~kg/100 m²~~lb VOC per gallon of material (grams VOC per liter)	~~lb/1,000 ft²~~lb VOC per gallon solids (grams VOC per liter solids)
1. Printed interior panels made of hardwood, plywood, or thin particleboard	~~2.9~~2.1 (250)	~~6.0~~2.9 (350)
2. Natural finish hardwood plywood panels	~~5.8~~2.1 (250)	~~12.0~~2.9 (350)
3. Class II hardboard paneling finish	~~4.8~~2.1 (250)	~~10.0~~2.9 (350)
4. Tileboard	2.1 (250)	2.9 (350)
5. Exterior siding	2.1 (250)	2.9 (350)

F. Emission limitations for surface coating of miscellaneous metal parts and products. This subsection applies to any miscellaneous metal parts and products coating unit subject to emission limitations as specified in Sections 1 and 2 of this Chapter. The owner or operator of a miscellaneous metal parts and products coating unit subject to this subsection ~~shall~~ may not cause or allow the release of VOC that exceeds the following emission limitations:

Category	kg/l	lb/gal
1. Clear coating	0.52	4.3
2. Steel pail and drum interior	0.52	4.3
3. Air-dried coating	0.42	3.5
4. Extreme performance coating	0.42	3.5
5. All other coatings	0.36	3.0

This subsection does not apply to the coating of metal cans or to the coating of metal furniture which are subject to Subsections 3(A) and 3(E) of this Chapter, respectively.

G. Notwithstanding the requirements of this Subsection, an owner or operator may use in the aggregate, up to 50 gallons of coatings that exceed the emissions limitations set forth in Subsections 3(A) through 3(F) of this Chapter, for any twelve (12) consecutive months, provided

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such owner or operator maintains records of such coatings in accordance with Subsection 7(B)(2) of this Chapter.

4. **Handling, Storage and Disposal of Materials Containing VOC.** This section applies to any surface coating facility subject to this Chapter.

   A. Vapor-tight containers shall be used for the storage of spent or fresh VOC and for the storage or disposal of cloth or paper impregnated with VOC that are used for surface preparation, clean up or coating removal.

   B. The use of VOC is prohibited for cleanup operations unless equipment is used to collect the cleaning compounds and to minimize their evaporation to the atmosphere. The owner or operator of a surface coating unit, line or operation subject to this Chapter shall comply with the following work practice standards:

   (1) Spray gun cleaning. The owner or operator of a surface coating unit, line or operation subject to this Chapter shall collect all organic solvent used to clean spray guns into a normally closed container.

   (2) Line cleaning. The owner or operator of a surface coating unit, line or operation subject to this Chapter shall pump or drain all organic solvent used for line cleaning into a normally closed container.

   (3) Spray booth cleaning. The owner or operator of a surface coating unit, line or operation subject to this Chapter shall not use compounds containing more than 8.0 percent by weight of VOC for cleaning spray booth components other than conveyers, continuous coaters and their enclosures, and/or metal filters, unless the spray booth is being refurbished. If the spray booth is being refurbished, that is, the spray booth coating or other material used to cover the booth is being replaced, the affected source may not ~~shall~~ use ~~no~~ more than 1.0 gallon of organic solvent to prepare the booth prior to applying the booth coating.

   (4) Washoff operations. The owner or operator of a surface coating unit, line or operation subject to this Chapter shall control emissions from washoff operations by:

   (a) Using normally closed tanks for washoff; and

   (b) Minimizing dripping by tilting or rotating the part to drain as much organic solvent as possible.

5. **Compliance Methods.** The owner or operator of a surface coating unit, line or operation subject to this Chapter shall choose one or more of the three compliance methods below in order to comply with the applicable emission limitations contained in Section 3 of this Chapter.

   A. Low solvent content coating technology. The owner or operator of a coating unit subject to this Chapter that chooses to use a low solvent content coating ~~shall~~ may not cause or allow application of any coating on that coating unit with VOC content that exceeds the applicable emission limitations in Section 3 of this Chapter.

B. Daily-weighted average limitation. The owner or operator of a coating unit under categories 1 through ~~4 and~~ 6, as specified in Subsection 1(A) of this Chapter, that chooses to obtain compliance with the applicable emission limitations in Section 3 of this Chapter by the daily-weighted average limitation ~~shall~~ may not apply during any day, coatings on that coating unit whose daily-weighted average VOC content exceeds the applicable emission limitations in Subsections 3(A) through ~~3(D) and~~ 3(F) of this Chapter, as calculated in Appendix A, Procedure C. Daily weighted cross-line averaging may be allowed on a case by case basis upon approval from the Department and EPA. Weekly weighted averaging may also be allowed on a case by case basis upon approval from the Department and EPA, and shall be calculated in accordance with Appendix A, Procedure C, substituting "weekly" for "daily", as appropriate.

C. Add-on air pollution control devices. The owner or operator of a coating unit that chooses to obtain compliance with the applicable emission limitations in Section 3 of this Chapter by an add-on air pollution control device shall install and operate a capture system and control device and demonstrate a daily overall emission reduction efficiency which is the lesser of the value calculated according to the procedure described in Appendix A, Procedure C ~~and Procedure D~~ or 95%.

(1) The capture system and control device shall be operated at all times that the coating unit is in operation. The owner or operator shall demonstrate compliance with the applicable emission limitations in Section 3 of this Chapter through the applicable test methods for coating analysis, capture system, control device and capture efficiency using the procedures described in Appendix A.

(2) The control device shall be equipped with the applicable monitoring equipment as specified in Appendix A, Procedure H and Procedure I, which shall be installed, calibrated, operated and maintained according to the manufacturer's specifications at all times.

6. Test Methods and Compliance Procedures. The owner or operator of any surface coating unit, line or operation subject to this Chapter shall collect and record the applicable information, and where required, perform compliance testing and demonstrate compliance by using the methods and procedures described in this Chapter, Appendix A, Procedures A through C and Procedures E through I, and submit a report to the Department of the results as stipulated in Section 8 of this Chapter. At least a thirty (30)-day advance notification to the Department shall precede all tests.

The owner or operator of a surface coating unit, line or operation subject to this Chapter shall perform additional testing and submit a report within ninety (90) days of receipt of notice from the Department if equipment operating parameters, staff inspection, air monitoring or other cause indicate to the Department that the surface coating facility may be operating out of compliance with the emission limitations.

7. Initial Compliance Certification and Recordkeeping Procedures. Each owner or operator of a surface coating facility subject to this Chapter shall establish and maintain all records necessary for determining compliance with the emission limitations in Section 3 of this Chapter for a period of six (6) years. The owner or operator of a surface coating facility subject to this Chapter shall further make such records and reports available for inspection during normal business hours and shall provide copies to the Department or the Environmental Protection Agency upon request.

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A. Initial compliance certification. The owner or operator of each surface coating facility subject to this Chapter shall submit an initial certification report by January 1, 1995. The owner or operator of a surface coating facility subject to this Chapter whose total actual coatings usage from all coating units, lines or operations at the surface coating facility under the same surface coating category is 50 or more gallons per year shall submit to the Department, certification records covering the relevant coating unit, line or operation, and method of compliance upon startup of any new coating unit, line or operation or upon changing the method of compliance for an existing coating unit, line or operation.

