



Rules of
Department of Natural Resources
Division 10—Air Conservation Commission
Chapter 5—Air Quality Standards and
Air Pollution Control Rules Specific
to the St. Louis Metropolitan Area

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**Title 10—DEPARTMENT OF
NATURAL RESOURCES
Division 10—Air Conservation
Commission**

**Chapter 5—Air Quality Standards and
Air Pollution Control Rules
Specific to the St. Louis
Metropolitan Area**

**10 CSR 10-5.010 Ambient Air Quality
Standards**

(Rescinded February 11, 1978)

AUTHORITY: section 203.050, RSMo 1969. Original rule filed March 14, 1967, effective March 24, 1967. Amended: Filed Jan. 2, 1970, effective Jan. 12, 1970. Rescinded: published Sept. 1, 1977, effective Feb. 11, 1978.

10 CSR 10-5.020 Definitions

(Rescinded February 11, 1978)

AUTHORITY: section 203.050, RSMo 1969. Original rule March 14, 1967, effective March 24, 1967. Amended: Filed Jan. 31, 1972, effective Feb. 10, 1972. Rescinded: published Sept. 1, 1977, effective Feb. 11, 1978.

**10 CSR 10-5.030 Maximum Allowable
Emission of Particulate Matter From Fuel
Burning Equipment Used for Indirect
Heating**

(Rescinded October 30, 2011)

AUTHORITY: section 643.050, RSMo 1994. Original rule filed March 14, 1967, effective March 24, 1967. Rescinded and readopted: Filed Aug. 11, 1978, effective Feb. 11, 1979. Amended: Filed March 14, 1984, effective Sept. 14, 1984. Rescinded: Filed Feb. 25, 2011, effective Oct. 30, 2011.

**10 CSR 10-5.040 Control of Emissions
From Hand-Fired Equipment**

PURPOSE: This rule sets conditions and restrictions for the operation of hand-fired fuel-burning equipment in the St. Louis Metropolitan Area.

(1) Applicability. This rule shall apply to all hand-fired, fuel-burning equipment at commercial facilities, including, but not limited to furnaces, heating and cooking stoves, and hot water furnaces with the exception of the following:

- (A) Fires used for recreational purpose;
- (B) Fires used solely for the preparation of

food by barbecuing;

(C) Wood-burning fireplaces in commercial facilities that are part of the building décor and are not intended to supply building heat;

(D) Ovens that only burn wood, charcoal, or anthracite coal for pizzas or bakery products;

(E) Craftsman, hobbyist, horseshoe, and rivet blacksmith forges that only burn charcoal, coking coal, or coke; and

(F) Wood and coal-fired educational, hobbyist, or recreational steam engines or tractors for demonstrations.

(2) Definitions.

(A) Clean wood—Wood that has not been treated (including, but not limited to, treatment with copper chromium arsenate, creosote, or pentachlorophenol) and has no paint, stain, or any other type of coating.

(B) Definitions of certain terms specified in this rule, other than those defined in this rule section, may be found in 10 CSR 10-6.020.

(3) General Provisions. No owner or operator shall operate applicable hand-fired, fuel-burning equipment unless the following conditions are met:

(A) Hand-fired equipment shall be operated to minimize emissions at all times. This includes, but is not limited to, following all manufacturers' operation and maintenance guidelines;

(B) Hand-fired equipment must be commercially manufactured;

(C) Hand-fired equipment may only burn process waste generated onsite;

(D) Equipment shall have a permanent stack extending five feet (5') higher than the peak of any roof structure located within one hundred fifty feet (150');

(E) Fuel shall be clean wood with a moisture content less than or equal to twenty-five percent (25%); and

(F) Each piece of equipment shall burn no more than thirty (30) tons of fuel per calendar year.

(4) Reporting and Record Keeping.

(A) The owner or operator of hand-fired equipment subject to this rule shall keep records necessary to determine compliance.

(B) Records verifying that only dry wood was used for fuel may be used to demonstrate compliance with the moisture content requirement.

(C) Records required under subsections (4)(A) and (4)(B) of this rule shall be retained by the owner or operator for a minimum of five (5) years. These records shall be made

available to the director upon request.

(5) Test methods. (*Not Applicable*)

AUTHORITY: section 643.050, RSMo Supp. 2011. Original rule filed March 14, 1967, effective March 24, 1967. Amended: Filed Sept. 26, 2011, effective May 30, 2012.*

**Original authority: 643.050, RSMo 1965, amended 1972, 1992, 1993, 2011.*

**10 CSR 10-5.050 Restriction of Emission of
Particulate Matter From Industrial Processes**

(Rescinded March 30, 2001)

AUTHORITY: section 643.050, RSMo 1994. Original rule filed March 14, 1967, effective March 24, 1967. Amended: Filed June 30, 1975, effective July 10, 1975. Amended: Filed March 15, 1979, effective Nov. 11, 1979. Amended: Filed Oct. 13, 1983, effective March 12, 1984. Rescinded: Filed Aug. 4, 2000, effective March 30, 2001.

**10 CSR 10-5.060 Refuse Not to be Burned
in Fuel Burning Installations**

(Rescinded February 11, 1979)

AUTHORITY: section 203.050, RSMo 1975. Original rule filed March 14, 1967, effective March 24, 1967. Rescinded: Filed Aug. 11, 1978, effective Feb. 11, 1979.

10 CSR 10-5.070 Open Burning Restrictions

(Rescinded January 30, 2008)

AUTHORITY: section 643.050, RSMo 1994. Original rule filed March 14, 1967, effective March 24, 1967. Amended: Filed Nov. 9, 1983, effective April 12, 1984. Amended: Filed June 30, 1994, effective Jan. 29, 1995. Rescinded: Filed June 7, 2007, effective Jan. 30, 2008.

10 CSR 10-5.080 Incinerators

(Rescinded December 9, 1991)

AUTHORITY: section 203.050, RSMo 1986. Original rule filed March 14, 1967, effective March 24, 1967. Amended: Filed Dec. 15, 1982, effective May 12, 1983. Amended: Filed June 15, 1983, effective Nov. 11, 1983. Amended: Filed Oct. 13, 1983, effective March 12, 1984. Rescinded: Filed May 20, 1991, effective Dec. 9, 1991.

**10 CSR 10-5.090 Restriction of Emission of Visible Air Contaminants**
(Rescinded May 30, 2000)

AUTHORITY: section 643.050, RSMo 1994. Original rule filed March 14, 1967, effective March 24, 1967. Amended: Filed Jan. 14, 1977, effective July 11, 1977. Rescinded: Filed Sept. 15, 1999, effective May 30, 2000.*

10 CSR 10-5.100 Preventing Particulate Matter From Becoming Airborne
(Rescinded September 28, 1990)

AUTHORITY: section 203.050, RSMo 1986. Original rule filed March 14, 1967, effective March 24, 1967. Amended: Filed June 30, 1975, effective July 10, 1975. Amended: Filed May 11, 1984, effective Oct. 11, 1984. Rescinded: Filed March 5, 1990, effective Sept. 28, 1990.

10 CSR 10-5.110 Restrictions of Emission of Sulfur Dioxide for Use of Fuel
(Rescinded July 30, 1997)

AUTHORITY: section 643.050, RSMo 1986. Original rule filed March 14, 1967, effective March 24, 1967. Amended: Filed Sept. 14, 1978, effective April 12, 1979. Rescinded: Filed Dec. 13, 1996, effective July 30, 1997.

10 CSR 10-5.120 Information on Sales of Fuels to be Provided and Maintained

PURPOSE: This rule provides that information pertaining to the sale of coal or residual fuel oil shall be maintained and provided upon request.

(1) Tickets to be Furnished and Retained. After thirty (30) days from the effective date of this regulation (April 24, 1976), every delivery of coal or residual fuel oil when first delivered to a consumer or wholesaler in the St. Louis metropolitan area must be accompanied by a ticket prepared in triplicate and containing at least the name and address of the seller and the buyer and the source of the fuel. Tickets on delivery of coal shall also show the ash content of the coal. One (1) copy of each ticket shall be kept by the person delivering the fuel and be retained for one (1) year; one (1) copy is to be given to the recipient of the fuel to be retained for one (1) year; and upon request, within thirty (30) days after delivery of the fuel, the delivering party shall mail one (1) copy to the Air Conservation Commission.

(2) Lists May Be Published. The director is authorized to publish lists of approved sources or other descriptive lists of fuels available in the area which meet the requirements of this regulation.

AUTHORITY: section 643.050, RSMo 1994. Original rule filed March 14, 1967, effective March 24, 1967.*

**Original authority: 643.050, RSMo 1965, amended 1972, 1992, 1993.*

Op. Atty. Gen. No. 331, Shell (11-15-71). The Missouri Air Conservation Commission does not have any specific authority to require the installation of emission monitoring devices, but does have the authority to require reports from sources of air pollution relating to rate, period of emission and composition of effluent, and to make such information available to the public, unless any such information is "confidential" as defined by section 203.050.4, RSMo (1969). The Missouri Air Conservation Commission has the authority under Chapter 203, RSMo (1969) to adopt emission control regulations, including limitations on the content of fuels, which will attain and maintain national air quality standards, if the state standards are the same or more stringent.

10 CSR 10-5.130 Certain Coals to be Washed

PURPOSE: This rule provides that specified coals shall be cleaned by washing prior to their sale or use.

(1) Certain Coals to be Washed. After December 1, 1968, it shall be unlawful for any person to import, sell, offer for sale, expose for sale, exchange, deliver or transport for use and consumption in the St. Louis metropolitan area or to use or consume in the area any coal which as mined contains in excess of two percent (2%) sulfur or twelve percent (12%) ash calculated as described in 10 CSR 10-5.110, unless it shall have been cleaned by a process known as washing so that it shall contain no more than twelve percent (12%) ash on a dry basis. The term washing is meant to include purifying, cleaning or removing impurities from coal by mechanical process, regardless of the cleaning medium used.

(2) Samples May Be Taken. The director is authorized to take or cause or to have taken samples of any coal at any reasonable time or place for purposes of determining compliance with this regulation.

(3) Exception. This regulation shall not apply if a person proposing to use unwashed coal can show that the emission of sulfur dioxide from the plant in which the coal is to be burned will not exceed two and three-tenths (2.3) pounds of sulfur dioxide per million British thermal units of heat input to the installation and that emission of particulate matter will be no more than that allowed in 10 CSR 10-6.405.

AUTHORITY: section 643.050, RSMo Supp. 2011. Original rule filed March 14, 1967, effective March 24, 1967. Amended: Filed Sept. 16, 2011, effective May 30, 2012.*

**Original authority: 643.050, RSMo 1965, amended 1972, 1992, 1993, 2011.*

10 CSR 10-5.140 Emission of Certain Settleable Acids and Alkaline Substances Restricted
(Rescinded February 11, 1978)

AUTHORITY: section 203.050, RSMo 1969. Original rule filed March 14, 1967, effective March 24, 1967. Rescinded: published Sept. 1, 1977, effective Feb. 11, 1978.

10 CSR 10-5.150 Emission of Certain Sulfur Compounds Restricted
(Rescinded July 30, 1997)

AUTHORITY: section 643.050, RSMo 1996. Original rule filed March 14, 1967, effective March 24, 1967. Amended: Filed Aug. 11, 1978, effective March 11, 1979. Rescinded: Filed Dec. 13, 1996, effective July 30, 1997.

10 CSR 10-5.160 Control of Odors in the Ambient Air
(Rescinded November 30, 2010)

AUTHORITY: section 643.050, RSMo 2000. Original rule filed March 14, 1967, effective March 24, 1967. Amended: Filed Aug. 15, 1983, effective Jan. 13, 1984. Amended: Filed Nov. 2, 1998, effective July 30, 1999. Amended: Filed Feb. 14, 2003, effective Sept. 30, 2003. Amended: Filed Dec. 4, 2006, effective July 30, 2007. Rescinded: Filed April 14, 2010, effective Nov. 30, 2010.

10 CSR 10-5.170 Control of Odors From Processing of Animal Matter

PURPOSE: This rule establishes methods and procedures for odor control during the processing of animal matter.



(1) General.

(A) For purposes of this regulation the word reduction is defined as any heated process, including rendering, cooking, drying, dehydrating, digesting, evaporating and protein concentrating. Animal matter is defined as any product or derivative of animal life.

(B) The provisions of this regulation shall not apply to any device, machine, equipment or other contrivance used exclusively for the processing of food for human consumption in food service establishments.

(C) For purposes of this regulation, a food service establishment shall be defined as follows: any fixed or mobile restaurant; coffee shop; cafeteria; short order cafe; luncheonette; grill; tearoom; sandwich shop; soda fountain; tavern; bar; cocktail lounge; night club; roadside stand; industrial feeding establishment; private, public or nonprofit organization or institution routinely serving food; catering kitchen, commissary or similar place in which food or drink is placed for sale or for service on the premises or elsewhere; and any other eating or drinking establishment or operation where food is served or provided for the public with or without charge.

(2) Odor Control Equipment Required on Reduction Processes.

(A) No person shall operate or use any device, machine, equipment or other contrivance for the reduction of animal matter unless all gases, vapors and gas-entrained effluents from the facility are incinerated at a temperature of not less than twelve hundred degrees Fahrenheit (1200 °F) for a period of not less than 0.3 second, or processed in a manner as determined by the director to be equally or more effective for the purpose of air pollution control.

(B) A person incinerating or processing gases, vapors or gas-entrained effluents pursuant to this rule shall provide, properly install and maintain, in good working order and in operation, devices as specified by the director for indicating temperature, pressure or other operating conditions.

(3) Other Odor Control Measures Required.

(A) Effective devices and/or measures shall be installed and operated so that no vent, exhaust pipe, blow-off pipe or opening of any kind shall discharge into the outdoor air any odorous matter, vapors, gases or dusts or any combination which create odors or other nuisances in the neighborhood of the plant.

(B) Odor-producing materials shall be stored and handled in a manner so that odors produced from the materials are confined.

Accumulation of odor-producing materials resulting from spillage or other escape is prohibited.

(C) Odor-bearing gases, vapors, fumes or dusts arising from materials in process shall be confined at the point of origin so as to prevent liberation of odorous matter. Confined gases, vapors, fumes or dusts shall be treated before discharge to the atmosphere, as required in subsection (3)(A).

(4) Enclosure of Building May Be Required. Whenever dust, fumes, gases, mist, odorous matter, vapors or any combination thereof escape from a building used for processing of animal matter in a manner and amount as to cause a violation of 10 CSR 10-5.160, the director may order that the building(s) in which processing, handling and storage are done be tightly closed and ventilated in a way that all air and gases and air or gas-borne material leaving the building are treated by incineration or other effective means for removal or destruction of odorous matter or other air contaminants before discharge into the open air.

AUTHORITY: section 643.050, RSMo 2000. * Original rule filed March 14, 1967, effective March 24, 1967. Amended: Filed July 19, 2002, effective April 30, 2003.

*Original authority: 643.050, RSMo 1965, amended 1972, 1992, 1993, 1995.

10 CSR 10-5.180 Emission of Visible Air Contaminants From Internal Combustion Engine

(Rescinded November 30, 2002)

AUTHORITY: section 643.050, RSMo 1994. Original rule filed March 14, 1967, effective March 24, 1967. Rescinded Filed Feb. 28, 2002, effective Nov. 30, 2002.

Op. Atty. Gen. No. 331, Shell (11-15-71). The state of Missouri has the authority to inspect for "air pollution control devices" which may be installed on motor vehicles as a requirement to comply with applicable emission regulations, but whether the regulations and inspections would accomplish the purpose of "enforcing compliance with applicable emission standards" which are federal standards, and whether the preemption provision of 42 U.S.C.A., Section 1857f-6a, has been complied with are questions that only the appropriate federal officials can answer.

10 CSR 10-5.190 Approval of Planned Installations

(Rescinded April 11, 1980)

AUTHORITY: section 203.050, RSMo 1978. Original rule filed March 14, 1967, effective March 24, 1967. Amended: Filed Jan. 31, 1972, effective Feb. 10, 1972. Amended: Filed Aug. 25, 1972, effective Sept. 4, 1972. Amended: Filed Aug. 16, 1977, effective Feb. 11, 1978. Rescinded: Filed Dec. 10, 1979, effective April 11, 1980.

Op. Atty. Gen. No. 331, Shell (11-15-71). The Missouri Air Conservation Commission has the authority under Chapter 203, RSMo (1969) to provide for the equivalent of a construction permit system by promulgating regulations to require the submission of plans and specifications for approval before any person may construct any facility which will cause air pollution, but that the commission has no such authority regarding an equivalent permit system for the operation of existing facilities which are the source of air pollution.

10 CSR 10-5.200 Measurement of Emissions of Air Contaminants

(Rescinded April 9, 1992)

AUTHORITY: section 203.050, RSMo 1986. Original rule filed March 14, 1967, effective March 24, 1967. Rescinded: Filed Oct. 16, 1991, effective April 9, 1992.

10 CSR 10-5.210 Submission of Emission Information

(Rescinded November 12, 1984)

AUTHORITY: section 203.050, RSMo 1978. Original rule filed March 14, 1967, effective March 24, 1967. Amended: Filed Aug. 25, 1972, effective Sept. 4, 1972. Rescinded: Filed June 13, 1984, effective Nov. 12, 1984.

Op. Atty. Gen. No. 331, Shell (11-15-71). The Missouri Air Conservation Commission does not have any specific authority to require the installation of emission monitoring devices, but does have the authority to require reports from sources of air pollution relating to rate, period of emission and composition of effluent, and to make such information available to the public, unless any such information is "confidential" as defined by section 203.050.4, RSMo (1969).

10 CSR 10-5.220 Control of Petroleum Liquid Storage, Loading and Transfer

PURPOSE: This rule restricts volatile organic compound emissions from the handling of



petroleum liquids in five specific areas: petroleum storage tanks with a capacity greater than forty thousand gallons, the loading of gasoline into delivery vessels, the transfer of gasoline from delivery vessels into storage containers, gasoline delivery vessels and the fueling of motor vehicles from storage containers. This rule is required to achieve the federally mandated reduction of hydrocarbon emissions in the St. Louis metropolitan area that contribute to the formation of ozone.

PUBLISHER'S NOTE: The secretary of state has determined that the publication of the entire text of the material which is incorporated by reference as a portion of this rule would be unduly cumbersome or expensive. This material as incorporated by reference in this rule shall be maintained by the agency at its headquarters and shall be made available to the public for inspection and copying at no more than the actual cost of reproduction. This note applies only to the reference material. The entire text of the rule is printed here.

(1) Applicability.

(A) This rule shall apply throughout St. Louis City and Jefferson, St. Charles, Franklin and St. Louis Counties.

(B) Compliance with this rule does not relieve the owner or operator of the responsibility to comply with other applicable governmental requirements.

(C) Exemptions to This Rule and/or Specific Areas of This Rule.

1. Petroleum storage tanks. Subsection (3)(A) of this rule shall not apply to petroleum storage tanks that—

A. Store processed and/or treated petroleum or condensate at a drilling and production installation prior to custody transfer;

B. Contain a petroleum liquid with a true vapor pressure less than 27.6 kilopascals (kPa) (4.0 psia) at ninety degrees Fahrenheit (90 °F);

C. Are welded construction, and equipped with a metallic-type shoe primary seal and have a shoe-mounted secondary seal or closure devices of demonstrated equivalence approved by the staff director; and

D. Store waxy, heavy pour crude oil.

2. Gasoline loading.

A. Subsection (3)(B) of this rule shall not apply to a gasoline loading installation whose average monthly throughput of gasoline is less than or equal to one hundred twenty thousand (120,000) gallons when averaged over the most recent calendar year, provided the gasoline loading installation loads gasoline by submerged filling and—

(I) Owners or operators of gasoline loading installations submit a report to the staff director on a form supplied by the department stating the gasoline throughput for each month of the previous calendar year. The report shall be submitted no later than February 1 of each year;

(II) Delivery vessels purchased after December 31, 1995, are Stage I equipped;

(III) Owners or operators of gasoline loading installations maintain records of gasoline throughput and gasoline delivery; and

(IV) Delivery vessels operated by an exempt installation do not deliver to Stage I controlled tanks unless the delivery vessel is equipped with and employs Stage I controls.

B. A gasoline loading installation that fails to meet the requirements of the exemption in subparagraph (1)(C)2.A. of this rule for one (1) calendar year shall not qualify for the exemption again.

3. This rule does not apply to stationary gasoline tanks with a capacity of less than or equal to five hundred (500) gallons.

4. Subsection (3)(E) of this rule does not apply to any gasoline dispensing facility (GDF) with one thousand (1,000) gallon or smaller tank(s) and monthly throughput of less than or equal to ten thousand (10,000) gallons of gasoline through the tanks.

5. Paragraph (3)(C)2. of this rule does not apply to gasoline transfers made to storage tanks equipped with floating roofs or their equivalent.

6. Subsection (3)(C) of this rule does not apply to any storage tank having a capacity less than or equal to two thousand (2,000) gallons used exclusively for the fueling of agricultural equipment.

7. Subsection (3)(E) of this rule does not apply to any stationary storage tank used primarily for the fueling of agricultural equipment.

(2) Definitions.

(A) Agricultural equipment—Any equipment used exclusively for agricultural purposes on land owned or leased for the production of farm products.

(B) Definitions of certain terms specified in this rule, other than those defined in this rule section, may be found in 10 CSR 10-6.020.

(3) General Provisions.

(A) Petroleum Storage Tanks.

1. No owner or operator of petroleum storage tanks shall cause or permit the storage in any stationary storage tank of more than forty thousand (40,000) gallons capacity

of any petroleum liquid having a true vapor pressure of one and five-tenths (1.5) pounds per square inch absolute (psia) or greater at ninety degrees Fahrenheit (90 °F), unless the storage tank is a pressure tank capable of maintaining working pressures sufficient at all times to prevent volatile organic compound (VOC) vapor or gas loss to the atmosphere or is equipped with one (1) of the following vapor loss control devices:

A. A floating roof, consisting of a pontoon type, double-deck type or internal floating cover or external floating cover, that rests on the surface of the liquid contents and is equipped with a closure seal(s) to close the space between the roof edge and tank wall. Storage tanks with external floating roofs shall meet the additional following requirements:

(I) The storage tank must be fitted with—

(a) A continuous secondary seal extending from the floating roof to the tank wall (rim-mounted secondary seal); or

(b) A closure or other device approved by the staff director that controls VOC emissions with an effectiveness equal to or greater than a seal required under subpart (3)(A)1.A.(I)(a) of this rule;

(II) All seal closure devices must meet the following requirements:

(a) There are no visible holes, tears or other openings in the seal(s) or seal fabric;

(b) The seal(s) is intact and uniformly in place around the circumference of the floating roof between the floating roof and the tank wall; and

(c) For vapor-mounted primary seals, the accumulated area of gaps exceeding 0.32 centimeters, one-eighth inch (1/8") width, between the secondary seal and the tank wall shall not exceed 21.2 cm² per meter of tank diameter (1.0 in² per foot of tank diameter);

(III) All openings in the external floating roof, except for automatic bleeder vents, rim space vents and leg sleeves, must be equipped with—

(a) Covers, seals or lids in the closed position except when the openings are in actual use; and

(b) Projections into the tank which remain below the liquid surface at all times;

(IV) Automatic bleeder vents must be closed at all times except when the roof is floated off or landed on the roof leg supports;

(V) Rim vents must be set to open when the roof is being floated off the leg supports or at the manufacturer's recommended setting; and



(VI) Emergency roof drains must be provided with slotted membrane fabric covers or equivalent covers which cover at least ninety percent (90%) of the area of the opening;

B. A vapor recovery system with all storage tank gauging and sampling devices gas-tight, except when gauging or sampling is taking place. The vapor disposal portion of the vapor recovery system shall consist of an absorber system, condensation system, membrane system or equivalent vapor disposal system that processes the vapor and gases from the equipment being controlled; or

C. Other equipment or means of equal efficiency for purposes of air pollution control that may be approved by the staff director.

2. Control equipment described in subparagraph (3)(A)1.A. of this rule shall not be allowed if the petroleum liquid other than gasoline has a true vapor pressure of 11.1 psia or greater at ninety degrees Fahrenheit (90 °F). All storage tank gauging and sampling devices shall be gas-tight except when gauging or sampling is taking place.

3. Reporting and record keeping shall be per subsection (4)(A) of this rule.

(B) Gasoline Loading.

1. No owner or operator of a gasoline loading installation or delivery vessel shall cause or permit the loading of gasoline into any delivery vessel from a gasoline loading installation unless the gasoline loading installation is equipped with a vapor recovery system or equivalent. This system or system equivalent shall be approved by the staff director and the delivery vessel shall be in compliance with subsection (3)(D) of this rule.

2. Gasoline loading shall be accomplished in a manner that the displaced vapors and air will be vented only to the vapor recovery system. Measures shall be taken to prevent liquid drainage from the loading device when it is not in use or to accomplish complete drainage before the loading device is disconnected. The vapor disposal portion of the vapor recovery system shall consist of one (1) of the following:

A. An absorber system, condensation system, membrane system, or equivalent vapor disposal system that processes the vapors and gases from the equipment being controlled and limits the discharge of VOC into the atmosphere to ten (10) milligrams of VOC vapor per liter of gasoline loaded;

B. A vapor handling system that directs the vapor to a fuel gas system; or

C. Other equipment of an efficiency equal to or greater than subparagraph (3)(B)2.A. or B. of this rule if approved by

the staff director.

3. Reporting and record keeping shall be per subsection (4)(B) of this rule.

(C) Gasoline Transfer at GDFs.

1. No owner or operator of a gasoline storage tank or delivery vessel shall cause or permit the transfer of gasoline from a delivery vessel into a gasoline storage tank with a capacity greater than five hundred (500) gallons and less than or equal to one thousand (1,000) gallons unless—

A. The gasoline storage tank is equipped with a submerged fill pipe extending unrestricted to within six inches (6") of the bottom of the tank and not touching the bottom of the tank, or the storage tank is equipped with a system that allows a bottom fill condition;

B. All gasoline storage tank caps and fittings are vapor-tight when gasoline transfer is not taking place; and

C. Each gasoline storage tank is vented via a conduit that is—

(I) At least two inches (2") inside diameter; and

(II) At least twelve feet (12') in height above grade; and

(III) Equipped with a pressure/vacuum valve that is certified by the California Air Resources Board (CARB) at three inches water column pressure/eight inches water column vacuum (3" wcp/8" wcv) except when the owner or operator provides documentation that the vapor recovery system is CARB-certified for a different valve and will not function properly with a 3" wcp/8" wcv valve.

2. No owner or operator of a gasoline storage tank or delivery vessel shall cause or permit the transfer of gasoline from a delivery vessel into a gasoline storage tank with a capacity greater than one thousand (1,000) and less than forty thousand (40,000) gallons unless—

A. The gasoline storage tank is equipped with a Stage I vapor recovery system that is certified by a CARB Executive Order as having a collection efficiency of at least ninety-eight percent (98%);

B. The delivery vessel to these tanks is in compliance with subsection (3)(D) of this rule;

C. All vapor ports are popped fittings;

D. The delivery vessel is reloaded at installations complying with the provisions of subsection (3)(B) of this rule;

E. The vapor recovery system employs one (1) vapor line per product line during the transfer. The staff director may approve other delivery systems submitted to the department with test data demonstrating

compliance with subparagraph (3)(C)2.A. of this rule;

F. All vapor hoses are at least three inches (3") inside diameter; and

G. All product hoses are less than or equal to four inches (4") inside diameter.

3. The director may approve a vapor recovery system or component that deviates from the requirements of subparagraph (3)(C)2.A. of this rule when provided documentation that—

A. The system or component has a collection efficiency of at least ninety-eight percent (98%); and

B. Compliance with the requirements of subparagraph (3)(C)2.A. of this rule would lead to noncompliance with other state or federal regulations or to improper functioning of the gasoline storage tank system.

4. Aboveground gasoline storage tanks at GDFs shall not have a capacity greater than one thousand (1,000) gallons.

5. This subsection does not prohibit safety valves or other devices required by government regulations.

(D) Gasoline Delivery Vessels.

1. No owner or operator of a gasoline delivery vessel shall operate or use a gasoline delivery vessel which is loaded or unloaded at an installation subject to subsection (3)(B) or (3)(C) of this rule unless—

A. The delivery vessel is tested annually to demonstrate compliance with the test method specified in 40 CFR 63.425(e);

B. The owner or operator obtains the completed test results signed by a representative of the testing installation upon successful completion of the leak test.

C. A copy of the vessel's current test results are kept with the delivery vessel at all times and made immediately available to the staff director upon request; and

D. The delivery vessel is repaired by the owner or operator and retested within fifteen (15) business days of testing if it does not meet the leak test criteria of subparagraph (3)(D)1.A. of this rule.

2. An owner or operator of a gasoline delivery vessel who can demonstrate to the satisfaction of the staff director that the vessel has passed a current annual leak test in another state shall be deemed to have satisfied the requirements of subparagraph (3)(D)1.A. of this rule, if the other state's leak test program requires the same gauge pressure and test procedures as specified in subparagraph (3)(D)1.A. of this rule.

3. Reporting and record keeping shall be performed as specified in subsection (4)(C) of this rule.



4. This subsection does not prohibit safety valves or other devices required by government regulations.

(E) Fueling of Motor Vehicles at GDFs.

1. GDFs not equipped with a Stage II vapor recovery system. Owners or operators shall—

A. Employ vapor-tight tank gauging and sampling sites or ports, valves, break-aways, joints, and disconnects on the vapor recovery systems to prevent emissions of volatile organic compounds except during gauging or sampling; and

B. Ensure that motor vehicle refueling meets the requirements of 40 CFR 80.22(j) promulgated June 26, 1996, and hereby incorporated by reference in this rule, as published by the Office of Federal Register, U.S. National Archives and Records, 700 Pennsylvania Avenue NW, Washington, D.C. 20408. This rule does not incorporate any subsequent amendments or additions.

2. GDFs equipped with a Stage II vapor recovery system.

A. Owners or operators shall—

(I) Comply with the requirements of subparagraphs (3)(E)1.A.–B. of this rule.

(II) Maintain the Stage II vapor recovery system in good working order in accordance with the manufacturer's specifications and with no indication of visible liquid leaks. Vapor recovery system components may only be replaced with components that have equivalent performance;

(III) Post operation instructions conspicuously in the gasoline dispensing area for the vapor recovery system in use at each GDF. The instructions shall clearly describe how to fuel vehicles correctly with vapor recovery nozzles utilized at that GDF. The instructions shall also include a warning that repeated attempts to continue dispensing gasoline after the system has indicated that the vehicle fuel tank is full may result in spillage of gasoline;

(IV) Decommission the Stage II vapor recovery system no later than December 31, 2015. The decommissioning must be performed in accordance with the department's Stage II Decommissioning Checklist.

B. The staff director shall identify and list specific defects that substantially impair the effectiveness of components or systems used for the control of gasoline vapors resulting from motor vehicle fueling operations. This ongoing list shall be used by the staff director as a basis for marking the components or systems out-of-order and shall be made available to any GDF with a Stage II vapor recovery system in place.

C. Upon the staff director's identification of substantial defects in equipment or

installation of a Stage II vapor recovery system, the system or components shall be marked "out-of-order" and no person shall use or permit the use of that system or component until those defects and all other defects have been repaired, replaced, or adjusted to establish compliance. The components or system may be released into operation when the staff director has reinspected the installation; found the system and components to be in good working order; and removed the "out-of-order" notice. The staff director shall reinspect the previously marked "out-of-order" system or component and other noted defects as expeditiously as possible after notification from the operator that the repairs have been completed. In no case shall the reinspection be more than four (4) business days from the operator's notification that the repairs have been completed. In those cases in which the reinspection cannot be scheduled within the required time, the owner or operator may remove the "out-of-order" notice with permission of the staff director. If reinspection reveals that compliance has not been established, the system or components shall remain tagged "out-of-order." The staff director shall conduct a second reinspection within seven (7) business days from the operator's notification that repairs have been completed.

3. After the effective date of this rule, no owner or operator of a GDF may install a new Stage II vapor recovery system.

(F) Permits Required.

1. No owner or operator of a GDF subject to subsections (3)(C) or (3)(E) of this rule may construct or modify a Stage I or Stage II vapor recovery system without obtaining a construction permit according to subsection (3)(G) of this rule; and

2. No owner or operator of a GDF subject to subsections (3)(C) or (3)(E) of this rule shall operate without an operating permit obtained according to subsection (3)(H) of this rule.

(G) Construction Permits for Vapor Recovery Systems for New GDFs, Vapor Recovery System Modification for Existing GDFs, and Stage I experimental technology.

1. Construction of a new GDF that requires a Stage I vapor recovery system, decommission of an existing Stage II vapor recovery system, or major modification to an existing GDF. An owner or operator constructing a new GDF that requires a Stage I vapor recovery system, decommissioning an existing Stage II vapor recovery system, or modifying an existing vapor recovery system such that the fixed capital costs of the new components will exceed fifty percent (50%) of the fixed capital cost of a new gasoline dispensing system (including only those compo-

nents directly related to gasoline dispensing and storage) shall—

A. Submit an application on a form supplied by the department for a permit to construct at least thirty (30) days prior to beginning construction. The application shall include:

(I) Complete diagrams and a thorough description of the planned installation;

(II) Plumbing diagrams including vent lines and material of all underground and aboveground plumbing;

(III) For gasoline storage tanks subject to paragraph (3)(C)2. of this rule, current CARB Executive Orders for the proposed Stage I vapor recovery system;

(IV) Detailed description of the storage tank(s); and

(V) Schedule of construction;

B. Obtain a construction permit prior to beginning construction;

C. Display the construction permit in a prominent location during construction;

D. Establish compliance with all rules and requirements of Division 10 of Title 10 of the *Code of State Regulations*;

E. Obtain staff director approval of final test methods and procedures that will be used to demonstrate compliance;

F. Meet the testing requirements in subparagraph (3)(H)1.B. of this rule; and

G. Obtain and maintain on-site, in a prominent location, the current operating permit from the director for the site and the specific vapor recovery system that was installed. The operating permit shall be maintained according to subsection (3)(H) of this rule.

2. Minor modification to existing GDF. An owner or operator of an existing GDF modifying an existing vapor recovery system such that the fixed capital costs of the new components will not exceed fifty percent (50%) of the fixed capital cost of a new gasoline dispensing system (including only those components directly related to gasoline dispensing and storage) shall—

A. Submit a construction permit notification prior to construction for projects that include, but are not limited to, any modification that—

(I) Requires breaking concrete in an area within fifteen (15) feet of the vapor lines or vent lines;

(II) Modifies vapor lines or vent lines themselves;

(III) Affects the operation of the vapor recovery system; or

(IV) Could result in improper functioning of the vapor recovery system;

B. Supply any information requested by the staff director for the specific installation. Such information may include, but is



not limited to, plumbing diagrams, including vapor or vent lines; material of all underground and aboveground plumbing; current CARB executive orders for the proposed vapor recovery system and equipment; and proof of compliance with all rules and requirements of Division 10 of Title 10 of the *Code of State Regulations*;

C. Modify the vapor recovery system in accordance with the rules and requirements of Division 10 of Title 10 of the *Code of State Regulations*. If, after review of the application, or inspection of the modification to the vapor recovery system, it is discovered that the modification is not in compliance with the rules and requirements of Division 10 of Title 10 of the *Code of State Regulations*, the owner or operator will be subject to enforcement action, and must bring the facility back into compliance with the rules and requirements of Division 10 of Title 10 of the *Code of State Regulations*;

D. Meet the testing requirements in paragraph (3)(H)1. of this rule; and

E. Upon completion of testing, obtain and display, in a prominent location, on-site the current operating permit from the director for the specific site and the specific vapor recovery system that was installed. The operating permit shall be maintained according to subsection (3)(H) of this rule.

3. Experimental Stage I technology. The director may approve Stage I experimental technology for a specific GDF. Experimental technology may be approved for up to three (3) years for a limited number of GDFs under specific conditions determined by the staff director. GDFs applying for approval of experimental technology shall—

A. Submit an application for director approval at least ninety (90) days prior to beginning construction. The application shall include, but not be limited to:

(I) Complete diagrams and a thorough description of the planned installation;

(II) Plumbing diagrams including vent lines and material of all underground and aboveground plumbing; and

(III) Standards, test data, history, and related information for the proposed system;

B. Submit to the staff director a detailed plan for the construction and operation of the system. The plan shall include a description of the planned testing and record keeping for the GDF. The director may issue the construction permit when all conditions of the testing GDF are deemed satisfactory;

C. Display the construction permit in a prominent location during construction;

D. Install monitoring equipment to prove that the vapor recovery system is leak-tight if requested by the staff director; and

E. Upon completion of testing, obtain and maintain on-site, in a prominent location, a current operating permit from the director for the specific innovative technology that is in operation. The permit shall specify the technology, the location, and the time period the technology will be tested.

4. Emergency Repairs.

A. Owners or operators of GDFs requiring emergency repair or replacement of vapor recovery system components may immediately begin corrective construction if the construction is in response to an accident or event that—

(I) Creates an abnormally high threat of fire;

(II) Poses an environmental hazard by allowing release of liquid product onto the ground or abnormal release of vapor into the air; and/or

(III) Threatens public safety; and

B. Owners or operators of GDFs electing to make emergency repair or replacement per subparagraph (3)(G)4.A. of this rule shall contact the department within forty-eight (48) hours of the commencement of the repair or replacement to determine what future action is required for compliance with this rule.

5. Owners or operators of GDFs making minor modifications per paragraph (3)(G)2. of this rule may begin modification upon submittal of the construction permit notification.

6. The director shall issue a construction permit or a permit rejection within thirty (30) days of receipt of all construction permit applications submitted per paragraph (3)(G)1. of this rule.

7. Owners or operators of GDFs shall pay the department a fee of one hundred dollars (\$100) for each construction permit application submitted in accordance with subsection (3)(G) of this rule.

(H) Operating Permits. All owners or operators of installations subject to subsection (3)(C) or (3)(E) of this rule shall apply to the director for an operating permit.

1. Completion of construction. To obtain an operating permit after the completion of construction, the owner or operator of a GDF shall—

A. Apply to the director for an operating permit within thirty (30) days of construction completion;

B. Conduct and pass a department-approved pressure decay test, pressure/vacuum valve test, and, where a Stage II vapor recovery system is in place, a dynamic back pressure/liquid blockage test;

C. Schedule the test and notify the staff director at least seven (7) days prior to the test date. The staff director may observe the test, but it is not required that the staff director be present and observe the test;

D. Provide the test results to the staff director;

E. Demonstrate that the installation maintains a system of record keeping that meets the requirements of subsection (4)(D) of this rule; and

F. Establish compliance with all rules and requirements of Division 10 of Title 10 of the *Code of State Regulations*.

2. Renewal of operating permits. The operating permit is renewable on the date specified in the initial operating permit and for periods of three (3) years after the initial permit term expires. In order to renew the operating permit the owner or operator of a GDF shall—

A. Apply to the director for renewal of the operating permit and test within ninety (90) days prior to the renewal date;

B. Demonstrate that the GDF maintained all vapor recovery system components in good operating order during the preceding operating permit term including prompt efforts to establish compliance following “out-of-order” notices;

C. Conduct and pass a department-approved pressure decay test, pressure/vacuum valve test, and, where a Stage II vapor recovery system is in place, a dynamic back pressure/liquid blockage test, prior to the expiration date of the permit;

D. Schedule the test and notify the staff director at least seven (7) days prior to the test date. The staff director may observe the test, but it is not required that the staff director be present and observe the test;

E. Provide the test results to the staff director; and

F. Maintain records according to subsection (4)(D) of this rule.

3. Owners or operators of an installation using a vapor recovery system that is decertified by CARB shall establish compliance with this rule within one (1) year or by the next renewal date of the operating permit whichever is longer. Failure to establish compliance will result in nonrenewal of the operating permit.