(1) Coating units, lines or operations exempt from emission limitations. Certification records required for coating units, lines or operations which are exempt from the emission limitations in Section 3 of this Chapter shall include a certification to the Department that the surface coating unit, line or operation is exempt, and provide the following:

(a) Name and location of surface coating facility;

(b) Name, address and telephone number of person responsible for the surface coating facility;

(c) A declaration that the surface coating unit, line or operation is exempt, because combined VOC emissions from all coating units, lines and operations under the same surface coating category at the same surface coating facility are below the emissions threshold under Subsection 1(C) of this Chapter. The following equations shall be used to calculate maximum theoretical emissions of VOC per calendar year before the application of capture systems and control devices for each affected coating unit, line or operation at the surface coating facility:

$$Ep = AxB$$

Where;

"Ep" means the maximum theoretical emissions of VOC from one coating unit in pounds per year (lb/yr)

"A" means the weight of VOC per volume of the coating with the highest VOC content, as applied, each year on the coating unit in pounds of VOC per gallon of coating (lb/gal)

"B" means the total volume of all coating that can be potentially applied each year on the coating unit in gallons per year (gal/yr). The instrument or method by which the owner or operator accurately measured or calculated the volume of coating applied and the amount that can potentially be applied each year shall be described in the certification to the Department; and

(d) For coating units under the category of miscellaneous metal parts and products, except for those coating units which meet each of the criteria listed in Subsections 1(C)(1) through 1(C)(3) of this Chapter, calculations of the total VOC emissions for a day that is representative of current maximum production levels from all miscellaneous metal parts

and products surface coating units at the surface coating facility. The following equation shall be used to calculate total VOC emissions for that day:

$$T = \sum_{i=1}^{n} A_i B_i$$

where,

"T" means the total VOC emissions from coating units at the surface coating facility before the application of capture systems and control devices in units of kg/day (lb/day)

"n" means the number of different coatings applied on each coating unit at the surface coating facility

"i" the subscript denoting an individual coating

"A_i"means the mass of VOC per volume of coating (i), excluding water and exempt compounds, as applied, used at the surface coating facility in units of kilograms of VOC per liter of coating (kg/l) or pounds of VOC per gallon of coating (lb/gal)

"B_i"means the volume of coating (i), excluding water and exempt compounds, as applied, used at the surface coating facility in units of liter per day (l/day) or gallons per day (gal/day). The instrument or method used by the owner or operator of the surface coating facility to accurately measure or calculate the volume of each coating, as applied, shall be described in the certification to the Department.

(2) Coating units, lines or operations using the Low Solvent Content Coating Technology Compliance Method. Initial certification records required for coating units, lines or operations using the low solvent content coating technology compliance method shall include:

(a) Name and location of surface coating facility;

(b) Name, address and telephone number of the person responsible for the surface coating facility;

(c) Identification of each coating used on each identified coating unit, line or operation subject to this Chapter;

(d) The mass of VOC per volume of each coating, excluding water and exempt compounds, as applied, used each day on each coating unit, line or operation~~, or in the case of coating of flatwood paneling, the mass of VOC per surface area to which the product is applied in kg of VOC/100 m^2 (lb VOC/1000 ft^2) and the surface area coated each day of each type of flatwood paneling~~; and

(e) The time at which the surface coating facility's "day" begins if a time other than midnight, local time, is used to define a "day."

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(3) Coating Units, Lines or Operations Using the Daily-Weighted Averaging Compliance Method. Certification records required for coating units, lines or operations using the daily-weighted averaging compliance method shall include:

(a) Name and location of the surface coating facility;

(b) Name, address and telephone number of the person responsible for the surface coating facility;

(c) Identification of each coating used on each identified coating unit, line or operation subject to this Chapter;

(d) Name and identification of each coating unit, line or operation that will comply by means of daily-weighted averaging;

(e) The instrument or method by which the owner or operator of the surface coating facility will accurately measure or calculate the volume of each coating, excluding water and exempt compounds, as applied, used each day on each coating unit, line or operation;

(f) The method by which daily records will be created and maintained as defined in this section;

(g) The calculation of the daily-weighted average, using Procedure C described in Appendix A of this Chapter; and

(h) The time at which the surface coating facility's "day" begins if a time other than midnight, local time, is used to define a day.

(4) Coating Units, Lines or Operations Using the Add-On Air Pollution Control Device Compliance Method. Initial certification records required for coating units, lines or operations using the add-on air pollution control device compliance method shall include the results of all tests and calculations necessary to demonstrate compliance with this Chapter using procedures A through C and procedure E, as described in Appendix A of this Chapter and shall include:

(a) Name and location of the surface coating facility;

(b) Name, address and telephone number of the person responsible for the surface coating facility;

(c) Identification of each coating used on each identified coating unit, line or operation subject to this Chapter;

(d) The mass of VOC per volume of each coating, excluding water and exempt compounds, as applied, used each day on each coating unit, line or operation~~, or in the case of coating of flatwood paneling, the mass of VOC per surface area to which the product is applied in kilograms of VOC per 100 square meters (kg/100 m^2) or pounds of VOC per 1000~~

~~square feet (lb/1000 ft^2) and the surface area coated each day for each type of flatwood paneling;~~

(e) The maximum VOC content (mass of VOC per coating unit volume of coating solids, as applied), or the daily-weighted average VOC content (mass of VOC per coating unit volume of coating solids, as applied) of the coatings used each day on each coating unit, line or operation; and

(f) The overall emission reduction efficiency for each day for each coating unit, line or operation required by Subsection 5(C) of this Chapter and determined using Procedure E in Appendix A attached to this Chapter.

B. Recordkeeping. The owner or operator of each surface coating facility subject to this Chapter shall begin to maintain the records required herein on the effective date of this Chapter.

(1) Coating units, lines or operations exempt from emission limitations. Monthly records shall be maintained on premises to document the name and identification of each coating and the mass of VOC per volume of each coating, excluding water and exempt compounds, as applied, used on each coating unit, line or operation, and the total emissions at the surface coating facility.

Miscellaneous metal parts and products surface coating facilities that do not meet each of the criteria listed in Subsections 1(C)(1) through 1(C)(3) of this Chapter shall maintain daily records on the premises to document the name and identification of each coating and the mass of VOC per volume of each coating, excluding water and exempt compounds, as applied, used each day on each coating unit, line or operation, and the total daily VOC emissions at the surface coating facility, as calculated using the equation in Subsection 7(A)(1)(d) of this Chapter.

Miscellaneous metal parts and products surface coating facilities that meet each of the criteria listed in Subsections 1(C)(1) through 1(C)(3) of this Chapter shall maintain monthly records on the premises to document the name and identification of each coating and the mass of VOC per volume of each coating, excluding water and exempt compounds, as applied, used each month on each coating unit, line or operation, and the total emissions at the surface coating facility each month.

(2) Coating units, lines or operations using the Low Solvent Content Coating Technology Compliance Method. Except in the case where a coating unit, line or operation certifies under Section 8 of this Chapter that all of the coatings used at the surface coating facility use low solvent content coating technology, daily records shall be maintained on premises to document the name and identification of each coating, and the mass of VOC per volume of each coating, excluding water and exempt compounds, as applied, used each day on each coating unit, line or operation. For surface coating facilities, which certify under Section 8 of this Chapter that all of the coatings used at the surface coating facility use low solvent content coating technology, monthly records shall be maintained on the premises to document the name and identification of each coating and the mass of VOC per volume of each coating, excluding water and exempt compounds, as applied, used each month on each coating unit, line or operation.

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~~NOTE: In the case of surface coating of flatwood paneling, the mass of VOC per area of surface coated for each coating each day and each type of product shall be recorded.~~

(3) Coating units, lines or operations using the Daily-Weighted Averaging Compliance Method. Daily records shall be maintained on premises to document the following information:

(a) ~~t~~The name and identification of each coating and the mass of VOC per volume and the volume of each coating, excluding water and exempt compounds, as applied, on each coating unit, line or operation~~,~~; and

(b) Daily records shall be maintained on premises to document the daily-weighted average VOC content of all coatings, as applied, on each coating unit, line or operation calculated according to Procedure C in Appendix A of this Chapter.

(4) Coating units, lines or operations using the Add-On Air Pollution Control Device Compliance Method. Daily records shall be maintained on premises to document the following data:

(a) The actual overall emission reduction efficiency achieved for each day for each coating unit, line or operation as determined using Procedure E in Appendix A;

(b) Control device monitoring data as specified in Appendix A for Procedures H and I;

(c) A log of operating time for the capture system, control device and monitoring equipment and associated coating unit, line or operation;

(d) A maintenance log for the capture system, control device and monitoring equipment detailing all routine and non-routine maintenance performed including dates and duration of outages;

(e) For thermal incinerators, all continuous three (3)-hour periods of operation in which the average combustion temperature was more that 28 degrees C (50 degrees F) below the average combustion temperature during the most recent performance test that demonstrated that the surface coating unit, line or operation was in compliance;

(f) For catalytic incinerators, all continuous three (3)-hour periods of operation in which the average temperature of the process vent stream immediately before the catalyst bed is more than 28 degrees C (50 degrees F) below the average temperature of the process vent stream immediately before the catalyst bed during the most recent performance test that demonstrated that the surface coating unit, line or operation was in compliance; and

(g) For carbon adsorbers, all continuous three (3)-hour periods of operation during which the average VOC concentration or the reading of organics in the exhaust gases is more than twenty (20) % greater than the average exhaust gas concentration or reading measured by the organics monitoring device during the most recent determination of the recovery efficiency of the carbon adsorber that demonstrated that the surface coating unit, line or operation was in compliance.

8. **Reporting.** The owner or operator of any surface coating unit, line or operation subject to this Chapter shall provide to the Department the following:

   A. **Initial compliance certification.** The owner or operator of each surface coating unit, line or operation subject to this Chapter shall provide to the Department, an initial compliance certification by January 1, 1995, or upon startup of a new coating unit, line or operation, or upon changing the method of compliance for an existing subject coating unit, line or operation.

   B. **Reports of excess emissions.** Any owner or operator of a surface coating unit, line or operation that emits VOC in excess of the emission limitations in Section 3 of this Chapter shall notify the Department in writing within thirty (30) calendar days of the following:

      (1) For surface coating units, lines or operations exempt from the emission limitations in Section 3 of this Chapter, any evidence showing that combined VOC emissions exceed the applicability threshold in Subsection 1(C) of this Chapter; or

      (2) For surface coating units, lines or operations subject to the emission limitations in Section 3 of this Chapter, any evidence showing excess emissions, the use of any coatings that do not use low solvent content coating technology, non-compliance with the daily-weighted average limitations, or malfunctions of the control device(s).

9. **Compliance Schedule.** The owner or operator of a surface coating unit, line or operation subject to this Chapter shall achieve final compliance with this Chapter on or before May 31, 1995.

10. **National Emission Standards for Hazardous Air Pollutants: Surface Coating Processes.** Section 112(d) of the 1990 Clean Air Act Amendments requires EPA to promulgate regulations establishing emission standards for each category or subcategory of major sources and area sources of hazardous air pollutants. These emission standards require maximum achievable control technology (MACT) for the reduction of hazardous air pollutant emissions. EPA has promulgated General Provisions for National Emission Standards for Hazardous Air Pollutants as published in 40 CFR Part 63 Subpart A, incorporated by reference herein, along with emission standards for the following surface coating source categories:

    A. **40 CR Part 63, Subpart GG.** "National Emission Standards for Hazardous Air Pollutants for Source Categories: Aerospace Manufacturing and Rework Facilities" as published in ~~the Federal Register, Vol. 60, No. 170, pages 45948-45980 on September 1, 1995; 61 FR 4902; 61 FR 55842; and 61 FR 66226~~ 40 CFR Part 63, Subpart GG, as amended up to July 1, 2010, are incorporated by reference herein.

    B. **40 CFR Part 63, Subpart II.** "National Emission Standards for Hazardous Air Pollutants for Shipbuilding and Ship Repair (Surface Coating) Operations" as published in the Federal Register, Vol. 60, No. 241, pages 64330-64347 on December 15, 1995; 61 FR 30814; and 61 FR 66226 are incorporated by reference herein.

    C. **40 CFR Part 63, Subpart JJ.** "National Emission Standards for Hazardous Air Pollutants: Final Standards for Hazardous Air Pollutants From Wood Furniture Manufacturing Operations" as published ~~in the Federal Register, Vol. 60, No. 235, pages 62930-62962 on December 7, 1995;~~

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~~62 FR 30259; and 62 FR 31363~~ in 40 CFR Part 63, Subpart JJ, as amended up to July 1, 2010, are incorporated by reference herein.

AUTHORITY: 38 MRSA Section 585-A

EFFECTIVE DATE: February 10, 1993
EFFECTIVE DATE (ELECTRONIC CONVERSION): May 8, 1996
AMENDED: March 3, 1998

BASIS STATEMENT

In the State of Maine, nine counties are classified as nonattainment for the federal ozone air quality standard. Ground-level ozone formation is caused in part by surface coating operations that emit volatile organic compounds (VOC).

This regulation of surface coating facilities restricts the VOC emissions from selected surface coating operations. Under Section 184 of the Clean Air Act Amendments of 1990, the State of Maine must submit plans to control VOC from all sources covered by a Control Technique Guideline (CTG) issued before November 15, 1990.

In addition to the Basis Statement above, the Department has filed with the Secretary of State its response to comments received during the comment period.

BASIS STATEMENT FOR AMENDMENTS OF JANUARY 28, 1998

These amendments simplify compliance for surface coating facilities through the establishment of an exemption for the use of coatings used on-site for maintenance and repair activities, and a de minimus threshold. The amendments also remove the once-in, always-in provisions for sources accepting certain license restrictions, establish explicit work practice standards for the use of solvents in cleanup operations, and incorporate the Federal MACT requirements for several surface coating categories.

In addition to this Basis Statement, the Department has filed a supplemental Basis Statement with the Secretary of State that summarizes its responses to comments received during the comment period.

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APPENDIX A
CHAPTER 129 and
CHAPTER 132

VOLATILE ORGANIC COMPOUNDS
TEST METHODS AND COMPLIANCE PROCEDURES

Procedure A	**Test methods and Compliance Procedures: General Provisions**
Procedure B	**Determining the Volatile Organic Compound (VOC) content of Coatings and Inks**
Procedure C	**Alternative Compliance Methods for Surface Coating of Cans, Fabric, Vinyl, Miscellaneous Metal Products, Metal Furniture, Flatwood Paneling and Graphic Arts**
Procedure D	**~~Compliance Test Methods for Coating of Flatwood Paneling~~ Repealed**
Procedure E	**Emission Capture and Destruction or Removal Efficiency and Monitoring Requirements**
Procedure F	**Determining the Destruction or Removal Efficiency of a Control Device**
Procedure G	**Leak Detection Methods for Volatile Organic Compounds (VOC)**
Procedure H	**Performance Specifications for Continuous Emissions Monitoring of Total Hydrocarbons**
Procedure I	**Quality Control Procedures for VOC Continuous Emission Monitoring Systems**

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VOLATILE ORGANIC COMPOUNDS
PROCEDURE A

Test Methods and Compliance Procedures: General Provisions.

(a) Test methods. The owner or operator of any volatile organic compound (VOC) source required to comply with Chapters 129 and 132 shall, at the owner's or operator's expense, demonstrate compliance by using the methods of Procedures A-C and E-H of this subpart or alternative methods that are approved by the Department and EPA as part of a State Implementation Plan (SIP) revision and shall meet all the requirements of these regulations.

(b) Preparation of test plan and quality assurance program. At least 30 days before the initiation of a required test the owner or operator shall submit a test plan that shall be approved by the Department before the results of the test are considered acceptable. This test plan shall include the following minimum information:

(1) The purpose of the proposed test and the applicable regulation;

(2) A detailed description of the facility to be tested, including a line diagram of the facility, locations of test sites, and facility operation conditions for the test;

(3) A detailed description of the proposed test methods and procedures, equipment, and sampling sites;

(4) A time table for the following:

(i) Date for the compliance test;

(ii) Date for submittal of final test report to the Department (not later than 45 days after completion of on-site sampling);

(5) Proposed corrective actions should the test results show noncompliance;

(6) Internal QA program. The internal quality assurance (QA) program shall include, at a minimum, the activities planned by routine operators and analysts to provide an assessment of test data precision. An example of internal QA is the sampling and analysis of replicable samples; and

(7) External QA program.