4. Owners or operators of GDFs shall pay the department a fee of one hundred dollars (\$100) for each operating permit.

(I) Owner/Operator Compliance. The owner or operator of a vapor recovery system subject to this rule shall—

1. Operate the vapor recovery system and the gasoline loading equipment in a manner that prevents—



A. Gauge pressure from exceeding four thousand five hundred (4,500) pascals (eighteen inches (18") of H₂O) in the delivery vessel;

B. A reading equal to or greater than one hundred percent (100%) of the lower explosive limit (LEL), measured as propane at two point five (2.5) centimeters from all points on the perimeter of a potential leak source when measured by the method referenced in 10 CSR 10-6.030(14)(E) during loading or transfer operations; and

C. Visible liquid leaks during loading or transfer operations; and

2. Repair and retest within fifteen (15) days, a vapor recovery system that exceeds the limits in paragraph (3)(I)1. of this rule; and

3. Reporting and record keeping shall be per subsection (4)(D) of this rule.

(4) Reporting and Record Keeping.

(A) Owners and operators of petroleum storage tanks subject to subsection (3)(A) of this rule shall maintain written records of maintenance (both routine and unscheduled) performed on the tanks, all repairs made, the results of all tests performed, and the type and quantity of petroleum liquid stored in them. Records shall be kept for two (2) years and made available to the staff director within five (5) business days of a request.

(B) Owners or operators of gasoline loading installations subject to subsection (3)(B) of this rule shall keep complete records documenting the number of delivery vessels loaded and their owners. Records shall be kept for two (2) years and made available to the staff director within five (5) business days of a request.

(C) Owners or operators of gasoline delivery vessels subject to subsection (3)(D) of this rule shall keep records of all tests and maintenance performed on the vessels. Records shall be kept for two (2) years and made available to the staff director within five (5) business days of a request. Also a copy of the vessel's current Tank Truck Tightness Test results shall be kept with the delivery vessel at all times and made immediately available to the staff director upon request.

(D) Owner/Operator Compliance. The owner or operator of a vapor recovery system subject to subsection (3)(C), (3)(E), or (3)(I) of this rule shall maintain records of department permits, inspection reports, enforcement documents, training certifications, gasoline deliveries, routine and unscheduled maintenance, repairs, and all results of tests conducted. Unless otherwise specified in this rule, records shall be kept for two (2) years

and made available to the staff director within five (5) business days of a request.

(5) Test Methods.

(A) Gasoline Loading. Gasoline loading testing procedures to determine compliance with subparagraph (3)(B)2.A. of this rule shall be according to 10 CSR 10-6.030 subsection (14)(A) or by any method determined by the staff director. The staff director, at any time, may monitor an installation subject to subsection (3)(B) of this rule to confirm compliance with this rule.

(B) Gasoline Delivery Vessels. Testing procedures for gasoline delivery vessels to determine compliance with subsection (3)(D) of this rule shall be according to 10 CSR 10-6.030 subsection (14)(B) or by any method determined by the staff director. The staff director, at any time, may monitor a gasoline delivery vessel subject to subsection (3)(D) of this rule to confirm compliance with this rule.

(C) Fueling of Motor Vehicles and Gasoline Transfer at GDFs. The staff director, at any time, may monitor a GDF subject to subsection (3)(C) or (3)(E) of this rule to confirm compliance with this rule. The staff director may require a leak test, a back pressure blockage test, a pressure/vacuum valve test, or may require any test or monitoring procedure in order to determine compliance with this rule.

(D) All emission controls that are approved by the director will not be considered federally enforceable and will not shield a source from the obligation to comply with the underlying federal emission controls until submitted to EPA and approved by EPA in the state implementation plan.

AUTHORITY: section 643.050, RSMo Supp. 2013. Original rule filed March 14, 1967, effective March 24, 1967. Amended: Filed Jan. 31, 1972, effective Feb. 10, 1972. Amended: Filed Aug. 25, 1972, effective Sept. 4, 1972. Amended: Filed May 12, 1976, effective Oct. 11, 1976. Amended: Filed Aug. 16, 1977, effective Feb. 11, 1978. Amended: Filed March 13, 1980, effective Sept. 12, 1980. Amended: Filed Dec. 5, 1980, effective May 11, 1981. Amended: Filed Nov. 2, 1984, effective May 11, 1985. Amended: Filed Dec. 3, 1985, effective Oct. 1, 1986. Amended: Filed Oct. 4, 1988, effective March 11, 1989. Amended: Filed Nov. 27, 1989, effective May 24, 1990. Rescinded and Readopted: Filed Aug. 15, 1994, effective April 30, 1995. Amended: Filed May 15, 1995, effective Dec. 30, 1995. Amended: Filed Jan. 16, 1996, effective Sept. 30, 1996. Amended: Filed Dec. 28, 1998, effective Aug. 30, 1999. Amended: Filed Jan. 2, 2007,*

effective Sept. 30, 2007. Amended: Filed Feb. 27, 2014, effective Nov. 30, 2014.

**Original authority: 643.020, RSMo 1965, amended 1972, 1992, 1993, 1995, 2011.*

10 CSR 10-5.230 Circumvention (Rescinded September 28, 1990)

AUTHORITY: section 203.050, RSMo 1986. Original rule filed March 14, 1967, effective March 24, 1967. Rescinded: Filed April 18, 1990, effective Sept. 28, 1990.

10 CSR 10-5.240 Additional Air Quality Control Measures May be Required When Sources Are Clustered in a Small Land Area (Rescinded July 30, 2014)

AUTHORITY: section 643.050, RSMo 1994. Original rule filed March 14, 1967, effective March 24, 1967. Rescinded: Filed Oct. 9, 2013, effective July 30, 2014.

Op. Atty. Gen. No. 331, Shell (11-15-71). The Missouri Air Conservation Commission has the authority under Chapter 203, RSMo (1969) and the Constitution of Missouri to enforce without delay the provisions of Chapter 203, RSMo (1969) and standards, regulations corresponding, through administrative procedures, and injunctive relief.

10 CSR 10-5.250 Time Schedule for Compliance (Rescinded December 30, 2008)

AUTHORITY: section 643.050, RSMo 1994. Original rule filed March 14, 1967, effective March 24, 1967. Amended: Filed Jan. 31, 1972, effective Feb. 10, 1972. Rescinded: Filed April 17, 2008, effective Dec. 30, 2008.

10 CSR 10-5.260 Rules for Controlling Emissions During Periods of High Air Pollution Potential (Rescinded October 11, 1984)

AUTHORITY: section 203.050, RSMo 1978. Original rule filed Sept. 8, 1970, effective Sept. 18, 1970. Amended: Filed Jan. 31, 1972, effective Feb. 10, 1972. Rescinded: Filed May 11, 1984, effective Oct. 11, 1984.

Op. Atty. Gen. No. 331, Shell (11-15-71). The Missouri Air Conservation Commission has the authority under Chapter 203, RSMo



(1969), to abate pollutant emissions on an emergency basis comparable to that available under 42 U.S.C.A., Section 1857d(k).

10 CSR 10-5.270 Public Availability of Emission Data

(Rescinded November 12, 1984)

AUTHORITY: section 203.050, RSMo 1978. Original rule filed Aug. 25, 1972, effective Sept. 4, 1972. Rescinded: Filed June 13, 1984, effective Nov. 12, 1984.

Op. Atty. Gen. No. 331, Shell (11-15-71). The Missouri Air Conservation Commission does not have any specific authority to require the installation of emission monitoring devices but does have the authority to require reports from sources of air pollution relating to rate, period of emission and composition of effluent and to make the information available to the public unless any such information is "confidential" as defined by section 203.050.4, RSMo (1969).

10 CSR 10-5.280 New Source Performance Regulation

(Rescinded April 11, 1980)

AUTHORITY: section 203.050, RSMo 1975. Original rule filed Dec. 19, 1975, effective Dec. 29, 1975. Rescinded: Filed Dec. 10, 1979, effective April 11, 1980.

Op. Atty. Gen. No. 331, Shell (11-15-71). The Missouri Air Conservation Commission has the authority under Chapter 203, RSMo (1969), to adopt emission control regulations, including limitations on the content of fuels, which will attain and maintain national air quality standards, if the state standards are the same or more stringent.

10 CSR 10-5.290 More Restrictive Emission Limitations for Particulate Matter in the South St. Louis Area

(Rescinded May 30, 2009)

AUTHORITY: section 643.050, RSMo 1994. Original rule filed Feb. 27, 1978, effective Dec. 11, 1978. Amended: Filed Nov. 10, 1981, effective May 13, 1982. Amended: Filed March 14, 1985, effective Aug. 26, 1985. Rescinded: Filed Aug. 21, 2008, effective May 30, 2009.

10 CSR 10-5.295 Control of Emissions From Aerospace Manufacture and Rework Facilities

PURPOSE: This rulemaking will reduce volatile organic compound emissions from aerospace manufacture and/or rework facilities located in the St. Louis nonattainment area. This rulemaking is required to comply with the Clean Air Act Amendments of 1990.

PUBLISHER'S NOTE: The publication of the full text of the material that the adopting agency has incorporated by reference in this rule would be unduly cumbersome or expensive. Therefore, the full text of that material will be made available to any interested person at both the Office of the Secretary of State and the office of the adopting agency, pursuant to section 536.031.4, RSMo. Such material will be provided at the cost established by state law.

(1) Applicability.

(A) This rulemaking shall apply throughout St. Louis City and Jefferson, St. Charles, Franklin, and St. Louis Counties.

(B) The requirements of this rulemaking shall apply to all aerospace manufacture and/or rework facilities with potential emissions of volatile organic compounds exceeding twenty-five (25) tons per year.

(2) Definitions.

(A) Definitions of individual specialty coatings specified in this rule are incorporated by reference from 40 CFR 63 subpart GG, Appendix A, with the following modifications:

1. Mold release—A coating applied to a mold surface to prevent the mold piece from sticking to the mold as it is removed, or to an aerospace component for purposes of creating a form-in-place seal; and

2. Caulking and smoothing compound—A semi-solid material that is used to aerodynamically smooth exterior vehicle surfaces or fill cavities such as bolt hole accesses. A material shall not be classified as a caulking and smoothing compound if it can be classified as a sealant.

(B) Aerospace manufacture and/or rework facility—Any installation that produces, reworks, or repairs in any amount any commercial, civil, or military aerospace vehicle or component.

(C) Aerospace vehicle or component—Any fabricated part, processed part, assembly of parts, or completed unit, with the exception of electronic components, of any aircraft.

(D) Antique aerospace vehicle or component—An aircraft or component thereof that

was built at least thirty (30) years ago. An antique aerospace vehicle would not routinely be in commercial or military service in the capacity for which it was designed.

(E) Aqueous cleaning solvent—A cleaning solution in which water is the primary ingredient (greater than eighty percent (80%) by weight of cleaning solvent solution as applied must be water). Detergents, surfactants, and bioenzyme mixtures and nutrients may be combined with the water along with a variety of additives such as organic solvents (e.g., high boiling point alcohols), builders, saponifiers, inhibitors, emulsifiers, pH buffers, and antifoaming agents. Aqueous solutions must have a flash point greater than ninety-three degrees Celsius (93 °C) (two hundred degrees Fahrenheit (200 °F)) (as reported by the manufacturer) and the solution must be miscible with water.

(F) Chemical milling maskants—A coating that is applied directly to aluminum components to protect surface areas when chemical milling the component with a Type I or Type II etchant. Type I chemical milling maskants are used with a Type I etchant and Type II chemical milling maskants are used with a Type II etchant. This definition does not include bonding maskants, critical use and line sealer maskants, and seal coat maskants. Maskants that must be used with a combination of Type I or Type II etchants and any of the above types of maskants are also not included in this definition.

(G) Energized electrical systems—Any AC or DC electrical circuit on an assembled aircraft once electrical power is connected, including interior passenger and cargo areas, wheel wells, and tail sections.

(H) Flush cleaning—The removal of contaminants such as dirt, grease, and coatings from an aerospace vehicle or component or coating equipment by passing solvent over, into, or through the item being cleaned. The solvent may simply be poured into the item cleaned and then drained, or be assisted by air or hydraulic pressure, or by pumping. Hand-wipe cleaning operations where wiping, scrubbing, mopping, or other hand action are used are not included in this definition.

(I) General aviation—Segment of civil aviation that encompasses all facets of aviation except air carriers, commuters, and military. General aviation includes charter and corporate-executive transportation, instruction, rental, aerial application, aerial observation, business, pleasure, and other special uses.

(J) General aviation rework facility—Any aerospace installation with the majority of its revenues resulting from the reconstruction, repair, maintenance, repainting, conversion,



or alteration of general aviation aerospace vehicles or components.

(K) High volume low pressure (HVLP) spray equipment—Spray equipment that is used to apply coating by means of spray gun that operates at ten pounds per square inch gauge (10.0 psig) of atomizing air pressure or less at the air cap.

(L) Low vapor pressure hydrocarbon-based cleaning solvent—A cleaning solvent that is composed of a mixture of photochemically reactive hydrocarbons and oxygenated hydrocarbons and has a maximum vapor pressure of seven millimeters of mercury (7 mmHg) at twenty degrees Celsius (20 °C). These cleaners must not contain hazardous air pollutants.

(M) Primer—The first layer and any subsequent layers of identically formulated coating applied to the surface of an aerospace vehicle or component. Primers are typically used for corrosion prevention, protection from the environment, functional fluid resistance, and adhesion of subsequent coatings. Primers that are defined as specialty coatings are not included under this definition.

(N) Self-priming topcoat—A topcoat that is applied directly to an uncoated aerospace vehicle or component for purposes of corrosion prevention, environmental protection, and function fluid resistance. More than one (1) layer of identical coating formulation may be applied to the vehicle or component.

(O) Semi-aqueous cleaning solvent—A solution in which water is a primary ingredient (greater than sixty percent (60%) by weight of the solvent solution as applied must be water).

(P) Specialty coating—A coating that, even though it meets the definition of a primer, topcoat, or self-priming topcoat, has additional performance criteria beyond those of primers, topcoats, and self-priming topcoats for specific applications. These performance criteria may include, but are not limited to, temperature or fire resistance, substrate compatibility, antireflection, temporary protection or marking, sealing, adhesively joining substrates, or enhanced corrosion protection.

(Q) Topcoat—A coating that is applied over a primer on an aerospace vehicle or component for appearance, identification, camouflage, or protection. Topcoats that are defined as specialty coatings are not included under this definition.

(R) Touch-up and repair operation—That portion of the coating operation that is the incidental application of coating used to cover minor imperfections in the coating finish or to achieve complete coverage. This definition includes out-of-sequence or out-of-cycle coating.

(S) Type I etchant—A chemical milling

etchant that contains varying amounts of dissolved sulfur and does not contain amines.

(T) Type II etchant—A chemical milling etchant that is a strong sodium hydroxide solution containing amines.

(U) Definitions of certain terms specified in this rule, other than those specified in this rule section, may be found in 10 CSR 10-6.020.

(3) General Provisions.

(A) No person shall cause, permit, or allow the emissions of volatile organic compounds (VOC) from the coating of aerospace vehicles or components to exceed—

1. 2.9 pounds per gallon (350 grams per liter) of coating, excluding water and exempt solvents, delivered to a coating applicator that applies primers. For general aviation rework facilities, the VOC limitation shall be 4.5 pounds per gallon of coating, excluding water and exempt solvents, delivered to a coating applicator that applies primers;

2. 3.5 pounds per gallon (420 grams per liter) of coating, excluding water and exempt solvents, delivered to a coating applicator that applies topcoats (including self-priming topcoats). For general aviation rework facilities, the VOC limit shall be 4.5 pounds per gallon (540 grams per liter) of coating, excluding water and exempt solvents, delivered to a coating applicator that applies topcoats (including self-priming topcoats);

3. The VOC content limits listed in Table I expressed in pounds per gallon of coating, excluding water and exempt solvents, delivered to a coating applicator that applies specialty coatings;

Table I: Specialty Coating VOC Limitations	Pounds per gallon	Grams per liter
Ablative Coating	5.0	600
Adhesion Promoter	7.4	890
Adhesive Bonding Primers:		
Cured at 250°F or below	7.1	850
Cured above 250°F	8.6	1030
Adhesives:		
Commercial Interior Adhesive	6.3	760
Cyanoacrylate Adhesive	8.5	1020
Fuel Tank Adhesive	5.2	620
Nonstructural Adhesive	3.0	360
Rocket Motor Bonding Adhesive	7.4	890
Rubber-Based Adhesive	7.1	850
Structural Autoclavable Adhesive	0.5	60
Structural Nonautoclavable Adhesive	7.1	850
Antichafe Coating	5.5	660
Bearing Coating	5.2	620
Caulking and Smoothing Compounds	7.1	850
Chemical Agent-Resistant Coating	4.6	550
Clear Coating	6.0	720
Commercial Exterior Aerodynamic Structure Primer	5.4	650
Compatible Substrate Primer	6.5	780
Corrosion Prevention Compound	5.9	710
Cryogenic Flexible Primer	5.4	645
Cryoprotective Coating	5.0	600
Dry Lubricative Material	7.3	880
Electric or Radiation-Effect Coating	6.7	800
Electrostatic Discharge and Electromagnetic Interference (EM) Coating	6.7	800
Elevated Temperature Skydrol Resistant Commercial Primer	6.2	740
Epoxy Polyamide Topcoat	5.5	660
Fire-Resistant (interior) Coating	6.7	800
Flexible Primer	5.3	640
Flight-Test Coatings:		
Missile or Single Use Aircraft	3.5	420
All Others	7.0	840
Fuel-Tank Coating	6.0	720
High-Temperature Coating	7.1	850
Insulation Covering	6.2	740
Intermediate Release Coating	6.3	750
Lacquer	6.9	830
Maskant:		
Bonding Maskant	10.3	1230
Critical Use and Line Sealer Maskant	8.5	1020
Seal Coat Maskant	10.3	1230
Metallized Epoxy Coating	6.2	740
Mold Release	6.5	780
Optical Anti-Reflective Coating	6.3	750
Part Marking Coating	7.1	850
Pretreatment Coating	6.5	780
Rain Erosion-Resistant Coating	7.1	850
Rocket Motor Nozzle Coating	5.5	660
Scale Inhibitor	7.3	880
Screen Print Ink	7.0	840
Sealants:		
Extrudable/Rollable/Brushable Sealant	2.3	280
Sprayable Sealant	5.0	600
Silicone Insulation Material	7.1	850
Solid Film Lubricant	7.3	880
Specialized Function Coating	7.4	890
Temporary Protective Coating	2.7	320
Thermal Control Coating	6.7	800
Wet Fastener Installation Coating	5.6	675
Wing Coating	7.1	850

4. 5.2 pounds per gallon (620 grams per liter) of coating, excluding water and exempt solvents, delivered to a coating applicator that applies Type I chemical milling maskant; and

5. 1.3 pounds per gallon (150 grams per liter) of coating, excluding water and exempt solvents, delivered to a coating applicator that applies Type II chemical milling maskants.