(i) The external QA program shall include, at a minimum, application of plans for a test method performance audit (PA) during the compliance test.

(ii) The external QA program may also include systems audits, which include the opportunity for on-site evaluation by the Department of instrument calibration, data validation, sample logging, and documentation of quality control data and field maintenance activities.

(iii) The PA shall consist of blind audit samples provided by the Department and analyzed during the compliance test to provide a measure of test data bias.

(A) The Department shall require the owner or operator to analyze PA samples during each compliance test when audit samples are available.

(B) Information concerning the availability of audit materials for a specific compliance test may be obtained by contacting the Emission Measurement Technical Information Center at (919) 541-2237.

(C) If the Department has prior knowledge that an audit material is available, the Department may contact the Atmospheric Research and Exposure Assessment Laboratory directly at (919) 541-4531 (for cylinder gas audit materials) or (919) 541-7834 (for all other types of audit materials).

(D) The evaluation criteria applied to the interpretation of the PA results and the subsequent remedial actions required of the owner or operator are the sole responsibility of the Department.

(c) Process operation. The owner or operator shall be responsible for providing:

(1) Sampling ports, pipes, lines, or appurtenances for collecting samples and data required by the test methods and procedures;

(2) Safe access to the sample and data collection locations; and

(3) Light, electricity, and the utilities required for sample and data collection.

(d) Final report. No later than 45 days after completion of the on-site sampling, the owner or operator shall submit a test report to the Department. The test report shall include the following minimum information:

(1) Process description;

(2) Air pollution capture system and control device description;

(3) Process conditions during testing;

(4) Test results and example calculations;

(5) Description of sampling locations and test methods;

(6) Quality assurance measures; and

(7) Field and analytical data.

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VOLATILE ORGANIC COMPOUNDS
PROCEDURE B

Test Methods and Compliance Procedures: Determining the Volatile Organic Compound (VOC) Content of Coatings and Inks

(a) Sampling procedures shall follow the guidelines presented in "Standard Procedure for Collection of Coating and Ink Samples for VOC Content Analysis by Reference Method 24 and Reference Method 24A," EPA-340/1-91-010.

(b) The analytical methods and procedures specified below shall be used to determine the VOC content of each coating, as applied:

(1) (i) Method 24 of 40 CFR Part 60, Appendix A, shall be used to determine total volatile content, water content, and density of coatings. For determining total volatile content, all samples shall be oven-dried at 110°C for 1 hour.

(ii) To determine the total volatile content, water content, and density of multicomponent coatings, the following procedures shall be used in addition to Method 24 of 40 CFR Part 60, Appendix A:

(A) The components shall be mixed in a storage container in the same proportions as those in the coating, as applied. The mixing shall be accomplished by weighing the components in the proper proportion into a container that is closed between additions and during mixing. About 100 milliliters (ml) of coating shall be prepared in a container just large enough to hold the mixture prior to withdrawing a sample;

(B) For determining volatile content, a sample shall be withdrawn from the mixed coating and then transferred to a dish where the sample shall stand for at least 1 hour, but no more than 24 hours, prior to being oven-dried at 110°C for 1 hour; and

(C) For determining the water content and density of multicomponent coatings, samples shall be taken from the same 100-ml mixture of coating and shall be analyzed by the appropriate ASTM methods referenced in Method 24 of 40 CFR Part 60, Appendix A;

(2) Method 24 of 40 CFR Part 60, Appendix A, shall be used in determining total volatile content, water content, and density of any flexographic or packaging rotogravure printing ink and related coatings. Alternatively, Method 24A of 40 CFR Part 60, Appendix A, may be used;

(3) Method 24A of 40 CFR Part 60, Appendix A, shall be used in determining total volatile content, water content, and density of any publication rotogravure printing ink and related coatings; and

(4) The following additional procedure shall be used in analyzing a coating sample: "Standard Procedure for Analysis of Coating and Ink Samples," EPA-340/1-91-011.

(c) Use of adaptations to test methods. Use of an adaptation to any of the analytical methods specified in paragraph (b) of this section shall be approved by the Department and EPA on a case-by-case basis. An owner or operator shall submit sufficient documentation for the Department to find that the analytical methods specified in paragraphs (b)(1), (b)(2), and (b)(3) will yield inaccurate results and that the proposed adaptation is appropriate.

(d) Each sample collected for analysis shall meet the following criteria:

(1) Each sample shall be at least 250 ml (8 ounces [oz]) taken into a 250-ml (8-oz) container at a location and time such that the sample will be representative of the coating or ink, as applied (i.e., the sample shall include any dilution solvent or VOC added during the manufacturing process);

(2) If a sample larger than 250 ml (8 oz) is obtained, the sample container shall be of a size such that the sample completely fills the container;

(3) The container shall be tightly sealed immediately after the sample is taken;

(4) Any solvent or other VOC added after the sample is taken shall be measured and accounted for in the calculations in paragraph (e) of this section; and

(5) For multicomponent coatings, separate samples of each component shall be obtained.

(e) Calculations for determining the VOC content of coatings and inks from data as determined by Method 24 or 24A of 40 CFR Part 60, Appendix A, shall follow the guidance provided in the following documents:

(1) "A Guideline for Surface Coating Calculations," EPA-340/1-86-016; and

(2) "Procedures for Certifying Quantity of Volatile Organic Compounds Emitted by Paint, Ink and Other Coatings," (Revised June 1986) EPA-450/3-84-019.

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VOLATILE ORGANIC COMPOUNDS
PROCEDURE C

Test Methods and Compliance Procedures: Alternative Compliance Methods for Surface Coating of Cans, Fabric, Vinyl, Metal Furniture, ~~and~~ Miscellaneous Metal Products, Flatwood Paneling and Graphic Arts

(a) Daily-weighted average.

The daily-weighted average VOC content, in units of mass of VOC per unit volume of coating, excluding water and exempt compounds, as applied, of the coatings used on a day on a coating unit, line, or operation shall be calculated using the following equation:

$$VOC_w = \frac{\sum_{i=1}^{n} ViCi}{V_T}$$

where:

VOCw = The daily-weighted average VOC content of the coatings, as applied, used on a coating unit, line, or operation in units of kilograms of VOC per liter of coating (kg VOC/liter) or pounds of VOC per gallon of coating (lb VOC/gal), excluding water and exempt compounds;

n = The number of different coatings, as applied, each day on a coating unit, line, or operation;

Vi = The volume of each coating, as applied, each day on a coating unit, line, or operation in units of liters or gallons, excluding water and exempt compounds;

Ci = The VOC content of each coating, as applied, each day on a coating unit, line, or operation in units of kg VOC/liter of coating or (lb VOC/gal), excluding water and exempt compounds; and

VT = The total volume of all coating, as applied, each day on a coating unit, line, or operation in units of liters or gallons, excluding water and exempt compounds.

(b) Overall emission reduction efficiency for control systems. The overall emission reduction efficiency needed to demonstrate compliance is determined each day as follows:

(1) Obtain the emission limitation from the applicable section of this subpart;

(2) Calculate the emission limitation on a solids basis according to the following equation:

$$S = \frac{C}{1 - (\frac{C}{d})}$$

where:

S = The VOC emission limitation in terms of kg VOC/liter of coating solids or (lb VOC/gal);

C = The VOC emission limitation in terms of kg VOC/liter of coating or (lb/gal), excluding water and exempt compounds; and

d = The density of VOC for converting emission limitation to a solids basis. The density equals 0.882 kg/liter (7.36 lb/gal);

(3) Calculate the required overall emission reduction efficiency of the control system for the day according to the following equation:

$$E = [\frac{(VOCa - S)}{VOCa}] x \quad 100$$

where:

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

VOCa = (1) The maximum VOC content of the coatings, as applied, used each day on the subject coating unit, line, or operation, in units of kg VOC/liter of coating solids or (lb VOC/gal), as determined by the applicable test methods and procedures specified in Procedure B, or

(2) The daily-weighted average VOC content, as applied, of the coatings used each day on the subject coating unit, line, or operation, in units of kg VOC/liter of coating solids or (lb VOC/gal), as determined by the applicable test methods and procedures specified in Procedure B and the procedure in paragraph (c)(4) of this section; and S = VOC emission limitation in terms of kg VOC/liter of coating solids or (lb VOC/gal); and

(4) The daily-weighted average VOC content, as applied, of the coatings used on a coating unit, line, or operation in units of mass of VOC per unit volume of coating solids shall be calculated by the following equation:

$$VOCws = \frac{\sum_{i=1}^{n} W voci \quad Vi \quad Di}{\sum_{i=1}^{n} Vi \quad VSi}$$

where:

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VOCws = The daily-weighted average VOC content, as applied, of the coatings used on a coating unit, line, or operation in units of mass of VOC per unit volume of coating solids;

n = The number of different coatings, as applied, used in a day on a coating unit, line, or operation;

Vi = The volume of each coating (i), as applied, used in a day on a coating unit, line, or operation in units of liters or gallons;

Wvoci = The weight fraction of VOC in each coating (i), as applied, used in a day on a coating unit, line, or operation in units of kg VOC/kg coating or (lb/lb);

Di = The density of each coating (i) as applied, used in a day on a coating unit, line, or operation in units of kg coating/liter of coating or (lb/gal); and

VSi = The volume fraction solids content of each coating (i), as applied, used in a day on a coating unit, line, or operation in units of liters solids/liter coating or (gal/gal).

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~~VOLATILE ORGANIC COMPOUNDS~~
~~PROCEDURE D~~

~~Compliance Test Methods Surface Coating of Flatwood Paneling Products~~

~~(a) Test methods. The test methods found in this paragraph and in Procedures A, B & E shall be used to determine compliance with surface coating of flatwood paneling products.~~

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

$$E = \left[\frac{(VOCa - S)}{VOCa}\right] x \quad 100$$

~~where:~~

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

~~VOCa = The maximum VOC content of the coatings, as applied, used each day on a coating line in units of kg VOC/100 m² of surface area coated or (lb VOC/1,000 ft²), as determined by the applicable test methods and procedures specified in Procedure B; and~~

~~S = VOC emission limitation in terms of kg VOC/100 m² of surface area coated or (lb VOC/1,000 ft²).~~

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VOLATILE ORGANIC COMPOUNDS
PROCEDURE E

Test Methods and Compliance Procedures: Emission Capture and Destruction or Removal Efficiency and Monitoring Requirements.

(a) Determining the efficiency of volatile organic compound (VOC) capture systems.

(1) For purposes of this paragraph, the following definitions and abbreviations apply:

"Gas/gas method" means either of two methods for determining capture that rely only on gas phase measurements. One method requires construction of a temporary total enclosure (TTE) to ensure all potential fugitive emissions are measured while the other method uses the room or building that houses the source as an enclosure.

"Hood" means a partial enclosure or canopy for capturing and exhausting, by means of a draft, the organic vapors or other fumes rising from a coating process or other source.

"Liquid/gas method" means either of two methods for determining capture that require both gas phase and liquid phase measurements and analysis. One liquid/gas method requires construction of a temporary enclosure, and the other uses the building or room that houses the facility as an enclosure.

"Process line" means any coating unit, coating line, coating operation, or printing press.

"PTE" is a permanent total enclosure, which contains a process that emits VOC and meets the specifications given in Chapter 126 Appendix A Procedure T.

"TTE" is a temporary total enclosure that is built around a process that emits VOC and meets the specifications given in Chapter 126 Appendix A Procedure T.

"BE" is a building or room enclosure that contains a process that emits VOC. If a BE is to substitute for a PTE or TTE, the appropriate requirements given in Chapter 126 Appendix A Procedure T shall be met.

(2) Applicability.

(i) The requirements of paragraph (a)(3) shall apply to all regulated VOC emitting processes using a control system except as provided below.

(ii) If a source owner or operator installs a PTE that meets EPA specifications, and that directs all VOC to a control device, the capture efficiency is assumed to be 100 percent, and the source is exempted from the requirements described in paragraph (a)(3). Chapter 126 Appendix A Procedure T shall be used to determine whether a structure is a PTE. This does not exempt a source from performing any control device efficiency testing required under this subpart. In addition, a source shall demonstrate that all criteria for a PTE are met during the testing for capture efficiency.

(iii) If a source owner or operator uses a control device designed to collect and recover VOC (e.g., carbon adsorber), an explicit measurement of capture efficiency is not necessary if the conditions given below are met. The overall emission reduction efficiency of the control system shall be determined each day by directly comparing the input liquid VOC (liters) to the recovered liquid VOC. The procedure for use in this situation is specified in 40 CFR 60.433 with the following modifications:

(A) The source owner or operator shall obtain data each day for the solvent usage and solvent recovery and determine the solvent recovery efficiency of the system each day using a 7-day rolling period. The recovery efficiency for each day is computed as the ratio of the total recovered solvent for that day and the prior 6 consecutive operating days to the total solvent usage for the same 7-day period used for the recovered solvent, rather than a 30-day weighted average as given in 40 CFR 60.433. This ratio shall be expressed as a percentage. This shall be done within 72 hours following each 24-hour period, and

(B) If the solvent recovery system controls multiple process lines, the source owner or operator shall demonstrate that the overall control (i.e., the total recovered solvent VOC divided by the sum of liquid VOC input to all process lines venting to the control system) meets or exceeds the most stringent standard applicable for any process line venting to the control system.

(3) Specific Requirements.

(i) The capture efficiency shall be measured using one of the four protocols given in paragraphs (a)(3)(iii)(A) through (a)(3)(iii)(D) of this section. During any capture efficiency test, the average face velocity of each emissions collection point ducted to the control device shall be measured and recorded. In addition, the distance between each collection point ducted to the control device and the emission source shall be measured and recorded. Measurements of average face velocity shall be done by determining average volumetric flow rate using Reference Method 2, 2A or 2C of 40 CFR Part 60, Appendix A and dividing by the total area of the face of the collection point.

(ii) Any error margin associated with a test protocol may not be incorporated into the results of a capture efficiency test.

(iii) Any source required to comply with this section shall use one of the following protocols to measure capture efficiency, unless a suitable alternative protocol is approved by the Department and EPA:

(A) Gas/gas method using TTE. Chapter 126 Appendix A Procedure T shall be used to determine whether a temporary enclosure is a TTE. The capture efficiency equation to be used for this protocol is:

$$CE = \frac{Gw}{Gw + Fw}$$

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where:

CE = capture efficiency, decimal fraction;

Gw = mass of VOC captured and delivered to control device using a TTE; and

Fw = mass of fugitive VOC that escapes from a TTE.
Chapter 126 Appendix A procedures are used to obtain Fw & Gw.

(B) Liquid/gas method using TTE. Chapter 126 Appendix A Procedure T shall be used to determine whether a temporary enclosure is a TTE. The capture efficiency equation to be used for this protocol is:

$$CE = \frac{L - F}{L}$$

where:

CE = capture efficiency, decimal fraction;

L = mass of liquid VOC input to process; and

F = mass of fugitive VOC that escapes from a TTE.
Chapter 126 Appendix A procedures are used to obtain L and F.

(C) Gas/gas method using the building or room (BE) in which the source is located as the enclosure and in which G and F are measured while operating only the source to be tested. All fans and blowers in the building or room shall be operated as they would be under normal production. The capture efficiency equation to be used for this protocol is:

$$CE = \frac{G}{G + F_B}$$

where:

CE = capture efficiency, decimal fraction;

G = mass of VOC captured and delivered to a control device; and

FB = mass of fugitive VOC that escapes from building enclosure.
Chapter 126 Appendix A procedures are used to obtain G and FB.