(B) The emission limitations in paragraph (3)(A)1. of this rule shall be achieved by—

1. The application of low solvent coating technology where each and every coating meets the specified applicable limitation expressed in pounds of VOC per gallon of coating, excluding water and exempt solvents, stated in subsection (3)(A) of this rule;

2. The application of low solvent coating technology where the monthly volume-weighted average VOC content of each specified coating type meets the specified applicable limitation expressed in pounds of VOC per gallon of coating, excluding water and exempt solvents, stated in subsection (3)(A) of this rule; averaging is not allowed for specialty coatings, and averaging is not allowed between primers, topcoats (including self-priming topcoats), Type I milling maskants, and Type II milling maskants or any combination of the above coating categories; or

3. Control equipment, including but not limited to incineration, carbon adsorption and condensation, with a capture system approved by the director, provided that the owner or operator demonstrates, in accordance with subsection (5)(C), that the control system has a VOC reduction efficiency of eighty-one percent (81%) or greater.

(C) Each owner or operator of an aerospace manufacturing and/or rework operation shall apply all non-exempt primers and topcoats using one (1) or more of the application techniques specified below—

1. Flow/curtain application;
2. Dip coat application;
3. Roll coating;
4. Brush coating;
5. Cotton-tipped swab application;
6. Electrodeposition (dip) coating;
7. High volume low pressure (HVLP) spraying;

8. Electrostatic spray application; or

9. Other coating application methods that achieve emission reductions equivalent to HVLP or electrostatic spray application methods, as determined by the director.

(D) Each owner or operator of an aerospace manufacturing and/or rework operation shall ensure that all application devices used to apply primers and topcoats (including self-priming topcoats) are operated according to company procedures, local specified operating procedures, and/or the manufacturer's



specifications, whichever is most stringent, at all times. Equipment modified by the owner or operator shall maintain a transfer efficiency equivalent to HVLP or electrostatic spray application techniques.

(E) Each owner or operator of an aerospace manufacturing and/or rework operation shall comply with the following house-keeping requirements for any affected cleaning operation, unless the cleaning solvent used is an aqueous cleaning solvent, low vapor pressure hydrocarbon-based cleaning solvent, or contains less than one percent (1%) VOC by weight:

1. Solvent-laden cloth, paper, or any other absorbent applicators used for cleaning shall be placed in bags or other closed containers upon completing their use. These bags and containers must be kept closed at all times except when depositing or removing these materials from the container. The bags and containers used must be of such a design so as to contain the vapors of the cleaning solvent. Cotton-tipped swabs used for very small cleaning operations are exempt from this requirement;

2. All fresh and spent cleaning solvents, except semi-aqueous solvent cleaners, used in aerospace cleaning operations shall be stored in closed containers; and

3. The handling and transfer of cleaning solvent to or from enclosed systems, vats, waste containers, and other cleaning operation equipment that hold or store fresh spent cleaning solvents shall be conducted in such a manner that spills are minimized.

(F) Each owner or operator of an aerospace manufacturing and/or rework operation utilizing hand-wipe cleaning operations excluding the cleaning of spray gun equipment performed in accordance with subsection (3)(G) shall comply with one (1) of the following:

1. Utilize cleaning solvent solutions that are classified as an aqueous cleaning solvent and/or a low vapor pressure hydrocarbon-based cleaning solvent; or

2. Utilize cleaning solvent solutions that have a composite vapor pressure of forty-five (45) mmHg or less at twenty degrees Celsius (20 °C).

(G) Each owner or operator of an aerospace manufacturing and/or rework operation shall clean all spray guns used in the application of primers, topcoats (including self-priming topcoats), and specialty coatings utilizing one or more of the following techniques:

1. Enclosed system. Spray guns shall be cleaned in an enclosed system that is closed at all times except when inserting or removing the spray gun. Cleaning shall consist of forcing cleaning solvent through the gun. If leaks in the system are found, repairs shall be made as soon as practicable, but no later than fifteen (15) days after the leak was found. If the leak is not repaired by the fifteenth day after detection, the cleaning solvent shall be removed and the enclosed cleaner shall be shut down until the leak is repaired or its use is permanently discontinued;

2. Nonatomized cleaning. Spray guns shall be cleaned by placing cleaning solvent in the pressure pot and forcing it through the gun with the atomizing cap in place. No atomizing air is to be used. The cleaning solvent from the spray gun shall be directed into a vat, drum, or other waste container that is closed when not in use;

3. Disassembled spray gun cleaning. Spray guns shall be cleaned by disassembling and cleaning the components by hand in a vat, which shall remain closed at all times except when in use. Alternatively, the components shall be soaked in a vat, which shall remain closed during the soaking period and when not inserting or removing components; and

4. Atomizing cleaning. Spray guns shall be cleaned by forcing the cleaning solvent through the gun and directing the resulting atomized spray into a waste container that is fitted with a device designed to capture the atomized cleaning solvent emissions.

(H) Each owner or operator of an aerospace manufacturing and/or rework operation that includes a flush cleaning operation shall empty the used cleaning solvents each time aerospace parts or assemblies, or components of a coating unit with the exception of spray guns are flush cleaned into an enclosed container or collection system that is kept closed when not in use or into a system with equivalent emission control approved by the director. Aqueous, semi-aqueous, and low vapor pressure hydrocarbon based solvent materials are exempt from the requirements of this subsection.

(I) The following activities are exempt from this section:

1. Research and development;
2. Quality control;
3. Laboratory testing activities;
4. Chemical milling;
5. Metal finishing;
6. Electrodeposition except for the electrodeposition of paints;

7. Composites processing except for cleaning and coating of composite parts or components that become part of an aerospace vehicle or component as well as composite tooling that comes in contact with such composite parts or components prior to cure;

8. Electronic parts and assemblies except for cleaning and topcoating of completed assemblies;

9. Manufacture of aircraft transparencies;

10. Wastewater treatment operations;

11. Manufacturing and rework of parts and assemblies not critical to the vehicle's structural integrity or flight performance;

12. Regulated activities associated with space vehicles designed to travel beyond the limit of the earth's atmosphere, including but not limited to satellites, space stations, and the space shuttle;

13. Utilization of primers, topcoats, specialty coatings, cleaning solvents, chemical milling maskants, and strippers containing VOC at concentrations less than 0.1 percent for carcinogens or 1.0 percent for noncarcinogens;

14. Utilization of touch-up, aerosol can, and Department of Defense classified coatings;

15. Maintenance and rework of antique aerospace vehicles and components; and

16. Rework of aircraft or aircraft components if the holder of the Federal Aviation Administration design approval, or the holder's licensee, is not actively manufacturing the aircraft or aircraft components.

(J) The requirements for primers, topcoats, specialty coatings, and chemical milling maskants specified in subsection (3)(A) of this rule do not apply to the use of low-volume coatings in these categories for which the rolling twelve (12)-month total of each separate formulation used at an installation does not exceed fifty (50) gallons, and the combined rolling twelve (12)-month total of all such primers, topcoats, specialty coatings, and chemical milling maskants used does not exceed two hundred (200) gallons. Coatings exempted under subsection (3)(I) of this rule are not included in the fifty (50) and two hundred (200)-gallon limits.

(K) The following situations are exempt from the requirements of subsections (3)(D) and (3)(E):

1. Any situation that normally requires the use of an airbrush or an extension on the spray gun to properly reach limited access spaces;

2. The application of any specialty coating;



3. The application of coatings that contain fillers that adversely affect atomization with HVLP spray guns and that cannot be applied by any of the application methods specified in subsection (3)(C) of this rule;

4. The application of coatings that normally have dried film thickness of less than 0.0013 centimeter (0.0005 in.) and that cannot be applied by any of the application methods specified in subsection (3)(C) of this rule;

5. The use of airbrush application methods for stenciling, lettering, and other identification markings;

6. The use of hand-held spray can application methods; and

7. Touch-up and repair operations.

(L) The following cleaning operations are exempt from the requirements of subsection (3)(F) of this rule:

1. Cleaning during the manufacture, assembly, installation, maintenance, or testing of components of breathing oxygen systems that are exposed to the breathing oxygen;

2. Cleaning during the manufacture, assembly, installation, maintenance, or testing of parts, subassemblies, or assemblies that are exposed to strong oxidizers or reducers (e.g., nitrogen tetroxide, liquid oxygen, or hydrazine);

3. Cleaning and surface activation prior to adhesive bonding;

4. Cleaning of electronic parts and assemblies containing electronic parts;

5. Cleaning of aircraft and ground support equipment fluid systems that are exposed to the fluid including air-to-air heat exchangers and hydraulic fluid systems;

6. Cleaning of fuel cells, fuel tanks, and confined spaces;

7. Surface cleaning of solar cells, coating optics, and thermal control surfaces;

8. Cleaning during fabrication, assembly, installation, and maintenance of upholstery, curtains, carpet, and other textile materials used in the interior of the aircraft;

9. Cleaning of metallic and non-metallic materials used in honeycomb cores during the manufacture or maintenance of these cores, and cleaning of the completed cores used in the manufacture or maintenance of aerospace vehicles or components;

10. Cleaning of aircraft transparencies, polycarbonate, or glass substrates;

11. Cleaning and solvent usage associated with research and development, quality control, and laboratory testing;

12. Cleaning operations, using non-flammable liquids, conducted within five feet (5') of energized electrical systems; and

13. Cleaning operations identified as essential uses under the Montreal Protocol for which the U.S. Environmental Protection Agency has allocated essential use allowances or exemptions.

(4) Reporting and Record Keeping.

(A) Monitoring Requirements—Each owner or operator of an aerospace manufacturing and/or rework operation shall submit a monitoring plan to the director that specifies the applicable operating parameter value, or range of values, to ensure ongoing compliance with paragraph (3)(B)3. of this rule. Any monitoring device, required by the monitoring plan, shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's specifications.

(B) Record Keeping Requirements.

1. Each owner or operator of an aerospace manufacture and/or rework operation that applies coatings listed in subsection (3)(A) of this rule shall—

A. Maintain a current list of coatings in use with category and VOC content as applied;

B. Record each coating volume usage on a monthly basis; and

C. Maintain records of monthly volume-weighted average VOC content for each coating type included in averaging for coating operations that achieve compliance through coating averaging under paragraph (3)(B)2. of this rule.

2. Each owner or operator of an aerospace manufacture and/or rework operation that uses cleaning solvents subject to this rule shall—

A. Maintain a list of materials with corresponding water contents for aqueous and semi-aqueous hand-wipe cleaning solvents;

B. Maintain a current list of cleaning solvents in use with their respective vapor pressure or, for blended solvents, VOC composite vapor pressure for all vapor pressure compliant hand-wipe cleaning solvents. This list shall include the monthly amount of each applicable solvent used; and

C. Maintain a current list of exempt hand-wipe cleaning processes for all cleaning solvents with a vapor pressure greater than forty-five (45) mmHg used in exempt hand-wipe cleaning operations. This list shall include the monthly amount of each applicable solvent used.

(C) All records must be kept on-site for a period of five (5) years and made available to the department upon request.

(5) Test Methods.

(A) An owner or operator of an aerospace manufacture and/or rework operation shall

determine compliance for coatings which are not waterborne (water-reducible), determine the VOC content of each formulation less water and less exempt solvents as applied using manufacturer's supplied data or Method 24 of 40 CFR part 60, Appendix A. If there is a discrepancy between the manufacturer's formulation data and the results of the Method 24 analysis, compliance shall be based on the results from the Method 24 analysis. For waterborne (water-reducible) coatings, manufacturer's supplied data alone can be used to determine the VOC content of each formulation.

(B) An owner or operator of an aerospace manufacture and/or rework operation shall determine compliance for cleaning solvents using the following:

1. For aqueous and semi-aqueous cleaning solvents manufacturers' supplied data shall be used to determine the water content; or

2. For hand-wipe cleaning solvents required in subsection (3)(F) of this rule, manufacturers' supplied data or standard engineering reference texts or other equivalent methods shall be used to determine the vapor pressure or VOC composite vapor pressure for blended cleaning solvents.

(C) An owner or operator of an aerospace manufacture and/or rework operation electing to demonstrate compliance with this rule by use of control equipment meeting the requirements of paragraph (3)(B)3., shall demonstrate the required capture efficiency in accordance with EPA Methods 18, 25, and/or 25A in 40 CFR 60, Appendix A.

AUTHORITY: section 643.050, RSMo Supp. 1998. Original rule filed July 15, 1999, effective Feb. 29, 2000.*

**Original authority: 643.050, RSMo 1965, amended 1972, 1992, 1993, 1995.*

10 CSR 10-5.300 Control of Emissions From Solvent Metal Cleaning

PURPOSE: This rule specifies equipment, operating procedures and training requirements for the reduction of volatile organic compound emissions from solvent metal cleaning operations in the St. Louis metropolitan area.

(1) Applicability.

(A) This rule shall apply throughout the city of St. Louis and St. Charles, St. Louis, Jefferson and Franklin Counties.

(B) This rule shall apply to all installations that emit volatile organic compounds (VOCs)



from solvent metal cleaning or degreasing operations.

(C) This rule applies to any of the following processes that use nonaqueous solvents to clean and remove soils from metal parts:

1. Spray gun cleaners;
2. Cold cleaners with a solvent reservoir or tank;
3. Open-top or conveyORIZED vapor degreasers; or
4. Air-tight or airless cleaning systems.

(D) Exemptions.

1. The following shall be exempt from this rule:

A. Cold cleaners with liquid surface areas of one (1) square foot or less or maximum capacities of one (1) gallon or less;

B. Solvent cleaning operations that meet the emission control requirements of 10 CSR 10-5.295, 10 CSR 10-5.330, 10 CSR 10-5.340 or 10 CSR 10-5.442;

C. Solvent metal cleaning operations regulated under 40 CFR 63 subpart T, National Emission Standards for Halogenated Solvent Cleaning;

D. The cleaning of electronic components, medical devices or optical devices;

E. Hand cleaning/wiping operations; and

F. Flush cleaning operations.

2. The following shall be exempt from the solvent vapor pressure requirements of subparagraphs (3)(A)1.A. and (3)(A)1.B. of this rule:

A. Sales of cold cleaning solvents in quantities of five (5) gallons or less;

B. Cold cleaners using solvents regulated under any federal National Emission Standard for Hazardous Air Pollutants; and

C. Janitorial and institutional cleaning.

3. All wastes that are subject to hazardous waste requirements at 10 CSR Division 25, Chapters 4 through 9 shall be exempt from the requirements of subparagraphs (3)(B)1.E., (3)(B)2.J., (3)(B)3.G., (3)(B)4.B. and (3)(B)5.G., and subsection (4)(A) of this rule.

(2) Definitions.

(A) Airless cleaning system—A degreasing machine that is automatically operated and seals at a differential pressure of 25 torr (25.0 millimeters of Mercury (mmHg) (0.475 pounds per square inch (psi)) or less, prior to the introduction of solvent vapor into the cleaning chamber and maintains differential pressure under vacuum during all cleaning and drying cycles.

(B) Air-tight cleaning system—A degreasing machine that is automatically operated and seals at a differential pressure no greater than 0.5 pounds per square inch gauge (psig) during all cleaning and drying cycles.

(C) Aqueous solvent—Any solvent consisting of sixty percent (60%) or more by volume water with a flashpoint greater than ninety-three degrees Celsius (93 °C) (one hundred ninety-nine point four degrees Fahrenheit (199.4 °F)) and is miscible with water.

(D) Electronic components—All portions of an electronic assembly, including, but not limited to, circuit board assemblies, printed wire assemblies, printed circuit boards, soldered joints, ground wires, bus bars, and associated electronic component manufacturing equipment such as screens and filters.

(E) Flush cleaning—The removal of contaminants such as dirt, grease and coatings from a component or coating equipment by passing solvent over, into or through the item being cleaned. The solvent drained from the item may be assisted by air, compressed gas, hydraulic pressure or by pumping. Flush cleaning does not include spray gun cleaning.

(F) Freeboard area—The air space in a batch-load cold cleaner that extends from the liquid surface to the top of the tank.

(G) Freeboard height—

1. The distance from the top of the solvent to the top of the tank for batch-loaded cold cleaners;

2. The distance from the air-vapor interface to the top of the tank for open-top vapor degreasers; or

3. The distance from either the air-solvent or air-vapor interface to the top of the tank for conveyORIZED degreasers.

(H) Freeboard ratio—The freeboard height divided by the smaller of either the inside length or inside width of the degreaser.

(I) Hand cleaning/wiping operation—The removal of contaminants such as dirt, grease, oil and coatings from a surface by physically rubbing it with a material such as a rag, paper or cotton swab that has been moistened with a cleaning solvent.

(J) Institutional cleaning—Cleaning activities conducted at organizations, societies or corporations including, but not limited to schools, hospitals, sanitariums and prisons.

(K) Janitorial cleaning—The cleaning of building or facility components such as the floors, ceilings, walls, windows, doors, stairs, bathrooms, kitchens, etc.

(L) Medical device—An instrument, apparatus, implement, machine, contrivance, implant, *in vitro* reagent or other similar article, including any component or accessory that meets one (1) of the following conditions:

1. It is intended for use in the diagnosis of disease or other conditions, or in the cure, mitigation, treatment, or prevention of disease;

2. It is intended to affect the structure or any function of the body; or

3. It is defined in the *National Formulary* or the *United States Pharmacopoeia*, or any supplement to them.

(M) Nonaqueous solvent—Any solvent not classifiable as an aqueous solvent as defined in subsection (2)(C) of this rule.

(N) Optical device—An optical element used in an electro-optical device and designed to sense, detect or transmit light energy, including specific wavelengths of light energy and changes in light energy levels.

(O) Soils—Includes, but is not limited to, unwanted grease, wax, grit, ash, dirt and oil. Spray gun soils, in addition, include unwanted primers, paint, specialty coatings, adhesives, sealers, resins and deadeners.

(P) Spray gun cleaner—Equipment used to clean spray guns used to apply, but not limited to, primers, paints, specialty coatings, adhesives, sealers, resins or deadeners incorporated into a product distributed in commerce.

(Q) Definitions of certain terms specified in this rule, other than those specified in this rule section, may be found in 10 CSR 10-6.020.

(3) General Provisions.

(A) Equipment Specifications.

1. Cold cleaners.

A. No one shall use, sell or offer for sale for use within the City of St. Louis and St. Charles, St. Louis, Jefferson and Franklin Counties a cold cleaning solvent with a vapor pressure greater than 1.0 mmHg (0.019 psi) at twenty degrees Celsius (20 °C) (sixty-eight degrees Fahrenheit (68 °F)) unless used for carburetor cleaning.

B. No one shall use, sell or offer for sale for use within the City of St. Louis and St. Charles, St. Louis, Jefferson and Franklin Counties a cold cleaning solvent for the purpose of carburetor cleaning with a vapor pressure greater than 5.0 mmHg (0.097 psi) at twenty degrees Celsius (20 °C) (sixty-eight degrees Fahrenheit (68 °F)).

C. Each cold cleaner shall have a cover which prevents the escape of solvent vapors from the solvent bath while in the closed position or an enclosed reservoir which limits the escape of solvent vapors from the solvent bath whenever parts are not being processed in the cleaner.

D. An owner or operator of a cold cleaner may use an alternate method for reducing cold cleaning emissions if the owner or operator shows the level of emission control is equivalent to or greater than the requirements of subparagraphs (3)(A)1.A. and (3)(A)1.B. of this rule. This alternate method must be approved by the director and



the U.S. Environmental Protection Agency (EPA).

E. When one (1) or more of the following conditions exist, the cover shall be designed to operate easily such that minimal disturbing of the solvent vapors in the tank occurs. (For covers larger than ten (10) square feet, this shall be accomplished by either mechanical assistance such as spring loading or counter weighing or by power systems):

(I) The solvent vapor pressure is greater than 0.3 psi measured at thirty-seven point eight degrees Celsius (37.8 °C) (one hundred degrees Fahrenheit (100 °F));

(II) The solvent is agitated; or

(III) The solvent is heated.

F. Each cold cleaner shall have an internal drainage facility so that parts are enclosed under the cover while draining.

G. If an internal drainage facility cannot fit into the cleaning system and the solvent vapor pressure is less than 0.6 psi measured at thirty-seven point eight degrees Celsius (37.8 °C) (one hundred degrees Fahrenheit (100 °F)), then the cold cleaner shall have an external drainage facility which provides for the solvent to drain back into the solvent bath.