(D) Liquid/gas method using the building or room (BE) in which the source is located as the enclosure and in which L and F are measured while operating only the source to be tested. All fans and blowers in the building or room shall

be operated as they would under normal production. The capture efficiency equation to be used for this protocol is:

$$CE = \frac{L - F_B}{L}$$

where:

CE = capture efficiency, decimal fraction;

L = mass of liquid VOC input to process; and

FB = mass of fugitive VOC that escapes from building enclosure. Chapter 126 Appendix A procedures are used to obtain L and FB.

(4) Recordkeeping and Reporting.

(i) All sources complying with this section shall maintain on file a copy of the capture efficiency protocol submitted to the Department. All results of appropriate test methods and CE protocols shall be reported to the Department within 60 days of the test date. A copy of the results shall be kept on file with the source.

(ii) If any changes are made to capture or control equipment, the source is required to notify the Department in writing within 30 days of these changes and a new capture efficiency and/or control device destruction or removal efficiency test may be required. A change to the capture or control equipment shall be defined as any modification to or malfunction of the capture system or control system that increases the distance between any emissions collection point and the emissions source that the collection point is serving or that reduces the average face velocity at any emissions collection point ducted to the control device to a value less than 90% of the value measured and recorded during the capture efficiency test. Reduction in the air flow at a collection point that occurs because the emission source that the collection point is serving is not being utilized shall not be considered a change requiring Department notification. Measurements of average face velocity shall be done at all collection points whenever any physical changes are made to the capture system.

The source must notify the Department 30 days prior to performing any capture efficiency and/or control efficiency tests.

(b) Determining the destruction or removal efficiency of incinerators and carbon adsorbers.

(1) Testing.

(i) The control device destruction or removal efficiency shall be determined from data obtained by simultaneously measuring the inlet and outlet gas-phase VOC concentrations and gas volumetric flow rates in accordance with the gas-phase test methods specified in this Appendix. The control device destruction or removal efficiency shall be calculated using the following equation:

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$$E = \frac{\sum_{i=1}^{n} QiCi - \sum_{j=1}^{m} Qj \quad Cj}{\sum_{i=1}^{n} Qi \quad Ci}$$

where:

E = VOC destruction efficiency of the control device;

Qi = Volumetric flow rate of the effluent gas flowing through stack i entering the control device, dry standard cubic meters per hour (dscm/hr);

Ci = Concentration of VOC (as carbon) in the effluent gas flowing through stack i entering the control device, parts per million by volume (ppmv);

Qj = Volumetric flow rate of the effluent gas flowing through stack j leaving the control device, dscm/hr;

Cj = Concentration of VOC (as carbon) in the effluent gas flowing through stack j leaving the control device, ppmv;

n = The number of vents to the control device; and

m = The number of vents after the control device.

(ii) A source using a PTE (or a BE as a PTE) shall demonstrate that this enclosure meets the requirements given in Chapter 126 Appendix A Procedure T for a PTE during any testing of a control device.

(iii) A source using a TTE (or a BE as a TTE) shall demonstrate that this enclosure meets the requirements given in Chapter 126 Appendix A Procedure T for a TTE during testing of a control device. The source shall also provide documentation that the quality assurance criteria for a TTE have been achieved.

(2) Monitoring.

(i) Any owner or operator who uses an incinerator or regenerative carbon adsorber to comply with any part of this subpart shall install, calibrate, certify to the Department, operate, and maintain continuous monitoring equipment. The continuous monitoring equipment shall monitor the following parameters:

(A) Combustion chamber temperature of each thermal incinerator or afterburner;

(B) Temperature rise immediately before the catalyst bed and across each catalytic incinerator bed; and

(C) The VOC concentration of the outlet from each carbon adsorption bed.

(ii) The continuous temperature monitoring equipment must be equipped with a continuous recorder and have an accuracy of ñ1 percent of the combustion temperature being measured expressed in degrees Celsius (°C) or ñ0.5°C, whichever is greater.

(iii) The owner or operator shall ensure that the quality assurance measures in _ Procedure H and the quality control procedures in Procedure F are met.

(c) Determining the overall emission reduction efficiency. The overall emission reduction efficiency of the emission control system shall be determined each day as the product of the capture efficiency, as determined using the capture efficiency test method in Chapter 126 Appendix A and the control device destruction or removal efficiency; or for each solvent recovery system, by the test protocol described in paragraph (a)(2)(iii)(A) of this section for comparing liquid input to liquid VOC recovery. The results of the capture efficiency test and control device destruction or removal efficiency test remain valid for each day until a subsequent test is performed. The results of any valid test may be used for each day until superseded by the results of a valid test subsequently performed.

VOLATILE ORGANIC COMPOUNDS
PROCEDURE F

Test Methods and Compliance Procedures:
Determining the Destruction or Removal Efficiency of a Control Device

(a) Depending upon the conditions at a test site, one of the following test methods from 40 CFR Part 60, Appendix A, must be used to determine volatile organic compound (VOC) concentrations of a gas stream at the inlet and outlet of a control device:

(1) Method 18;
(2) Method 25; or
(3) Method 25A.

(b) The method selected shall be based on consideration of the diversity of organic species present and their total concentration and on consideration of the potential presence of interfering gases. Because of the different response factors for the many organic compounds formed during the combustion process, only Method 25, which measures VOC as carbon, may be used for determining destruction efficiency of incinerators or catalytic incinerators, except in cases where the allowable outlet VOC concentration of the control device is less than 50 ppm as carbon, in which case Method 25A should be used.

(c) Except as indicated in paragraphs (c)(1) and (2) of this section, a test shall consist of three separate runs, each lasting a minimum of 60 minutes (min), unless the Department determines that process variables dictate shorter sampling times.

(1) When the method is to be used to determine the efficiency of a fixed-bed carbon adsorption system with a common exhaust stack for all of the individual adsorber vessels, the test shall consist of three separate runs, each coinciding with one or more complete sequences through the adsorption cycles of all the individual adsorber vessels.

(2) When the method is to be used to determine the efficiency of a fixed-bed carbon adsorption system with individual exhaust stacks for each adsorber vessel shall be tested individually. The test for each adsorber vessel shall consist of three separate runs. Each run shall coincide with one or more complete adsorption cycles.

(d) Method 1 or 1A of 40 CFR Part 60, Appendix A, shall be used for velocity traverses.

(e) Method 2, 2A, 2C, or 2D of 40 CFR Part 60, Appendix A, shall be used for velocity and volumetric flow rates.

(f) Method 3 or 3A of 40 CFR Part 60, Appendix A, shall be used for O2 and CO2 analysis.

(g) Method 4 of 40 CFR Part 60, Appendix A, shall be used for stack gas moisture.

(h) Methods 2, 2A, 2C, 2D, 3, 3A and 4 of 40 CFR Part 60, Appendix A, shall be performed, as applicable, at least twice during each test run.

(i) Use of adaptations to test methods. Use of an adaptation to any of the analytical methods specified in paragraphs (a) and (d) through (h) of this section shall be approved by the Department and

EPA on a case-by-case basis. An owner or operator shall submit sufficient documentation for the Department and EPA to find that the analytical methods specified in paragraphs (a) and (d) through (h) will yield inaccurate results and that the proposed adaptation is appropriate.

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VOLATILE ORGANIC COMPOUNDS
PROCEDURE G

Test Methods and Compliance Procedures:
Leak Detection Methods for Volatile Organic Compounds (VOC).

(a) Owners or operators required to carry out a leak detection monitoring program shall comply with the following requirements:

(1) Monitoring shall be performed in accordance with Method 21 of 40 CFR Part 60, Appendix A.

(2) The detection instrument shall meet the performance criteria of Method 21.

(3) The detection instrument shall be calibrated before and after use on each day of its use by the methods specified in Method 21. Failure to achieve a post-use calibration precision of less than 10 percent shall constitute grounds for rejecting all tests performed since the last pre-use calibration. In such cases, required leak tests must be reperformed.