H. Solvent sprays, if used, shall be a solid fluid stream (not a fine, atomized or shower-type spray) and at a pressure which does not cause splashing above or beyond the freeboard.

I. A permanent conspicuous label summarizing the operating procedures shall be affixed to the equipment or in a location readily visible during operation of the equipment.

J. Any cold cleaner which uses a solvent that has a solvent vapor pressure greater than 0.6 psi measured at thirty-seven point eight degrees Celsius (37.8 °C) (one hundred degrees Fahrenheit (100 °F)) or heated above forty-eight point nine degrees Celsius (48.9 °C) (one hundred twenty degrees Fahrenheit (120 °F)) must use one (1) of the following control devices:

(I) A freeboard ratio of at least 0.75;

(II) Water cover (solvent must be insoluble in and heavier than water); or

(III) Other control systems with a mass balance demonstrated overall VOC emissions reduction efficiency greater than or equal to sixty-five percent (65%). These control systems must receive approval from the director and EPA prior to their use.

2. Open-top vapor degreasers.

A. Each open-top vapor degreaser shall have a cover that will prevent the escape of solvent vapors from the degreaser while in the closed position and shall be designed to open and close easily such that minimal dis-

turbing of the solvent vapors in the tank occurs. For covers larger than ten (10) square feet, easy cover use shall be accomplished by either mechanical assistance, such as spring loading or counter weighing or by power systems.

B. Each open-top vapor degreaser shall be equipped with a vapor level control device that shuts off the heating source when the vapor level rises above the cooling or condensing coil, or an equivalent safety device approved by the director and EPA.

C. Each open-top vapor degreaser with an air/vapor interface over ten and three-fourths (10 3/4) square feet shall be equipped with at least one (1) of the following control devices:

(I) A freeboard ratio of at least 0.75;

(II) A refrigerated chiller;

(III) An enclosed design (the cover or door opens only when the dry part actually is entering or exiting the degreaser);

(IV) A carbon adsorption system with ventilation of at least fifty (50) cubic feet per minute per square foot of air vapor area when the cover is open and exhausting less than twenty-five parts per million (25 ppm) of solvent by volume averaged over one (1) complete adsorption cycle as measured using the reference method specified at 10 CSR 10-6.030(14)(A); or

(V) A control system with a mass balance demonstrated overall VOC emissions reduction efficiency greater than or equal to sixty-five percent (65%) and prior approval by the director and EPA.

D. A permanent conspicuous label summarizing the operating procedures shall be affixed to the equipment or in a location readily visible during operation of the equipment.

3. Conveyorized degreasers.

A. Each conveyorized degreaser shall have a drying tunnel or rotating (tumbling) basket or other means demonstrated to have equal to or better control which shall be used to prevent cleaned parts from carrying out solvent liquid or vapor.

B. Each conveyorized degreaser shall have the following safety devices which operate if the machine malfunctions:

(I) A vapor level control device that shuts off the heating source when the vapor level rises just above the cooling or condensing coil; and

(II) A spray safety switch, which shuts off the spray pump if the vapor level in the spray chamber drops four inches (4"), for conveyorized degreasers utilizing a spray chamber; or

(III) Equivalent safety devices approved by the director and EPA.

C. Entrances and exits shall silhouette

workloads so that the average clearance between parts and the edge of the degreaser opening is less than four inches (4") or less than ten percent (10%) of the width of the opening.

D. Covers shall be provided for closing off the entrance and exit during hours when the degreaser is not being used.

E. A permanent, conspicuous label summarizing the operating procedures shall be affixed to the equipment or in a location readily visible during operation of the equipment.

F. If the air/vapor interface is larger than twenty-one and one-half (21 1/2) square feet, one (1) major control device shall be required. This device shall be one (1) of the following:

(I) A refrigerated chiller;

(II) Carbon adsorption system with ventilation of at least fifty (50) cubic feet per minute per square foot of the total entrance and exit areas (when downtime covers are open) and exhausting less than twenty-five (25) ppm of solvent by volume averaged over one (1) complete adsorption cycle as measured using the reference method specified at 10 CSR 10-6.030(14)(A); or

(III) A control system with a mass balance demonstrated overall VOC emissions reduction efficiency greater than or equal to sixty-five percent (65%) and prior approval by the director and EPA.

4. Air-tight or airless cleaning systems. Air-tight or airless cleaning systems shall:

A. Have a permanent conspicuous label summarizing the operating procedures affixed to the equipment or in a location readily visible during operation of the equipment;

B. Be equipped with a differential pressure gauge to indicate the sealed chamber pressure under vacuum; and

C. Be equipped with a safety alarm to alert the operator of equipment malfunction.

(B) Operating Procedure Requirements.

1. Cold cleaners.

A. Cold cleaner covers shall be closed whenever parts are not being handled in the cleaners or the solvent must drain into an enclosed reservoir except when performing maintenance or collecting solvent samples.

B. Cleaned parts shall be drained in the freeboard area for at least fifteen (15) seconds or until dripping ceases, whichever is longer. Parts having cavities or blind holes shall be tipped or rotated while the part is draining. During the draining, tipping or rotating, the parts shall be positioned so that the solvent drains directly back to the cold cleaner.

C. Whenever a cold cleaner fails to perform within the rule operating requirements, the unit shall be shutdown immediately and shall remain shutdown until operation is



restored to meet the rule operating requirements.

D. Solvent leaks shall be repaired immediately or the cold cleaner shall be shutdown until the leaks are repaired.

E. Any waste material removed from a cold cleaner shall be disposed of by one (1) of the following methods or an equivalent method approved by the director and EPA:

(I) Reduction of the waste material to less than twenty percent (20%) VOC solvent by distillation and proper disposal of the still bottom waste; or

(II) Stored in closed containers for transfer to—

(a) A contract reclamation service; or

(b) A disposal facility approved by the director and EPA.

F. Waste solvent shall be stored in closed containers only.

2. Open-top vapor degreasers.

A. The cover shall be kept closed at all times except when processing workloads through the open-top vapor degreaser, performing maintenance or collecting solvent samples.

B. Solvent carry-out shall be minimized in the following ways:

(I) Parts shall be racked, if practical, to allow full drainage;

(II) Parts shall be moved in and out of the open-top vapor degreaser at less than eleven feet (11') per minute;

(III) Workload shall remain in the vapor zone at least thirty (30) seconds or until condensation ceases, whichever is longer;

(IV) Pools of solvent shall be removed from cleaned parts before removing parts from the open-top vapor degreaser freeboard area; and

(V) Cleaned parts shall be allowed to dry within the open-top vapor degreaser freeboard area for at least fifteen (15) seconds or until visually dry, whichever is longer.

C. Porous or absorbent materials such as cloth, leather, wood or rope shall not be degreased.

D. If workloads occupy more than half of the open-top vapor degreaser's open-top area, rate of entry and removal shall not exceed five feet (5') per minute.

E. Spray shall never extend above vapor level.

F. Whenever an open-top vapor degreaser fails to perform within the rule operating requirements, the unit shall be shutdown until operation is restored to meet the rule operating requirements.

G. Solvent leaks shall be repaired immediately or the open-top vapor degreaser shall be shutdown until the leaks are repaired.

H. Ventilation exhaust from the open-top vapor degreaser shall not exceed sixty-five (65) cubic feet per minute per square foot of the open-top vapor degreaser open area unless proof is submitted that it is necessary to meet Occupational Safety and Health Administration (OSHA) requirements. Fans shall not be used near the open-top vapor degreaser opening.

I. Water shall not be visually detectable in solvent exiting the water separator, except for automatic water separators that by configuration do not allow visual inspection.

J. Any waste material removed from an open-top vapor degreaser shall be disposed of by one (1) of the following methods or an equivalent method approved by the director and EPA:

(I) Reduction of the waste material to less than twenty percent (20%) VOC solvent by distillation and proper disposal of the still bottom waste; or

(II) Stored in closed containers for transfer to—

(a) A contract reclamation service; or

(b) A disposal facility approved by the director and EPA.

K. Waste solvent shall be stored in closed containers only.

3. ConveyORIZED degreasers.

A. Ventilation exhaust from the conveyORIZED degreaser shall not exceed sixty-five (65) cubic feet per minute per square foot of conveyORIZED degreaser opening unless proof is submitted that it is necessary to meet OSHA requirements. Fans shall not be used near the conveyORIZED degreaser opening.

B. Solvent carry-out shall be minimized in the following ways:

(I) Parts shall be racked, if practical, to allow full drainage; and

(II) Vertical conveyor speed shall be maintained at less than eleven feet (11') per minute.

C. Whenever a conveyORIZED degreaser fails to perform within the rule operating requirements, the unit shall be shutdown immediately and shall remain shutdown until operation is restored to meet the rule operating requirements.

D. Solvent leaks shall be repaired immediately or the conveyORIZED degreaser shall be shutdown until the leaks are repaired.

E. Water shall not be visually detectable in solvent exiting the water separator.

F. Covers shall be placed over entrances and exits immediately after conveyor and exhaust are shutdown and removed just before they are started up.

G. Any waste material removed from a conveyORIZED degreaser shall be disposed of by one (1) of the following methods or an equivalent method approved by the director and EPA:

(I) Reduction of the waste material to less than twenty percent (20%) VOC solvent by distillation and proper disposal of the still bottom waste; or

(II) Stored in closed containers for transfer to—

(a) A contract reclamation service; or

(b) A disposal facility approved by the director and EPA.

H. Waste solvent shall be stored in closed containers only.

4. Spray gun cleaners.

A. Cleaning of spray guns shall be accomplished by use of one (1) or more of the following methods:

(I) Enclosed spray gun cleaning. Enclosed system spray gun cleaning shall consist of forcing solvent through the spray gun and/or spray gun parts. Spray guns and/or spray gun parts shall only be cleaned in remote closed top spray gun cleaning machines under the following conditions:

(a) The spray gun cleaning machine is operated within the manufacturer's specifications and with the lid kept tightly closed at all times except when being accessed or maintained; and

(b) Removable containers (which shall not exceed thirty (30) gallons in size) for clean, used and waste solvent, are kept tightly closed except when being accessed or maintained;

(II) Nonatomized spray gun cleaning. Nonatomized spray gun cleaning shall consist of placing solvent in the pressure pot and forcing it through the spray gun with the atomizing cap in place. Spray guns shall only be cleaned through nonatomized spray gun cleaning under the following conditions:

(a) No atomizing air shall be used; and

(b) The cleaning solvent from the spray gun shall be directed into a pail, bucket, drum or other waste container that is closed when not in use;

(III) Disassembled spray gun cleaning. Disassembled spray gun cleaning shall be accomplished by disassembling the spray gun to be cleaned and cleaning the components by one (1) of the following methods:

(a) By hand in a spray gun cleaner, which shall remain closed except when in use; or

(b) By soaking in a spray gun



cleaner, which shall remain closed during the soaking period and when not inserting or removing components; or

(IV) Atomized spray gun cleaning. Atomized spray gun cleaning shall consist of forcing the cleaning solvent through the gun and directing the resulting atomized spray into a waste container that is fitted with a device designed to capture the atomized cleaning solvent emissions. Cleaning of the nozzle tips of an automated spray equipment system is exempt from the requirements of paragraph (3)(B)4. of this rule, unless the system is a robotic system that is programmed to spray into a closed container.

B. Any waste material removed from a spray gun cleaning system shall be disposed of by one (1) of the following methods or an equivalent method approved by the director and EPA:

(I) Reduction of the waste material to less than twenty percent (20%) VOC solvent by distillation and proper disposal of the still bottom waste; or

(II) Stored in closed containers for transfer to—

(a) A contract reclamation service; or

(b) A disposal facility approved by the director and EPA.

C. Waste solvent shall be stored in closed containers only.

5. Air-tight and airless cleaning systems.

A. Operate the air-tight and airless cleaning systems with a door or other pressure sealing apparatus in place during all cleaning and drying cycles.

B. All associated pressure relief devices shall not allow liquid solvent to drain out of the equipment.

C. Solvent leaks shall be repaired immediately or the air-tight or airless cleaning system shall be shutdown until the leaks are repaired.

D. The air-tight and airless cleaning systems shall be operated within the manufacturer's specifications.

E. Parts shall be positioned, if practical, to allow full drainage and pools of solvent shall be removed from cleaned parts before removing parts from the air-tight or airless cleaning system.

F. Wipe up solvent leaks and spills immediately and store the used rags in closed containers.

G. Any waste material removed from an air-tight and airless cleaning system shall be disposed of by one (1) of the following methods or an equivalent method approved by the director and EPA:

(I) Reduction of the waste material to less than twenty percent (20%) VOC solvent by distillation and proper disposal of the still bottom waste; or

(II) Stored in closed containers for transfer to—

(a) A contract reclamation service; or

(b) A disposal facility approved by the director and EPA.

H. Waste solvent shall be stored in closed containers only.

(C) Operator and Supervisor Training.

1. Only persons trained in at least the operational and equipment requirements specified in this rule for their particular solvent metal cleaning process shall be permitted to operate the equipment.

2. The person who supervises any person who operates solvent cleaning equipment regulated by this rule shall receive equal or greater operational training than the operator.

3. A procedural review shall be given to all solvent metal cleaning equipment operators at least once each twelve (12) months.

4. Training records shall be maintained per subsections (4)(D) and (4)(E) of this rule.

(4) Reporting and Record Keeping.

(A) The owner or operator of a solvent metal cleaning or degreasing operation shall keep records of all types and amounts of solvents containing waste material from cleaning or degreasing operations transferred either to a contract reclamation service or to a disposal facility and all amounts distilled on the premises. The records also shall include maintenance and repair logs for both the degreaser and any associated control equipment. These records shall be kept current and made available for review on a monthly basis. The director may require additional record keeping if necessary to adequately demonstrate compliance with this rule.

(B) All persons that use any solvent subject to the requirements of subparagraph (3)(A)1.A. or (3)(A)1.B. of this rule shall maintain records which include for each purchase of cold cleaning solvent:

1. The name and address of the solvent supplier;

2. The date of purchase;

3. The type of solvent; and

4. The vapor pressure of the solvent in mmHg at twenty degrees Celsius (20 °C) (sixty-eight degrees Fahrenheit (68 °F)).

(C) All persons that sell or offer for sale any solvent subject to the requirements of subparagraph (3)(A)1.A. or (3)(A)1.B. of this rule shall maintain records which include for each sale of cold cleaning solvent:

1. The name and address of the solvent purchaser;

2. The date of sale;

3. The type of solvent;

4. The unit volume of solvent;

5. The total volume of solvent; and

6. The vapor pressure of the solvent measured in mmHg at twenty degrees Celsius (20 °C) (sixty-eight degrees Fahrenheit (68 °F)).

(D) A record shall be kept of solvent metal cleaning training required by subsection (3)(C) of this rule.

(E) All records required under subsections (4)(A), (4)(B), (4)(C) and (4)(D) of this rule shall be retained for five (5) years and shall be made available to the director upon request.

(5) Test Methods. (*Not applicable*)

AUTHORITY: section 643.050, RSMo 2000. Original rule filed Nov. 14, 1978, effective June 11, 1979. Amended: Filed Oct. 4, 1988, effective March 11, 1989. Emergency amendment filed Sept. 2, 1997, effective Jan. 1, 1998, expired June 30, 1998. Amended: Filed Sept. 22, 1997, effective May 30, 1998. Amended: Filed Sept. 13, 2001, effective May 30, 2002. Amended: Filed April 3, 2006, effective Nov. 30, 2006.*

**Original authority: 643.050, RSMo 1965, amended 1972, 1992, 1993, 1995.*

10 CSR 10-5.310 Liquefied Cutback Asphalt Paving Restricted

PURPOSE: This rule restricts volatile organic compounds, emissions from cutback asphalt paving operations.

(1) Application.

(A) This rule shall apply throughout St. Louis City and Jefferson, St. Charles, Franklin and St. Louis Counties.

(B) This rule applies to producers and suppliers which use or apply liquefied cutback asphalt in paving and maintenance operations on highways, roads, parking lots and driveways.

(2) Definitions of certain terms specified in this rule may be found in 10 CSR 10-6.020.

(3) General. After December 31, 1982, no person may cause or permit the use or application of liquefied cutback asphalt on highways, roads, parking lots and driveways during the months of April, May, June, July, August, September and October except as permitted in section (4). This section refers to liquefied cutback asphalt which is directly applied for use in a plant-mix or road-mix.

(4) Exceptions. The use or application of liquefied cutback asphalt is permitted if the liquefied cutback asphalt is—



(A) Used in a plant-mix or road-mix which is used solely for filling potholes or for emergency repairs;

(B) Used to produce a plant-mix manufactured for resale or for use outside the St. Louis metropolitan area; or

(C) To be used solely as an asphalt prime coat or an asphalt seal coat on absorbent surfaces.

(5) Record Keeping.

(A) Records shall be kept on all application uses and all production quantities sufficient to determine daily volatile organic compound emissions for the months of April, May, June, July, August, September and October.

(B) Liquefied cutback asphalt plants shall keep records of the quantities of liquefied cutback asphalt sold and who the purchasers are. The owner, operator or user shall record all information derived for a period of not less than two (2) years and all these records shall be made available to the director upon his/her request.

*AUTHORITY: section 643.050, RSMo 1994. *Original rule filed Nov. 14, 1978, effective July 12, 1979. Amended: Filed Oct. 4, 1988, effective March 11, 1989.*

**Original authority: 643.050, RSMo 1965, amended 1972, 1992, 1993.*

10 CSR 10-5.320 Control of Emissions From Perchloroethylene Dry Cleaning Installations

(Rescinded January 30, 2003)

AUTHORITY: section 643.050, RSMo 1994. Original rule filed March 13, 1980, effective Sept. 12, 1980. Amended: Filed Nov. 10, 1981, effective May 13, 1982. Amended: Filed Oct. 4, 1988, effective March 11, 1989. Rescinded: Filed May 21, 2002, effective Jan. 30, 2003.

10 CSR 10-5.330 Control of Emissions From Industrial Surface Coating Operations

PURPOSE: This rule restricts the emissions of volatile organic compounds from industrial surface coating operations.

(1) Applicability.

(A) This rule shall apply throughout St. Louis City and Jefferson, St. Charles, Franklin, and St. Louis Counties.

(B) This rule shall apply to any installation with actual emissions of volatile organic compounds (VOCs) from surface coating opera-

tions, including related cleaning activities, of at least three (3) tons per twelve (12)-month rolling period, before consideration of controls.

(C) This rule is only applicable to the surface coating of manufactured items intended for distribution in commerce to persons other than the person or legal entity performing the surface coating.

(D) Exemptions. This rule is not applicable to the following:

1. Motor vehicle refinishing;
2. Customizing top coating of motor vehicles, if production is less than thirty-five (35) vehicles per day;

3. Surface coating that is part of janitorial, building, and installation maintenance operations;

4. Research and development, performance testing, and quality control of coatings and surface coated products;

5. Aerosol coatings;

6. Field application of architectural coatings to buildings, building components, and stationary structures;

7. Powder coatings;

8. Surface coating and cleaning of aerospace vehicles or components at an aerospace manufacture or rework installation that—

A. Is subject to the requirements and/or aerospace-specific exemptions of 10 CSR 10-5.295; or

B. Is not subject to 10 CSR 10-5.295 because the installation's potential to emit volatile organic compounds from aerospace surface coating and cleaning is twenty-five (25) tons per year or less;

9. Surface coating and cleaning of wood furniture or wood furniture components at a wood furniture manufacturing installation that—

A. Is subject to the requirements and/or wood furniture-specific exemptions of 10 CSR 10-5.530; or

B. Is not subject to 10 CSR 10-5.530 because the installation's potential to emit volatile organic compounds from wood furniture coating and cleaning is less than twenty-five (25) tons per year;

10. Surface coating and cleaning operations that are subject to a Reasonably Available Control Technology determination under 10 CSR 10-5.520;

11. Application and storage of traffic coatings that are subject to the requirements of 10 CSR 10-5.450;

12. Printing operations that are subject to the requirements of 10 CSR 10-5.340 or 10 CSR 10-5.442;

13. Surface coating and cleaning of articles used for internal company operations,

including, but not limited to, work stands; scaffolding; jigs; tooling; dollies; tow bars; aircraft ground support equipment; portable equipment used for maintenance, testing, fabrication, or repair; toolboxes; storage bins; shelving; and other manufacturing or warehouse support items;

14. Surface coating operations which do not have a VOC limit in section (3) of this rule;

15. Adhesives and sealants that contain less than 0.17 pounds of VOC per gallon of coating (less water and exempt compounds) as applied;

16. Cyanoacrylate adhesives;

17. Adhesives, sealants, adhesive primers, and sealant primers that are supplied by the manufacturer or supplier in containers with a net volume of sixteen (16) fluid ounces or less, or a net weight of one (1) pound or less, except plastic cement welding adhesives and contact adhesives;

18. Contact adhesives that are supplied by the manufacturer or supplier in containers with a net volume of one (1) gallon or less; and

19. Adhesives, sealants, adhesive primers, sealant primers, surface preparation, and cleanup solvents that are used in the following operations:

A. Tire repair operations, provided the adhesive is labeled for tire repair only;

B. Assembly, repair, and manufacture of aerospace or undersea-based weapon systems;

C. Solvent welding operations used in the manufacture of medical devices or in the manufacture of medical equipment; and

D. Plaque laminating operations in which adhesives are used to bond clear, polyester acetate laminate to wood with lamination equipment installed prior to July 1, 1992.

(E) Once an installation exceeds the applicability level of this rule, it shall remain subject to this rule until it can demonstrate, to the satisfaction of the director, that the actual total VOC emissions from surface coating operations, including related cleaning activities and before consideration of controls, is below three (3) tons per twelve (12)-month rolling period for sixty (60) consecutive months.

(2) Definitions of certain terms specified in this rule may be found in 10 CSR 10-6.020.

(3) General Provisions. General provisions for specific coatings may be found in the following subsections of section (3) of this rule:



Coating	Subsection
Large Appliance Coatings	(3)(A)
Metal Furniture Coatings	(3)(B)
Automobile and Light-Duty Truck Assembly Coatings	(3)(C)
Paper, Film, and Foil Coatings	(3)(D)
Magnet Wire Coatings	(3)(E)
Coil Coatings	(3)(F)
Can Coatings	(3)(G)
Vinyl and Fabric Coatings	(3)(H)
Flat Wood Paneling Coatings	(3)(I)
Miscellaneous Metal and Plastic Parts Coatings	(3)(J)
Industrial Adhesive Application	(3)(K)

(A) Large Appliance Coatings.

1. The requirements in this subsection apply to the surface coating of doors, cases, lids, panels, and interior support parts of the following residential and commercial products:

- A. Washers;
- B. Dryers;
- C. Ranges;
- D. Refrigerators;
- E. Freezers;
- F. Water heaters;
- G. Dishwashers;
- H. Trash compactors;
- I. Air conditioners; and
- J. Other similar products.

2. Emission limits.

A. Prior to March 1, 2012, no owner or operator of a surface coating unit subject to this subsection may cause, allow, or permit the discharge into the ambient air of any VOCs in excess of the following, as delivered to the coating applicator(s):

Large Appliance Coatings	
Coating Category	Emission Limit
	pounds of VOC per gallon of coating (minus water and exempt compounds)
Topcoat	2.8
Final Repair	6.5

B. On or after March 1, 2012, no owner or operator of a surface coating unit subject to this subsection may cause, allow, or permit the discharge into the ambient air of any VOCs in excess of the following, as delivered to the coating applicator(s):

Large Appliance Coatings		
Coating Category	Emission Limit	
	pounds of VOC per gallon of coating (minus water and exempt compounds)	
	Baked	Air Dried
General, One Component	2.3	2.3
General, Multi Component	2.3	2.8
Extreme High Gloss	3.0	2.8
Extreme Performance	3.0	3.5
Heat Resistant	3.0	3.5
Metallic	3.5	3.5
Pretreatment Coatings	3.5	3.5
Solar Absorbent	3.0	3.5
Repair and Touch Up	6.5	6.5

3. Method and determination of compliance. The emission limits in paragraph (3)(A)2. of this rule shall be achieved through one (1) of the following:

A. VOC content of coatings. Determine the daily volume-weighted average VOC content of all coatings used in a surface coating unit, expressed as pounds of VOC per gallon of coating (minus water and exempt compounds) per subparagraph (5)(C)3.A. of this rule. The surface coating unit is in compliance if this value is less than or equal to the emission limits in paragraph (3)(A)2. of this rule;

B. Combination of VOC content of coatings and add-on controls. Calculate the required control system efficiency per paragraph (5)(C)4. of this rule. The surface coating unit is in compliance if the actual overall control system efficiency is greater than or equal to the required control system efficiency; or

C. Control system. If a control system is used to achieve compliance, the overall control system efficiency must be ninety percent (90%) or greater.

4. Application equipment. On or after March 1, 2012, one (1) or a combination of the following equipment shall be used for coating application, unless achieving compliance by using an add-on control system per subparagraph (3)(A)3.C. of this rule:

- A. Electrostatic equipment;
- B. High-volume low-pressure (HVLP) spray equipment;
- C. Flow coating;
- D. Roller coating;
- E. Dip coating, including electrodeposition;
- F. Airless spray;
- G. Air-assisted airless spray;
- H. Ink jet technology; and
- I. Other coating application method capable of achieving a transfer efficiency

equivalent or better than achieved by HVLP spraying.

5. Work practices. On or after March 1, 2012, work practices shall be used to minimize VOC emissions from solvent storage, mixing operations, and handling operations for coatings, thinners, cleaning materials, and waste materials. Work practices shall include, but not be limited to, the following:

A. Store all VOC-containing coatings, thinners, and cleaning materials in closed containers;

B. Ensure that mixing and storage containers used for VOC-containing coatings, thinners, coating related waste, and cleaning materials are kept closed at all times except when depositing or removing these materials;

C. Minimize spills of VOC-containing coatings, thinners, and cleaning materials;

D. Clean up spills immediately;

E. Convey any coatings, thinners, and cleaning materials in closed containers or pipes from one (1) location to another; and

F. Minimize VOC emissions from the cleaning of application, storage, mixing, and conveying equipment by ensuring that equipment cleaning is performed without atomizing the cleaning solvent and all spent solvent is captured in closed containers.

6. The VOC limits in paragraph (3)(A)2. of this rule do not apply to the following types of coatings and coating operations:

- A. Stencil coatings;
- B. Safety-indicating coatings;
- C. Solid film lubricants; or
- D. Electric-insulating and thermal-conducting coatings.

(B) Metal Furniture Coatings.

1. The requirements in this subsection apply to surface coating of any furniture 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.

2. Emission limits.

A. Prior to March 1, 2012, no owner or operator of a surface coating unit subject to this subsection may cause, allow, or permit the discharge into the ambient air of any VOCs in excess of three (3.0) pounds of VOC per gallon of coating (minus water and exempt compounds) as delivered to the coating applicator(s).

B. On or after March 1, 2012, no owner or operator of a surface coating unit subject to this subsection may cause, allow, or permit the discharge into the ambient air of any VOCs in excess of the following, as delivered to the coating applicator(s):



Metal Furniture Coatings		
Coating Category	Emission Limit pounds of VOC per gallon of coating (minus water and exempt compounds)	
	Baked	Air Dried
General, One Component	2.3	2.3
General, Multi Component	2.3	2.8
Extreme High Gloss	3.0	2.8
Extreme Performance	3.0	3.5
Heat Resistant	3.0	3.5
Metallic	3.5	3.5
Pretreatment Coatings	3.5	3.5
Solar Absorbent	3.0	3.5

3. Method and determination of compliance. The emission limits in paragraph (3)(B)2. of this rule shall be achieved through one (1) of the following:

A. VOC content of coatings. Determine the daily volume-weighted average VOC content of all coatings used in a surface coating unit, expressed as pounds of VOC per gallon of coating (minus water and exempt compounds) per subparagraph (5)(C)3.A. of this rule. The surface coating unit is in compliance if this value is less than or equal to the emission limits in paragraph (3)(B)2. of this rule;

B. Combination of VOC content of coatings and add-on controls. Calculate the required control system efficiency per paragraph (5)(C)4. of this rule. The surface coating unit is in compliance if the actual overall control system efficiency is greater than or equal to the required control system efficiency; or

C. Control system. If a control system is used to achieve compliance, the overall control system efficiency must be ninety percent (90%) or greater.

4. Application equipment. On or after March 1, 2012, one (1) or a combination of the following equipment shall be used for coating application, unless achieving compliance by using an add-on control system per subparagraph (3)(B)3.C. of this rule:

- A. Electrostatic equipment;
- B. HVLP spray equipment;
- C. Flow coating;
- D. Roller coating;
- E. Dip coating, including electrodeposition;
- F. Airless spray;
- G. Air-assisted airless spray;
- H. Ink jet technology; and
- I. Other coating application method capable of achieving a transfer efficiency equivalent or better than achieved by HVLP

spraying.

5. Work practices. On or after March 1, 2012, work practices shall be used to minimize VOC emissions from solvent storage, mixing operations, and handling operations for coatings, thinners, cleaning materials, and waste materials. Work practices shall include, but not be limited to, the following:

A. Store all VOC-containing coatings, thinners, and cleaning materials in closed containers;

B. Ensure that mixing and storage containers used for VOC-containing coatings, thinners, coating related waste, and cleaning materials are kept closed at all times except when depositing or removing these materials;

C. Minimize spills of VOC-containing coatings, thinners, and cleaning materials;

D. Clean up spills immediately;

E. Convey any coatings, thinners, and cleaning materials in closed containers or pipes from one (1) location to another; and

F. Minimize VOC emissions from the cleaning of application, storage, mixing, and conveying equipment by ensuring that equipment cleaning is performed without atomizing the cleaning solvent and all spent solvent is captured in closed containers.

6. The VOC limits in paragraph (3)(B)2. of this rule do not apply to the following types of coatings and coating operations:

- A. Stencil coatings;
- B. Safety-indicating coatings;
- C. Solid film lubricants; and
- D. Electric-insulating and thermal-conducting coatings.

(C) Automobile and Light-Duty Truck Assembly Coatings.

1. The requirements in this subsection apply to automobile and light-duty truck surface coating operations performed in an automobile or light-duty truck assembly installation.

2. Emission limits.

A. Prior to March 1, 2012, no owner or operator of an automobile or light-duty truck assembly installation may cause, allow, or permit the discharge into the ambient air of any VOC in excess of the following:

Automobile and Light-Duty Truck Assembly Coatings	
Coating Category	Emission Limit
Topcoat	15.1 pounds of VOC per gallon of coating solids deposited
Spray Primer or Primer Surfacer	15.1 pounds of VOC per gallon of coating solids deposited
Electrodeposition Primer	1.4 pounds of VOC per gallon of coating solids deposited
Final Repair	4.8 pounds of VOC per gallon of coating (minus water and exempt compounds)
Miscellaneous Metal Parts, Extreme Performance, and Air Dried Coatings	3.5 pounds of VOC per gallon of coating (minus water and exempt compounds)
All Other Coatings	3.0 pounds of VOC per gallon of coating (minus water and exempt compounds)

B. On or after March 1, 2012, no owner or operator of an automobile or light-duty truck assembly installation may cause, allow, or permit the discharge into the ambient air of any VOC in excess of the following:

Automobile and Light-Duty Truck Assembly Coatings			
Coating Category	Emission Limit		
	$R_T < 0.040$	$0.040 \leq R_T < 0.160$	$R_T \geq 0.160$
Electrodeposition primer (EDP)	No VOC Emission Limit	$0.7 \times 350^{0.160-R_T}$ pounds of VOC per gallon of coating solids deposited	0.7 pounds of VOC per gallon of coating solids deposited
Primer-surfacer	12.0 pounds of VOC per gallon of coating solids deposited		
Topcoat	12.0 pounds of VOC per gallon of coating solids deposited		
Combined Primer-Surfacer and Topcoat	12.0 pounds of VOC per gallon of coating solids deposited		
Final repair	4.8 pounds of VOC per gallon of coating (minus water and exempt compounds)		



Miscellaneous Materials	
Material	Emission Limit pounds of VOC per gallon of coating (minus water and exempt compounds)
Automobile and light-duty truck glass bonding primer	7.5
Automobile and light-duty truck adhesive	2.1
Automobile and light-duty truck cavity wax	5.4
Automobile and light-duty truck sealer	5.4
Automobile and light-duty truck deadener	5.4
Automobile and light-duty truck gasket/gasket-sealing material	1.7
Automobile and light-duty truck underbody coating	5.4
Automobile and light-duty truck trunk interior coating	5.4
Automobile and light-duty truck bedliner	1.7
Automobile and light-duty truck weatherstrip adhesive	6.3
Automobile and light-duty truck lubricating wax/compound	5.8

3. Method and determination of compliance. The emission limits in paragraph (3)(C)2. of this rule shall be achieved through the following:

A. Spray primer; primer-surfacer; topcoat; and combined primer-surfacer and topcoat. The VOC emission rate, expressed as pounds of VOC per gallon of coating solids deposited, is determined by the procedures in the U.S. Environmental Protection Agency (EPA) document *Protocol for Determining the Daily Volatile Organic Compound Emission Rate of Automobile and Light-Duty Truck Primer-Surfacer and Topcoat Operations* (EPA-453/R-08-002), dated September 2008. The surface coating unit is in compliance if the emission rate is less than or equal to the emission limit in paragraph (3)(C)2. of this rule;

B. Electrodeposition primer (EDP). Determine the monthly volume-weighted average VOC emission rate of the EDP coating unit, expressed as pounds of VOC per gallon of coating solids deposited, per subparagraph (5)(C)3.D. of this rule. The EDP coating unit is in compliance if this value is less than or equal to the emission limit in paragraph (3)(C)2. of this rule;

C. Final repair coatings. Determine the daily volume-weighted average VOC content of all coatings used in a surface coating unit, expressed as pounds of VOC per gallon

of coating (minus water and exempt compounds) per subparagraph (5)(C)3.A. of this rule. The surface coating unit is in compliance if this value is less than or equal to the emission limits in paragraph (3)(C)2. of this rule; and

D. All other coatings. Determine the monthly volume-weighted average VOC content of all coatings used in a surface coating unit, expressed as pounds of VOC per gallon of coating (minus water and exempt compounds) per subparagraph (5)(C)3.E. of this rule. The surface coating unit is in compliance if this value is less than or equal to the emission limit in paragraph (3)(C)2. of this rule.

4. Work practices and work practice plan.

A. Work practices. On or after March 1, 2012, work practices shall be used to minimize VOC emissions from storage, mixing operations, and handling operations for coatings, thinners, cleaning materials, and waste materials. Work practices shall include, but not be limited to, the following:

(I) Store all VOC-containing coatings, thinners, and cleaning materials in closed containers;

(II) Ensure that mixing and storage containers used for VOC-containing coatings, thinners, coating related waste, and cleaning materials are kept closed at all times except when depositing or removing these materials;

(III) Minimize spills of VOC-containing coatings, thinners, and cleaning materials;

(IV) Clean up spills immediately;

(V) Convey any coatings, thinners, and cleaning materials in closed containers or pipes from one (1) location to another; and

(VI) Minimize VOC emissions from the cleaning of application, storage, mixing, and conveying equipment by ensuring that equipment cleaning is performed without atomizing the cleaning solvent and all spent solvent is captured in closed containers.

B. Work practice plan. Installations subject to subparagraph (3)(C)4.A. of this rule shall develop and implement a work practice plan to minimize VOC emissions from cleaning and purging of equipment associated with all coating operations for which emission limits are specified in paragraph (3)(C)2. of this rule. The plan shall specify practices and procedures to ensure that VOC emissions from the following operations are minimized:

(I) Vehicle body wiping;

(II) Coating line purging;

(III) Flushing of coating systems;

(IV) Cleaning of spray booth grates;

(V) Cleaning of spray booth walls;

(VI) Cleaning of spray booth equip-

ment;

(VII) Cleaning external spray booth areas; and

(VIII) Other housekeeping measures, such as keeping solvent-laden rags in closed containers.

(D) Paper, Film, and Foil Coatings.

1. The requirements in this subsection apply to paper, film, and foil coating operations, with the exception of the following:

A. Paper, film, and foil surface coating units with potential to emit below twenty-five (25) tons per year of VOC from coating, prior to controls;

B. Coating performed on or in-line with any offset lithographic, screen, letterpress, flexographic, rotogravure, or digital printing press that is part of a printing process; and

C. Size presses and on-machine coaters on papermaking machines that apply sizing or water-based clays.

2. Emission limits.

A. Prior to March 1, 2012, no owner or operator of a surface coating unit subject to this subsection may cause, allow, or permit the discharge into the ambient air of any VOCs in excess of two and nine-tenths (2.9) pounds of VOC per gallon of coating (minus water and exempt compounds) as delivered to the coating applicator(s).

B. On or after March 1, 2012, no owner or operator of a surface coating unit subject to this subsection may cause, allow, or permit the discharge into the ambient air of any VOCs in excess of the following, as delivered to the coating applicator(s):

Paper, Film, and Foil Coatings	
Coating Category	Emission Limit pounds of VOC per pound of coating solids
Pressure sensitive tape and label	0.2
Paper, film, and foil surface coating (not including pressure sensitive tape and label)	0.4

3. Method and determination of compliance. The emission limits in paragraph (3)(D)2. of this rule shall be achieved through one (1) of the following:

A. VOC content of coatings.

(I) Prior to March 1, 2012. Determine the daily volume-weighted average VOC content of all coatings used in a surface coating unit, expressed as pounds of VOC per gallon of coating (minus water and exempt compounds) per subparagraph (5)(C)3.A. of this rule. The surface coating unit is in compliance if this value is less than or equal to the emission limit in paragraph (3)(D)2. of this rule.

(II) On or after March 1, 2012.



Determine the daily mass-weighted average VOC content of all coatings used in a surface coating unit, expressed as pounds of VOC per pound of coating solids per subparagraph (5)(C)3.C. of this rule. The surface coating unit is in compliance if this value is less than or equal to the emission limits in paragraph (3)(D)2. of this rule; or

B. Control system. If a control system is used to achieve compliance, the overall control system efficiency must be ninety percent (90%) or greater.

4. Work practices. On or after March 1, 2012, work practices shall be used to minimize VOC emissions from solvent storage, mixing operations, and handling operations for coatings, thinners, cleaning materials, and waste materials. Work practices shall include, but not be limited to, the following:

A. Store all VOC-containing coatings, thinners, and cleaning materials in closed containers;

B. Ensure that mixing and storage containers used for VOC-containing coatings, thinners, coating related waste, and cleaning materials are kept closed at all times except when depositing or removing these materials;

C. Minimize spills of VOC-containing coatings, thinners, and cleaning materials;

D. Clean up spills immediately;

E. Convey any coatings, thinners, and cleaning materials in closed containers or pipes from one (1) location to another; and

F. Minimize VOC emissions from the cleaning of application, storage, mixing, and conveying equipment by ensuring that equipment cleaning is performed without atomizing the cleaning solvent and all spent solvent is captured in closed containers.

(E) Magnet Wire Coatings.

1. The requirements in this subsection apply to the coating of electrically insulating varnish or enamel to aluminum or copper wire for use in electrical machinery.

2. Emission limits. No owner or operator of a surface coating unit subject to this subsection may cause, allow, or permit the discharge into the ambient air of any VOCs in excess of one and seven-tenths (1.7) pounds of VOC per gallon of coating (minus water and exempt compounds) as delivered to the coating applicator(s).