(4) Calibration gases shall be:

(i) Zero air (less than 10 parts per million [ppm] of hydrocarbon in air); and

(ii) A mixture of methane or n-hexane and air at a concentration of approximately, but less than, 10,000 ppm methane or n-hexane.

(5) The detection instrument probe shall be traversed around all potential leak interfaces as close to the interface as possible as described in Method 21.

(b) When equipment is tested for compliance with the requirement that there be no detectable emissions, the test shall comply with the following:

(1) The requirements of paragraph (a)(1) through (a)(5) of this section shall apply and shall be met, and

(2) The background level shall be determined as set forth in Method 21.

(c) Leak detection shall be performed consistent with:

(1) "APTI Course SI 417-Controlling Volatile Organic Compound Emissions from Leaking Process Equipment", EPA-450/2-82-015;

(2) "Portable Instrument User's Manual for Monitoring VOC Sources", EPA-340/1-86-015;

(3) "Protocols for Generating Unit-Specific Emission Estimates for Equipment Leaks of VOC and VHAP", EPA-450/3-88-010; and

(4) "Petroleum Refinery Enforcement Manual", EPA-340/1-80-008.

(d) Use of adaptations to test methods. Use of an adaptation to any analytical methods specified in paragraphs (a), (b), and (c) of this section shall be approved by the Department and EPA on a case-by-case basis. An owner or operator shall submit sufficient documentation for the Department and EPA to find that the analytical methods specified in paragraphs (a), (b), and (c) will yield inaccurate results and that the proposed adaptation is appropriate.

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VOLATILE ORGANIC COMPOUNDS
PROCEDURE H

Performance Specifications for Continuous Emissions Monitoring of Total Hydrocarbons

(a) Applicability.

(1) This method applies to the measurement of total hydrocarbons as a surrogate measure for the total gaseous organic concentration of the combustion gas stream. The concentration is expressed in terms of propane.

(2) The Department may approve the use of gas conditioning, including cooling to between 4.4° and 18°C (40° and 64°F), and condensate traps to reduce the moisture content of the sample gas if the owner/operator:

(i) Successfully demonstrates to the Department that the use of such system is necessary for the specific application; and

(ii) Includes in the demonstration a quantification of the total hydrocarbon concentration (THC) lost to the gas conditioning system.

(b) Principle. A gas sample is extracted from the source through a heated sample line and heated glass fiber filter to a flame ionization detector (FID). Results are reported as volume concentration equivalents of the propane.

(c) Definitions. As used in this section, all terms not defined herein shall have the meaning given them in the applicable chapters and in Maine's Chapter 100 "Definitions regulation" and Chapter 117 Source Surveillance.

"Calibration drift" means the difference in the measurement system response to a mid-level calibration gas before and after a stated period of operation during which no unscheduled maintenance, repair, or adjustment took place.

"Calibration error" means the difference between the gas concentration indicated by the measurement system and the known concentration of the calibration system.

"Calibration gas" means a known concentration of gas in an appropriate diluent gas.

"Measurement system" means the total equipment required for the determination of the inlet and outlet gas concentrations, percent capture efficiency, and gas outlet emission rate. The system consists of the following major subsystems:

(1) Sample interface--the portion of the system that is used for one or more of the following:

(i) Sample acquisition;

(ii) Sample transportation;

(iii) Sample conditioning; or

(iv) Protection of the analyzer from the effects of the stack effluent;

(2) Organic analyzer--the portion of the system that senses organic concentration and generates an output proportional to the gas concentration;

(3) Data recorder--the portion of the system that records a permanent record of the measurement values; and

(4) Flow rate system--a gas volume meter meeting the requirements of Method 2A, Section 2.1 (40 CFR Part 60, Appendix A).

"Response time" means the time interval from a step change in pollutant concentration at the inlet to the emission measurement system to the time at which 95 percent of the corresponding final value is reached as displayed on the recorder

"Span value" means for most incinerators, a 50 parts per million (ppm) propane span. Higher span values may be necessary if propane emissions are significant. For convenience, the span value should correspond to 100 percent of the recorder scale.

"Zero drift" means the difference in the measurement system response to a zero level calibration gas before and after a stated period of operation during which no unscheduled maintenance, repair, or adjustment took place.

(d) Apparatus. [Note: this method is often applied in highly explosive areas. Caution should be exercised in choice of equipment and installation.] An acceptable measurement system i includes a sample interface system, a calibration valve, gas filter and a pump preceding the analyzer. THC measurement systems are designated HOT or COLD systems based on the operating temperatures of the system. In HOT systems, all components in contact with the sample gas (probe, calibration valve, filter, and sample lines) as well as all parts of the flame ionization analyzer between the sample inlet and the FID must be maintained between 150° to 175°C. This includes the sample pump if it is located on the inlet side of the FID. A condensate trap may be installed, if necessary, to prevent any condensate entering the FID. The essential components of the measurement system are as follows:

(1) Organic concentration analyzer. An FID capable of meeting or exceeding the specifications in this method.

(2) Sample probe.

(i) Stainless steel, or equivalent, three hole rake type. Sample holes shall be 4 millimeters (mm) (0.2 inches [in.] in diameter or smaller and located at 16.7, 50, and 83.3 percent of the equivalent stack diameter; or

(ii) A single opening probe so that a gas sample is collected from the centrally located 10 percent area of the stack cross section.

(3) Sample line. Stainless steel or Teflon tubing to transport the sample gas to the analyzer. The sample line from the heated probe shall be heated to between 150 and 175°C (302° and 347°F).

(4) Calibration valve assembly.

(i) A heated three-way valve assembly to direct the zero and calibration gases to the analyzers; or

(ii) Other methods, such as quick-connect lines, to route calibration gas to the analyzers.

(5) Particulate filter. An in-stack or an out-of-stack glass fiber filter if exhaust gas particulate loading is significant. An out-of-stack filter must be heated.

(6) Recorder. A strip-chart recorder, analog computer, or digital recorder for recording measurement data. The minimum data recording shall be one measurement value per minute.

(e) Calibration gases and other gases.

(1) Gases used for calibration, fuel, and combustion air shall be contained in compressed gas cylinders.

(2) Preparation of calibration gases shall be done according to the procedure in Protocol No. 1, listed in the reference in paragraph (l)(2) of this section.

(3) The recommended shelf life for each calibration gas cylinder over which the concentration does not change more than ñ2 percent from the certified value shall be obtained from the cylinder manufacturer.

(4) The following calibration and other gases shall be used:

(i) Fuel. A 40 percent hydrogen and 60 percent helium or 40 percent hydrogen and 60 percent nitrogen gas mixture to avoid an oxygen synergism effect that reportedly occurs when oxygen concentration varies significantly from a mean value.

(ii) Zero gas. High purity air with less than 0.1 parts per million by volume (ppmv) of organic material methane or carbon equivalent or less than 0.1 percent of the span value, whichever is greater.

(iii) Low-level calibration gas. Propane calibration gas (in air or nitrogen) with a concentration equivalent to 20 to 30 percent of the applicable span value.

(iv) Mid-level calibration gas. Propane calibration gas with a concentration equivalent to 45 to 55 percent of the applicable span value.

(v) High-level calibration gas. Propane calibration gas with a concentration equivalent to 80 to 90 percent of the applicable span value.

(f) Measurement system performance specifications.

(1) Zero drift shall be less than ñ3 percent of the span value.

(2) Calibration drift shall be less than ñ3 percent of the span value.

(3) Calibration error shall be less than ñ5 percent of the calibration gas value.

(g) Pretest preparations.

(1) Selection of sampling site.

(i) The location of the sampling site shall be determined from the applicable section of this subpart or purpose of the test (i.e., exhaust stack, inlet line, etc.).

(ii) The sample port shall be located at least 1.5 meters (4.9 feet) or 2 equivalent diameters upstream of the gas discharge to the atmosphere.

(2) Location of sample probe. The sample probe must be installed so that the probe is centrally located in the stack, pipe or duct and is sealed tightly at the stack port connection.