3. Method and determination of compliance. The emission limits in paragraph (3)(E)2. of this rule shall be achieved through one (1) of the following:

A. VOC content of coatings. Determine the daily volume-weighted average VOC content of all coatings used in a surface coating unit, expressed as pounds of VOC per gallon of coating (minus water and exempt compounds), per subparagraph (5)(C)3.A. of

this rule. The surface coating unit is in compliance if this value is less than or equal to the emission limit in paragraph (3)(E)2. of this rule;

B. Combination of VOC content of coatings and add-on controls. Calculate the required control system efficiency per paragraph (5)(C)4. of this rule. The surface coating unit is in compliance if the actual overall control system efficiency is greater than or equal to the required control system efficiency; or

C. Control system. If a control system is used to achieve compliance, the overall control system efficiency must be ninety percent (90%) or greater.

(F) Coil Coatings.

1. The requirements in this subsection apply to the surface coating of any flat metal sheet or strip that comes in rolls or coils.

2. Emission limits. No owner or operator of a surface coating unit subject to this subsection may cause, allow, or permit the discharge into the ambient air of any VOCs in excess of two and six-tenths (2.6) pounds of VOC per gallon of coating (minus water and exempt compounds) as delivered to the coating applicator(s).

3. Method and determination of compliance. The emission limits in paragraph (3)(F)2. of this rule shall be achieved through one (1) of the following:

A. VOC content of coatings. Determine the daily volume-weighted average VOC content of all coatings used in a surface coating unit, expressed as pounds of VOC per gallon of coating (minus water and exempt compounds), per subparagraph (5)(C)3.A. of this rule. The surface coating unit is in compliance if this value is less than or equal to the emission limit in paragraph (3)(F)2. of this rule;

B. Combination of VOC content of coatings and add-on controls. Calculate the required control system efficiency per paragraph (5)(C)4. of this rule. The surface coating unit is in compliance if the actual overall control system efficiency is greater than or equal to the required control system efficiency; or

C. Control system. If a control system is used to achieve compliance, the overall control system efficiency must be ninety percent (90%) or greater.

(G) Can Coatings.

1. The requirements in this subsection apply to the surface coating of cans.

2. Emission limits. No owner or operator of a surface coating unit subject to this subsection may cause, allow, or permit the discharge into the ambient air of any volatile

organic compounds, as delivered to the coating applicator(s), in excess of the following:

Can Coatings	
Coating Category	Emission Limit pounds of VOC per gallon of coating (minus water and exempt compounds)
2-Piece Exterior Sheet Basecoat	2.8
2- and 3-Piece Interior Body Spray	4.2
2-Piece End Exterior	4.2
3-Piece Side Seam	5.5
End Seal Compound	3.7

3. Method and determination of compliance. The emission limits in paragraph (3)(G)2. of this rule shall be achieved through one (1) of the following:

A. VOC content of coatings. Determine the daily volume-weighted average VOC content of all coatings used in a surface coating unit, expressed as pounds of VOC per gallon of coating (minus water and exempt compounds), per subparagraph (5)(C)3.A. of this rule. The surface coating unit is in compliance if this value is less than or equal to the emission limit in paragraph (3)(G)2. of this rule;

B. Combination of VOC content of coatings and add-on controls. Calculate the required control system efficiency per paragraph (5)(C)4. of this rule. The surface coating unit is in compliance if the actual overall control system efficiency is greater than or equal to the required control system efficiency; or

C. Control system. If a control system is used to achieve compliance, the overall control system efficiency must be ninety percent (90%) or greater.

(H) Vinyl and Fabric Coatings.

1. The requirements in this subsection apply to vinyl coating and fabric coating.

2. Emission limits. No owner or operator of a surface coating unit subject to this subsection may cause, allow, or permit the discharge into the ambient air of any volatile organic compounds, as delivered to the coating applicator(s), in excess of the following:

Vinyl and Fabric Coatings	
Coating Category	Emission Limit pounds of VOC per gallon of coating (minus water and exempt compounds)
Vinyl	3.8
Fabric	2.9

3. Method and determination of compliance. The emission limits in paragraph



(3)(H)2. of this rule shall be achieved through one (1) of the following:

A. VOC content of coatings. Determine the daily volume-weighted average VOC content of all coatings used in a surface coating unit, expressed as pounds of VOC per gallon of coating (minus water and exempt compounds), per subparagraph (5)(C)3.A. of this rule. The surface coating unit is in compliance if this value is less than or equal to the emission limit in paragraph (3)(H)2. of this rule;

B. Combination of VOC content of coatings and add-on controls. Calculate the required control system efficiency per paragraph (5)(C)4. of this rule. The surface coating unit is in compliance if the actual overall control system efficiency is greater than or equal to the required control system efficiency; or

C. Control system. If a control system is used to achieve compliance, the overall control system efficiency must be ninety percent (90%) or greater.

(I) Flat Wood Paneling Coatings.

1. The requirements in this subsection apply to the coating of the following:

A. Printed interior panels made of hardwood plywood and thin particleboard;

B. Natural finish hardwood plywood panels;

C. Hardboard paneling with Class II finishes;

D. Exterior siding; and

E. Tileboard.

2. Emission limits. On or after March 1, 2012, no owner or operator of a surface coating unit subject to this subsection may cause, allow, or permit the discharge into the ambient air of any VOCs in excess of two and one-tenths (2.1) pounds of VOC per gallon of coating (minus water and exempt compounds) as delivered to the coating applicator(s).

3. Method and determination of compliance. The emission limits in paragraph (3)(I)2. of this rule shall be achieved through one (1) of the following:

A. VOC content of coatings. Determine the daily volume-weighted average VOC content of all coatings used in a surface coating unit, expressed as pounds of VOC per gallon of coating (minus water and exempt compounds), per subparagraph (5)(C)3.A. of this rule. The surface coating unit is in compliance if this value is less than or equal to the emission limit in paragraph (3)(I)2. of this rule;

B. Combination of VOC content of coatings and add-on controls. Calculate the required control system efficiency per paragraph (5)(C)4. of this rule. The surface coating unit is in compliance if the actual overall

control system efficiency is greater than or equal to the required control system efficiency; or

C. Control system. If a control system is used to achieve compliance, the overall control system efficiency must be ninety percent (90%) or greater.

4. Work practices. On or after March 1, 2012, work practices shall be used to minimize VOC emissions from solvent storage, mixing operations, and handling operations for coatings, thinners, cleaning materials, and waste materials. Work practices shall include, but not be limited to, the following:

A. Store all VOC-containing coatings, thinners, and cleaning materials in closed containers;

B. Ensure that mixing and storage containers used for VOC-containing coatings, thinners, coating related waste, and cleaning materials are kept closed at all times except when depositing or removing these materials;

C. Minimize spills of VOC-containing coatings, thinners, and cleaning materials;

D. Clean up spills immediately;

E. Convey any coatings, thinners, and cleaning materials in closed containers or pipes from one (1) location to another; and

F. Minimize VOC emissions from the cleaning of application, storage, mixing, and conveying equipment by ensuring that equipment cleaning is performed without atomizing the cleaning solvent and all spent solvent is captured in closed containers.

(J) Miscellaneous Metal and Plastic Parts Coatings.

1. The requirements in this subsection apply to the surface coating of all other miscellaneous metal and plastic parts including, but not limited to, the following:

A. Large and small farm implements and machinery;

B. Railroad cars;

C. Small household appliances;

D. Office equipment;

E. Commercial and industrial machinery and equipment;

F. Any other industrial category that coats metal parts or products under the Standard Industrial Classification Code of major groups #33, #34, #35, #36, #37, #38, and #39;

G. Fabricated metal products;

H. Molded plastic parts;

I. Automotive or transportation equipment;

J. Interior or exterior automotive parts;

K. Construction equipment;

L. Motor vehicle accessories;

M. Bicycles and sporting goods;

N. Toys;

O. Recreational vehicles;
P. Pleasure craft (recreational boats);
Q. Extruded aluminum structural components;

R. Heavy-duty vehicles;

S. Lawn and garden equipment;

T. Business machines;

U. Laboratory and medical equipment;

V. Electronic equipment;

W. Steel drums;

X. Metal pipes; and

Y. Prefabricated architectural components when the coating is applied in a surface coating unit as defined in 10 CSR 10-6.020.

2. Emission limits.

A. Prior to March 1, 2012, no owner or operator of a surface coating unit subject to this subsection may cause, allow, or permit the discharge into the ambient air of any VOCs in excess of the following, as delivered to the coating applicator(s):

Coating Category	Emission Limit pounds of VOC per gallon of coating (minus water and exempt compounds)
Metal Parts	
Clear Coat	4.3
Extreme Performance Coatings	3.5
Air Dried Coatings	3.5
All Other Coatings	3.0
Plastic Parts	3.5
Railroad Cars	3.5
Farm Implements and Machinery	3.5
Heavy-Duty Trucks	3.5
Mail Boxes and Shutters	3.5

B. On or after March 1, 2012, no owner or operator of a surface coating unit subject to this subsection may cause, allow, or permit the discharge into the ambient air of any VOCs in excess of the following, as delivered to the coating applicator(s):



Metal Parts and Products Coatings		
Coating Category	Emission Limit pounds of VOC per gallon of coating (minus water and exempt compounds)	
	Air Dried	Baked
General, One Component	2.8	2.3
General, Multi Component	2.8	2.3
Camouflage	3.5	3.5
Clear Coat	4.3	4.3
Electric-Insulating Varnish	3.5	3.5
Etching Filler	3.5	3.5
Extreme High Gloss	3.5	3.0
Extreme Performance	3.5	3.0
Heat Resistant	3.5	3.0
High Performance Architectural	6.2	6.2
High Temperature	3.5	3.5
Metallic	3.5	3.5
Military Specification	2.8	2.3
Mold Seal	3.5	3.5
Pan Backing	3.5	3.5
Prefabricated Architectural	3.5	2.3
Pretreatment Coatings	3.5	3.5
Repair and Touch Up	3.5	3.0
Silicone Release	3.5	3.5
Solar Absorbent	3.5	3.0
Vacuum Metalizing	3.5	3.5
Drum, New, Exterior	2.8	2.8
Drum, New, Interior	3.5	3.5
Drum, Reconditioned, Exterior	3.5	3.5
Drum, Reconditioned, Interior	4.2	4.2

Plastic and Rubber Parts and Products Coatings	
Coating Category	Emission Limit pounds of VOC per gallon of coating (minus water and exempt compounds)
Automotive/Transportation	
High Bake, Interior and Exterior Parts	
Flexible Primer	4.5
Non-Flexible Primer	3.5
Basecoat	4.3
Clear Coat	4.0
Non-Basecoat/Clear Coat	4.3
Low Bake/Air Dried, Exterior Parts	
Primer	4.8
Basecoat	5.0
Clear Coat	4.5
Non-Basecoat/Clear Coat	5.0
Low Bake/Air Dried, Interior Parts	5.0
Touch Up and Repair	5.2
Business Machine	
Primer	2.9
Topcoat	2.9
Texture Coat	2.9
Fog Coat	2.2
Touch Up and Repair	2.9
Plastic and Rubber, All Other	
General, One Component	2.3
General, Multi Component	3.5
Electric Dissipating and Shock-Free	6.7
Extreme Performance	3.5
Metallic	3.5
Military Specification	
One (1) Pack	2.8
Two (2) Pack	3.5
Mold Seal	6.3
Multi Colored	5.7
Optical	6.7
Polyurethane Shoe Sole	6.7
Vacuum-Metalizing	6.7

Pleasure Craft Coatings	
Coating Category	Emission Limit pounds of VOC per gallon of coating (minus water and exempt compounds)
Extreme High Gloss Topcoat	5.0
High Gloss Topcoat	3.5
Pretreatment Wash Primer	6.5
Finish Primer/Surfacer	5.0
High Build Primer/Surfacer	2.8
Aluminum Substrate Antifoulant	4.7
Other Substrate Antifoulant	3.3
Antifoulant Sealer/Tie	3.5
All Other	3.5

Motor Vehicle Materials	
Coating Category	Emission Limit pounds of VOC per gallon of coating (minus water and exempt compounds)
Motor Vehicle Cavity Wax	5.4
Motor Vehicle Sealer	5.4
Motor Vehicle Deadener	5.4
Motor Vehicle Gasket/Gasket-Sealing Material	1.7
Motor Vehicle Underbody	5.4
Motor Vehicle Trunk Interior	5.4
Motor Vehicle Bedliner	1.7
Motor Vehicle Lubricating Wax/Compound	5.8

3. Method and determination of compliance. The emission limits in paragraph (3)(J)2. of this rule shall be achieved through one (1) of the following:

A. VOC content of coatings. Determine the daily volume-weighted average VOC content of all coatings used in a surface coating unit, expressed as pounds of VOC per gallon of coating (minus water and exempt compounds), per subparagraph (5)(C)3.A. of this rule. The surface coating unit is in compliance if this value is less than or equal to the emission limit in paragraph (3)(J)2. of this rule;

B. Combination of VOC content of coatings and add-on controls. Calculate the required control system efficiency per paragraph (5)(C)4. of this rule. The surface coating unit is in compliance if the actual overall control system efficiency is greater than or equal to the required control system efficiency; or

C. Control system. If a control system is used to achieve compliance, the overall control system efficiency must be ninety percent (90%) or greater.



4. Application equipment. On or after March 1, 2012, one (1) or a combination of the following equipment shall be used for coating application, unless achieving compliance by using an add-on control device per subparagraph (3)(J)3.C. of this rule:

- A. Electrostatic equipment;
- B. HVLP spray equipment;
- C. Flow coating;
- D. Roller coating;
- E. Dip coating, including electrodeposition;
- F. Airless spray;
- G. Air-assisted airless spray;
- H. Ink jet technology; and
- I. Other coating application method

capable of achieving a transfer efficiency equivalent or better than achieved by HVLP spraying.

5. Work practices. On or after March 1, 2012, work practices shall be used to minimize VOC emissions from solvent storage, mixing operations, and handling operations for coatings, thinners, cleaning materials, and waste materials. Work practices shall include, but not be limited to, the following:

A. Store all VOC-containing coatings, thinners, and cleaning materials in closed containers;

B. Ensure that mixing and storage containers used for VOC-containing coatings, thinners, coating related waste, and cleaning materials are kept closed at all times except when depositing or removing these materials;

C. Minimize spills of VOC-containing coatings, thinners, and cleaning materials;

D. Clean up spills immediately;

E. Convey any coatings, thinners, and cleaning materials in closed containers or pipes from one (1) location to another; and

F. Minimize VOC emissions from the cleaning of application, storage, mixing, and conveying equipment by ensuring that equipment cleaning is performed without atomizing the cleaning solvent and all spent solvent is captured in closed containers.

6. For metal parts coatings, the VOC limits in paragraph (3)(J)2. of this rule do not apply to the following types of coatings and coating operations:

- A. Stencil coatings;
- B. Safety-indicating coatings;
- C. Solid film lubricants;
- D. Electric-insulating and thermal-conducting coatings;

E. Magnetic data storage disk coatings; and

F. Plastic extruded onto metal parts to form a coating.

7. For metal parts coatings, the application equipment requirements in paragraph (3)(J)4. of this rule do not apply to the fol-

lowing types of coatings and coating operations:

- A. Touch-up coatings;
- B. Repair coatings; and
- C. Textured coatings.

8. For plastic parts coatings, the VOC limits in paragraph (3)(J)2. of this rule do not apply to the following types of coatings and coating operations:

A. Touch-up and repair coatings;

B. Stencil coatings applied on clear or transparent substrates;

C. Clear or translucent coatings;

D. Coatings applied at a paint manufacturing installation while conducting performance tests on the coatings;

E. Any individual coating category used in volumes less than fifty (50) gallons in any one (1) year, if substitute compliant coatings are not available, provided that the total usage of all such coatings does not exceed two hundred (200) gallons per year, per installation;

F. Reflective coating applied to highway cones;

G. Mask coatings that are less than one-half (0.5) millimeter thick (dried) and the area coated is less than twenty-five (25) square inches;

H. Electromagnetic interference and radio frequency interference (EMI/RFI) shielding coatings; and

I. Heparin-benzalkonium chloride (HBAC)-containing coatings applied to medical devices, provided that the total usage of all such coatings does not exceed one hundred (100) gallons per year, per installation.

9. For plastic parts coatings, the application equipment requirements in paragraph (3)(J)4. of this rule do not apply to airbrush operations using five (5) gallons or less per year of coating.

10. For automobile, transportation, or business machine plastic parts coatings, the VOC limits in paragraph (3)(J)2. of this rule do not apply to the following types of coatings and coating operations:

- A. Texture coatings;
- B. Vacuum metalizing coatings;
- C. Gloss reducers;
- D. Texture adhesion primers;
- E. Electrostatic preparation coatings;
- F. Resist coatings; and
- G. Stencil coatings.

11. For pleasure craft surface coating operations, the application equipment requirements in paragraph (3)(J)4. of this rule do not apply to extreme high gloss coatings.

12. The limits for military specification coatings in subparagraph (3)(J)2.B. of this rule do not apply to coatings that meet the

following criteria:

A. The coating is applied to military equipment used for national defense;

B. The coating performance is critical to the successful operation of the military equipment;

C. The coating is mandated in a specification or contract and a substitution of coatings that meet the VOC limits in subparagraph (3)(J)2.B. of this rule is prohibited; and

D. The director grants approval for the use of the coating at the installation.

13. The limits for pleasure craft coatings in subparagraph (3)(J)2.B. do not apply to pleasure craft touch-up and repair coatings supplied by the manufacturer or supplier in containers with a net volume of one (1) liter or less.

(K) Industrial Adhesive Application.

1. The requirements in this subsection apply to adhesive application processes.

2. Emission limits.

A. On or after March 1, 2012, no owner or operator of an adhesive application process subject to this subsection may cause, allow, or permit the discharge into the ambient air of any VOCs in excess of the following, as delivered to the coating applicator(s):



Category	Emission Limit pounds of VOC per gallon of coating (minus water and exempt compounds)
Adhesives Applied to the Specific Substrates	
Reinforced Plastic Composites	1.7
Flexible Vinyl	2.1
Metal	0.3
Porous Material (Except Wood)	1.0
Rubber	2.1
Wood	0.3
Other Substrates	2.1
Specialty Adhesive Application Processes	
Ceramic Tile Installation	1.1
Contact Adhesive	2.1
Cove Base Installation	1.3
Floor Covering Installation, Indoor	1.3
Floor Covering Installation, Outdoor	2.1
Floor Covering Installation, Perimeter Bonded Sheet Vinyl	5.5
Metal to Urethane/Rubber Molding or Casting	7.1
Motor Vehicle Adhesive	2.1
Motor Vehicle Weatherstrip Adhesive	6.3
Multipurpose Construction	1.7
Plastic Solvent Welding, ABS	3.3
Plastic Solvent Welding, Except ABS	4.2
Sheet Rubber Lining Installation	7.1
Single-Ply Roof Membrane Installation/Repair, Except EPDM Glue	2.1
Structural Glazing	0.8
Thin Metal Laminating	6.5
Tire Repair	0.8
Waterproof Resorcinol	1.4
Adhesive Primer Application Processes	
Motor Vehicle Glass Bonding Primer	7.5
Plastic Solvent Welding Adhesive Primer	5.4
Single-Ply Roof Membrane Adhesive Primer	2.1
Other Adhesive Primer	2.1

B. The VOC limits in subparagraph (3)(K)2.A. of this rule for adhesives or adhe-

sive primers applied to particular substrates shall apply as follows:

(I) If an adhesive is subject to a specific VOC limit in subparagraph (3)(K)2.A., the specific limit is applicable rather than an adhesive-to-substrate limit; and

(II) When an adhesive is used to bond dissimilar substrates, the applicable substrate category with the highest VOC content shall be the limit.