(3) Measurement systems preparation. Prior to the emission test, the measurement system must be assembled following the manufacturer's written instructions in preparing the sample interface and the organic analyzer. The system must be operable.

(4) Calibration error test.

(i) Immediately prior to the test series (within 2 hours of the start of the test), zero gas and high-level calibration gas shall be introduced at the calibration valve assembly.

(ii) The analyzer output shall be adjusted to the appropriate levels, if necessary.

(iii) The predicted response for the low-level and mid-level gases shall be calculated based on a linear response line between the zero and high-level responses.

(iv) Low-level and mid-level calibration gases shall be introduced successively to the measurement system.

(v) The analyzer responses for low-level and mid-level calibration gases shall be recorded, and the differences between the measurement system responses and the predicted responses shall be determined. These differences must be less than ñ5 percent of the respective calibration gas value. If not, the measurement system shall be deemed not acceptable and must be replaced or repaired prior to testing. No adjustments to the measurement system shall be conducted after the calibration and before the drift determination found in paragraph (h)(2) of this section.

(vi) If adjustments are necessary before the completion of the test series, the drift checks shall be performed prior to the required adjustments, and the calibration following the adjustments shall be repeated.

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(vii) If multiple electronic ranges are to be used, each additional range must be checked with a mid-level calibration gas to verify the multiplication factor.

(5) Response time test.

(i) Zero gas shall be introduced into the measurement system at the calibration valve assembly.

(ii) When the system output has stabilized, the owner or operator shall switch quickly to the high-level calibration gas.

(iii) The time shall be recorded from the concentration change to the measurement system response equivalent to 95 percent of the step change.

(iv) The test shall be repeated three times and the results averaged.

(h) Emission measurement test procedure.

(1) Organic measurement.

(i) Sampling shall begin at the start of the test period.

(ii) Time and any required process information shall be recorded, as appropriate.

(iii) Periods of process interruption or cyclic operation shall be noted on the recording chart.

(2) Drift determination.

(i) Immediately following the completion of the test period and hourly during the test period, the zero and mid-level calibration gases shall be introduced, one at a time, to the measurement system at the calibration valve assembly. No adjustments to the measurement system shall be made until after both the zero and calibration drift checks are made.

(ii) The analyzer response shall be recorded.

(iii) If the drift values exceed the specified limits, the test results shall be invalidated preceding the check, and the test shall be repeated following corrections to the measurement system.

(iv) Alternatively, the test measurement system may be recalibrated as in paragraph (g)(4) of this section and the results reported using both sets of calibration data (i.e., data determined prior to the test period and data determined following the test period).

(i) Organic concentration calculations. The average organic concentration shall be determined in terms of ppmv propane by the integration of the output recording over the period specified in the applicable section of this subpart.

(j) Quality assurance.

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(1) The owner or operator shall assure proper calibration, maintenance, and operation of the continuous emissions monitoring system on a continual basis.

(2) The owner or operator shall establish a quality assurance program to evaluate and monitor performance on a continual basis. The following checks shall routinely be done:

(i) A daily calibration check for each monitor. The calibration shall be adjusted if the check indicates the instrument's calibration drift exceeds the specification established in paragraph (f) of this section;

(ii) A daily system audit which includes the following:

(A) A review of the calibration check data;

(B) An inspection of the recording system;

(C) An inspection of the control panel warning lights; and

(D) An inspection of the sample transport/interface system (e.g., flowmeters, filters), as appropriate;

(iii) A quarterly calibration error test at the span midpoint; and

(iv) The entire performance specification test repeated every second year.

(k) Reporting of total hydrocarbon levels.

(1) The total hydrocarbon concentration (THC) levels from the initial compliance certification test shall be reported as ppm propane for inlet and outlet concentrations and as a percent reduction across the control device.

(2) THC levels shall be expressed in milligrams per second (mg/sec) or pounds per second (lb/sec).

(3) This conversion shall be accomplished using the following equation:

THC, mg/sec = (THC ppm propane) x (stack gas flow) x 5.2 x 10-2

where:

THC ppm propane = the total hydrocarbon concentration as actually measured by this method in ppm propane at the inlet or outlet.

Stack gas flow = measured in dry standard cubic feet as time needed as determined by the flowmeter system or Methods 2 and 4.

5.2 x 10-2 = constant to account for the conversion of units.

(l) References.

(1) Measurement of Volatile Organic Compounds--Guideline Series. U. S. Environmental Protection Agency, Research Triangle Park, North Carolina. Publication No. EPA-450/2-78-041. June 1978. p. 46-54.

(2) Traceability Protocol for Establishing True Concentrations of Gases Used for Calibration and Audits of Continuous Source Emission Monitors (Protocol No. 1). U. S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory. Research Triangle Park, North Carolina. June 1973.

(3) Gasoline Vapor Emission Laboratory Evaluation--Part 2. U. S. Environmental Protection Agency. Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina. EMB Report No. 75-GAS-6. August 1975.

(4) Appendix D: Performance Specifications for Continuous Emissions Monitoring of Total Hydrocarbons in Hazardous Waste Incinerators, Boilers and Industrial Furnaces. Federal Register. 54:206 pp. 43743-43745. October 26, 1989.

VOLATILE ORGANIC COMPOUNDS
PROCEDURE I

Quality Control Procedures for Continuous Emission Monitoring Systems (CEMS)

(a) CEMS quality control (QC) program. Each owner or operator of a CEMS shall develop and implement a CEMS QC program. At a minimum, each QC program shall include written procedures that describe in detail step-by-step procedures and operations for each of the following:

(1) Initial and routine periodic calibration of the CEMS.

(2) Calibration drift (CD) determination and adjustment of the CEMS.

(3) Preventative maintenance of the CEMS (including spare parts inventory).

(4) Data recording, calculations, and reporting.

(5) Accuracy audit procedures including sampling and analysis methods.

(6) Program of corrective action for malfunctioning CEMS.

(b) Determining out-of-control condition for the CEMS.

(1) If either the zero (or low-level) or high-level CD exceeds twice the applicable drift specification in 40 CFR Part 60, Appendix B, for five consecutive daily periods, the CEMS is out-of-control.

(2) If either the zero (or low-level) or high-level CD exceeds four times the applicable drift specification in 40 CFR Part 60, Appendix B, during any CD check, the CEMS is out-of-control.

(3) If the CEMS fails a performance audit (PA), the CEMS is out-of-control, and the owner or operator shall take necessary corrective action to eliminate the problem. Following the corrective action, the source owner or operator shall reconduct the appropriate failed portion of the audit and other applicable portions to determine whether the monitoring system is operating properly and within specifications. Monitoring data obtained during any out-of-control period may not be used for compliance determination or meet any data capture requirements; however, the data can be used for identifying periods when there has been a failure to meet quality assurance/quality control criteria.

(c) Determining the out-of-control time period for the CEMS.

(1) The beginning of the out-of-control period is:

(i) The time corresponding to the completion of the fifth consecutive daily CD check with CD in excess of two times the allowable limit, or

(ii) The time corresponding to completion of the daily CD check preceding the daily CD check that results in a CD in excess of four times the allowable limit.

(2) The end of the out-of-control period is the time corresponding to the completion of the CD check following corrective action that results in the CD at both the zero (or low-level) and high-level measurement points being within the corresponding allowable CD limit (i.e., either two times or four times the allowable limit in 40 CFR Part 60, Appendix B).

(3) If the CEMS failed a PA, the beginning of the out-of-control period is the time corresponding to the completion of the failed audit test. The end of the out-of-control period is the time corresponding to a successful retest of the PA sample.

(d) Recordkeeping. The owner or operator shall keep the QC procedure described in paragraph (a) of this section in a readily accessible location for at least 5 years and shall make the procedure available to the Department and/or EPA upon verbal or written request.

(e) Reporting. Upon verbal or written request, the owner or operator shall submit to the Department and/or EPA a copy of all information and records documenting out-of-control periods including beginning and end dates and descriptions of corrective actions taken.