3. Method and determination of compliance. The emission limits in paragraph (3)(K)2. of this rule shall be achieved through one (1) of the following:

A. VOC content of coatings. Determine the daily volume-weighted average VOC content of all coatings used in an adhesive application process, expressed as pounds of VOC per gallon of coating (minus water and exempt compounds) per subparagraph (5)(C)3.A. of this rule. The adhesive application process is in compliance if this value is less than or equal to the emission limits in paragraph (3)(K)2. of this rule;

B. Combination of VOC content of coatings and add-on controls. Calculate the required control system efficiency per paragraph (5)(C)4. of this rule. The adhesive application process is in compliance if the actual overall control system efficiency is greater than or equal to the required control system efficiency; or

C. Control system. If a control system is used to achieve compliance, the overall control system efficiency must be eighty-five percent (85%) or greater.

4. Application equipment. On or after March 1, 2012, one (1) or a combination of the following equipment shall be used for adhesive application, unless achieving compliance by using an add-on control device per subparagraph (3)(K)3.C. of this rule:

- A. Electrostatic spray;
- B. HVLP spray;
- C. Flow coat;
- D. Roller coat or hand application, including non-spray application methods similar to hand- or mechanically-powered caulking gun, brush, or direct hand application;
- E. Dip coat, including electrodeposition;
- F. Airless spray;
- G. Air-assisted airless spray;
- H. Ink jet technology; and
- I. Other coating application method capable of achieving a transfer efficiency equivalent or better than achieved by HVLP spraying.

5. Work practices. On or after March 1, 2012, work practices shall be used to minimize VOC emissions from solvent storage,

mixing operations, and handling operations for coatings, thinners, cleaning materials, and waste materials. Work practices shall include, but not be limited to, the following:

A. Store all VOC-containing coatings, thinners, and cleaning materials in closed containers;

B. Ensure that mixing and storage containers used for VOC-containing coatings, thinners, coating related waste, and cleaning materials are kept closed at all times except when depositing or removing these materials;

C. Minimize spills of VOC-containing coatings, thinners, and cleaning materials;

D. Clean up spills immediately;

E. Convey any coatings, thinners, and cleaning materials in closed containers or pipes from one (1) location to another; and

F. Minimize VOC emissions from the cleaning of application, storage, mixing, and conveying equipment by ensuring that equipment cleaning is performed without atomizing the cleaning solvent and all spent solvent is captured in closed containers.

(4) Reporting and Record Keeping.

(A) The owner or operator of a surface coating unit covered under this rule shall keep records as necessary to determine compliance. Records kept should be appropriate for the facility, their products, and operations. These may include, as applicable, one (1) or more of the following:

- 1. Current list of coatings used and the VOC content as applied;
- 2. Daily volume usage of each coating;
- 3. Records of the weighted average VOC content for each coating type included in averaging for coating operations that achieve compliance through coating VOC content or a combination of coating VOC content and control system;
- 4. Annual VOC emissions from surface coating equipment cleaning; and
- 5. All test results to determine capture efficiency, control efficiency, and coating properties.

(B) Records such as daily production rates may be substituted for actual daily coating use measurements provided the owner submits a demonstration, approved by the director, that these records are adequate for the purposes of this rule.

(C) Any owner or operator using an emission control device to achieve compliance shall maintain daily records of key system operating parameters for emission control equipment including, but not limited to:

- 1. Identification of the type of emissions control system used;
- 2. Hours of operation;



3. Routine and non-routine maintenance, including dates and duration of any outages;

4. Records of test reports conducted;

5. An owner or operator of a surface coating unit employing a thermal or catalytic oxidizer to achieve compliance shall comply with the following requirements:

A. Continuous temperature monitoring and recording equipment shall be installed and operated to accurately measure the operating temperature(s) for the control device; and

B. The following information shall be collected and recorded each day of operation of the surface coating unit and the control device:

(I) A log or record of the operating time for the control device, monitoring equipment, and the associated surface coating unit;

(II) For thermal oxidizers, all three (3)-hour periods of operation during which the average combustion temperature was more than fifty degrees Fahrenheit (50 °F) below the average combustion temperature during the most recent emission test that demonstrated that the surface coating unit was in compliance; and

(III) For catalytic oxidizers, all three (3)-hour periods of operation during which the average temperature of the exhaust gases immediately before the catalyst bed was more than fifty degrees Fahrenheit (50 °F) below the average temperature of the exhaust gases during the most recent emission test that demonstrated that the surface coating unit was in compliance, and all three (3)-hour periods during which the average temperature difference across the catalyst bed was less than eighty percent (80%) of the average temperature difference during the most recent emission test that demonstrated that the surface coating operation was in compliance; and

6. An owner or operator of a surface coating unit employing a carbon adsorption system to achieve compliance shall comply with the following requirements:

A. The following types of monitoring and recording equipment shall be installed and operated for the carbon adsorption system:

(I) A continuous emission monitoring and recording system that is capable of accurately measuring and recording the concentration of organic compounds in the exhaust gases from the carbon adsorption system;

(II) Monitoring and recording equipment that is capable of accurately measuring and recording the total mass steam

flow rate for each regeneration cycle of each carbon bed; and

(III) Monitoring and recording equipment that is capable of accurately measuring and recording the temperature of each carbon bed after regeneration (and after completion of any cooling cycle(s)); and

B. The following information shall be collected and recorded each day of operation of the surface coating unit and the carbon adsorption system:

(I) A log or record of the operating time for the carbon adsorption system, monitoring equipment, and the associated surface coating unit;

(II) For a carbon adsorption system that employs a continuous emission monitoring and recording system to measure and record the concentration of organic compounds in the exhaust gases, all three (3)-hour periods of operation during which the average concentration level or reading in the exhaust gases is more than twenty percent (20%) greater than the exhaust gas organic compound concentration level or reading measured by the most recent performance test that demonstrated that the surface coating unit was in compliance;

(III) For a carbon adsorption system that employs monitoring and recording equipment to measure and record the total mass steam flow rate for each regeneration cycle of each carbon bed, all carbon bed regeneration cycles during which the total mass steam flow rate was more than ten percent (10%) below the total mass steam flow rate during the most recent performance test that demonstrated that the surface coating unit was in compliance; and

(IV) For a carbon adsorption system that employs monitoring and recording equipment to measure and record the temperature of each carbon bed after regeneration (and after completion of any cooling cycle(s)) was more than ten percent (10%) greater than the carbon bed temperature during the most recent performance test that demonstrated that the surface coating unit was in compliance.

(D) Records required under subsections (4)(A) through (4)(C) of this rule shall be retained by the owner or operator for a minimum of five (5) years. These records shall be made available to the director upon request.

(5) Test Methods.

(A) Test Methods for Control Systems. Owners or operators demonstrating compliance with the provisions of this rule via a control system shall determine the overall control system efficiency as the product of the

capture efficiency and control device efficiency, using the following test methods:

1. The VOC concentration of gaseous air streams shall be determined with a test consisting of three (3) separate runs, each lasting a minimum of sixty (60) minutes using one (1) of the following methods as specified by 40 CFR 60, Appendix A—Reference Methods:

A. Method 18—Measurement of Gaseous Organic Compound Emissions by Gas Chromatography;

B. Method 25—Determination of Total Gaseous Non-methane Organic Emissions as Carbon; or

C. Method 25A—Determination of Total Gaseous Organic Concentration Using Flame Ionization Analyzer;

2. Sample and velocity traverses shall be determined by using one (1) of the following methods as specified by 40 CFR 60, Appendix A—Reference Methods:

A. Method 1—Sample and Velocity Traverses for Stationary Sources; or

B. Method 1A—Sample and Velocity Traverses for Stationary Sources with Small Stacks or Ducts;

3. Velocity and volumetric flow rates shall be determined by using one (1) of the following methods as specified by 40 CFR 60, Appendix A—Reference Methods:

A. Method 2—Determination of Stack Gas Velocity and Volumetric Flow Rate (Type S Pitot Tube);

B. Method 2A—Direct Measurement of Gas Volume Through Pipes and Small Ducts;

C. Method 2C—Determination of Stack Gas Velocity and Volumetric Flow Rate in Small Stacks or Ducts (Standard Pitot Tube);

D. Method 2D—Measurement of Gas Volumetric Flow Rates in Small Pipes and Ducts;

E. Method 2F—Determination of Stack Gas Velocity and Volumetric Flow Rate With Three-Dimensional Probes;

F. Method 2G—Determination of Stack Gas Velocity and Volumetric Flow Rate With Two-Dimensional Probes; or

G. Method 2H—Determination of Stack Gas Velocity Taking Into Account Velocity Decay Near the Stack Wall;

4. To analyze the exhaust gases, use the method in 10 CSR 10-6.030(3);

5. To measure the moisture in the stack gas, use the method in 10 CSR 10-6.030(4); and

6. To determine capture efficiency, use the procedure in 10 CSR 10-6.030(20).



(B) Test Methods for Determining Coating Properties. The coating properties in paragraphs (5)(B)1. through (5)(B)6. of this rule shall be determined from the coating manufacturer's supplied data or the method referenced in 10 CSR 10-6.030(14)(C). If there is a discrepancy between the manufacturer's supplied data and the method referenced in 10 CSR 10-6.030(14)(C), compliance shall be based on the method referenced in 10 CSR 10-6.030(14)(C).

1. Density of coating, D_C .

A. Electrodeposition primer. For electrodeposition primer, the coating density shall be as received.

B. All other coatings. For all other coatings, the coating density shall be as applied.

2. Volume fraction of solids in the coating, V_S .

A. Electrodeposition primer. For electrodeposition primer, the volume fraction of solids in the coating shall be as received.

B. All other coatings. For all other coatings, the volume fraction of solids in the coating shall be as applied.

3. Weight fraction of exempt compounds in the coating, W_E .

4. Weight fraction of regulated VOC in the coating, W_O . This value does not include the weight fraction of water or exempt compounds.

A. Electrodeposition primer. For electrodeposition primer, the weight fraction of VOC in the coating shall be as received.

B. All other coatings. For all other coatings, the weight fraction of VOC in the coating shall be as applied.

5. Weight fraction of solids in the coating, W_S .

6. Weight fraction of water in the coating, W_W .

(C) Other Test Methods and Calculations.

1. Calculating the VOC content of the coating.

A. The VOC content of the coating as applied, expressed as pounds of VOC per gallon of coating (minus water and exempt compounds), shall be determined using Equation (1) as follows:

$$B = \frac{D_C \times W_O}{1 - \left(\frac{D_C \times W_W}{8.33} \right) - \left(\sum_{j=1}^m \frac{D_C \times W_{E_j}}{D_{E_j}} \right)} \quad (1)$$

Where:

B = VOC content of the coating as applied, expressed as pounds of VOC per gallon of coating (minus water and exempt com-

pounds);

D_C = density of coating as applied, expressed as pounds per gallon;

W_O = weight fraction of regulated VOC in the coating, as applied. This value does not include the weight fraction of water or exempt compounds;

W_W = weight fraction of water in the coating, as applied;

W_E = weight fraction of exempt compounds in the coating, as applied;

D_E = density of each exempt compound, expressed as pounds per gallon;

m = number of exempt compounds in the coating; and

8.33 = density of water, expressed as pounds per gallon.

B. The VOC content of the coating as applied, expressed as pounds of VOC per gallon of coating solids, shall be determined using Equation (2) as follows:

$$B_S = \frac{D_C \times W_O}{V_S} \quad (2)$$

Where:

B_S = VOC content of the coating as applied, expressed as pounds of VOC per gallon of coating solids;

D_C = density of coating as applied, expressed as pounds per gallon;

W_O = weight fraction of regulated VOC in the coating, as applied. This value does not include the weight fraction of water or exempt compounds; and

V_S = volume fraction of solids in the coating, as applied.

C. The VOC content of the coating as applied, expressed as pounds of VOC per pound of coating solids, shall be determined using Equation (3) as follows:

$$B_{MWS} = \frac{D_C \times W_O}{D_C \times W_S} \quad (3)$$

Where:

B_{MWS} = VOC content of the coating as applied, expressed as pounds of VOC per pound of coating solids;

D_C = density of coating as applied, expressed as pounds per gallon;

W_O = weight fraction of regulated VOC in the coating, as applied. This value does not include the weight fraction of water or exempt compounds; and

W_S = weight fraction of solids in the coating, as applied.

2. Equivalent emission limits. Emission limits expressed as pounds of VOC per gallon of coating (minus water and exempt compounds) shall be converted to an equivalent emission limit expressed as pounds of VOC per gallon of coating solids using Equation (4) as follows:

$$L_S = \frac{L}{\left(1 - \frac{L}{7.36} \right)} \quad (4)$$

Where:

L_S = emission limit expressed as pounds of VOC per gallon of coating solids;

L = emission limit expressed as pounds of VOC per gallon of coating (minus water and exempt compounds); and

7.36 = average density of solvents, in pounds per gallon, used to originally establish the emission limits.

3. Weighted averaging.

A. The daily volume-weighted average VOC content of all coatings used in a surface coating unit, expressed as pounds of VOC per gallon of coating (minus water and exempt compounds), shall be calculated using Equation (5) as follows:

$$DAVG_{VW} = \frac{\sum_{i=1}^n (A_i \times B_i)}{C} \quad (5)$$

Where:

$DAVG_{VW}$ = daily volume-weighted average VOC content, expressed as pounds of VOC per gallon of coating (minus water and exempt compounds);

A = daily gallons of each coating used (minus water and exempt compounds) in a surface coating unit;

B = VOC content of the coating as applied, expressed as pounds of VOC per gallon of coating (minus water and exempt compounds). This is determined by subparagraph (5)(C)1.A. of this rule;

C = total daily gallons of coatings used (minus water and exempt compounds) in a surface coating unit; and

n = number of coatings used in a surface coating unit.

B. The daily volume-weighted average VOC content of all coatings used in a surface coating unit, expressed as pounds of VOC per gallon of coating solids, shall be calculated using Equation (6) as follows:



$$DAVG_{VWS} = \frac{\sum_{i=1}^n (A_{S_i} \times B_{S_i})}{C_S} \quad (6)$$

Where:

DAVG_{VWS} = daily volume-weighted average VOC content, expressed as pounds of VOC per gallon of coating solids;
A_S = daily gallons of coating solids for each coating used in a surface coating unit;
B_S = VOC content of the coating as applied, expressed as pounds of VOC per gallon of coating solids. This is determined by subparagraph (5)(C)1.B. of this rule;
C_S = total daily gallons of coatings solids used in a surface coating unit; and
n = number of coatings used in a surface coating unit.

C. The daily mass-weighted average VOC content of all coatings used in a surface coating unit, expressed as pounds of VOC per pound of coating solids, shall be calculated using Equation (7) as follows:

$$DAVG_{MWS} = \frac{\sum_{i=1}^n (A_{MWS_i} \times B_{MWS_i})}{C_{MWS}} \quad (7)$$

Where:

DAVG_{MWS} = daily mass-weighted average VOC content, expressed as pounds of VOC per pound of coating solids;
A_{MWS} = daily pounds of coating solids for each coating used in a surface coating unit;
B_{MWS} = VOC content of the coating as applied, expressed as pounds of VOC per pound of coating solids. This is determined by subparagraph (5)(C)1.C. of this rule;
C_{MWS} = total daily pounds of coatings solids used in a surface coating unit; and
n = number of coatings used in a surface coating unit.

D. The monthly volume-weighted average VOC emission rate of an electrodeposition primer, expressed as pounds of VOC per gallon of coating solids deposited, shall be determined using Equation (8) as follows:

$$MAVG_{VWS} = \frac{\sum_{i=1}^n L_{C_i} D_{C_i} W_{O_i} + \sum_{j=1}^m L_{D_j} D_{D_j}}{\sum_{i=1}^n L_{C_i} V_{S_i}} \times [1 - E/100] \quad (8)$$

Where:

MAVG_{VWS} = monthly volume-weighted average VOC emission rate of the electrodeposition primer, expressed as pounds of VOC per gallon of coating solids deposited;
L_C = monthly volume of each coating consumed, as received, expressed as gallons;
D_C = density of each coating as received, expressed as pounds per gallon;
W_O = weight fraction of VOC in each coating, as received;
L_D = monthly volume of each type of VOC dilution solvent added to the coating, expressed as gallons;
D_D = density of each type of VOC dilution solvent added to the coating, expressed as pounds per gallon;
V_S = volume fraction of solids in each coating as received, expressed as gallons of solids per gallon of coating;
E = overall control system efficiency;
n = number of coatings used; and
m = number of VOC dilution solvents used.

E. The monthly volume-weighted average VOC content of all coatings used in a surface coating unit, expressed as pounds of VOC per gallon of coating (minus water and exempt compounds), shall be calculated using Equation (9) as follows:

$$MAVG_{VW} = \frac{\sum_{i=1}^n (A_i \times B_i)}{C} \quad (9)$$

Where:

MAVG_{VW} = monthly volume-weighted average VOC content as applied, expressed as pounds of VOC per gallon of coating (minus water and exempt compounds);
A = monthly gallons of each coating used (minus water and exempt compounds) in a surface coating unit;
B = VOC content of the coating as applied, expressed as pounds of VOC per gallon of coating (minus water and exempt compounds), as delivered to the coating applicator. This is determined by subparagraph (5)(C)1.A. of this rule;

C = total monthly gallons of coatings used (minus water and exempt compounds) in a surface coating unit; and
n = number of coatings used in a surface coating unit.

4. The required control system efficiency shall be determined using Equation (10) as follows:

$$R = \left[\frac{(DAVG_{VWS} - L_S)}{DAVG_{VWS}} \right] \times 100 \quad (10)$$

Where:

R = required control system efficiency;
DAVG_{VWS} = daily volume-weighted average VOC content of all coatings used in a surface coating unit, expressed as pounds of VOC per gallon of coating solids, per subparagraph (5)(C)3.B. of this rule; and
L_S = emission limits expressed as pounds of VOC per gallon of coating solids, per paragraph (5)(C)2. of this rule.

AUTHORITY: section 643.050, RSMo Supp. 2010. Original rule filed Dec. 15, 1978, effective July 12, 1979. Amended: Filed March 13, 1980, effective Sept. 12, 1980. Amended: Filed Aug. 15, 1983, effective Jan. 13, 1984. Amended: Filed Dec. 13, 1983, effective Jan. 13, 1984. Rescinded and readopted: Filed June 30, 1989, effective Nov. 26, 1989. Amended: Filed May 19, 2000, effective Jan. 30, 2001. Amended: Filed Nov. 30, 2010, effective Aug. 30, 2011.*

**Original authority: 643.050, RSMo 1965, amended 1972, 1992, 1993, 1995.*

10 CSR 10-5.340 Control of Emissions From Rotogravure and Flexographic Printing Operations

PURPOSE: This rule restricts volatile organic compound emissions from rotogravure and flexographic printing operations including flexible package printing operations.

(1) Applicability.

(A) This rule shall apply throughout St. Louis City and Jefferson, St. Charles, Franklin, and St. Louis Counties.

(B) This rule applies to installations with at least one (1) of the following:

1. Uncontrolled potential emissions equal to or greater than two hundred fifty kilograms (250 kg) per day or one hundred (100) tons per twelve (12)-consecutive-month period of volatile organic compounds (VOC) from the combination of rotogravure and flexographic printing presses. The uncontrolled potential emissions are the potential



emissions (as defined) plus the amount by weight of VOCs whose emission into the atmosphere is prevented by the use of air pollution control devices;

2. Individual flexible package printing press(es) with the potential to emit VOCs in an amount equal to or greater than twenty-five (25) tons per twelve (12)-consecutive-month period; and

3. Flexible package printing operations that have actual VOC emissions, including related cleaning activities, before consideration of controls, of at least three (3) tons per twelve (12)-month rolling period. Once an installation exceeds this applicability level, it shall remain subject to this rule even if its actual emissions drop below this applicability level until it can demonstrate, to the satisfaction of the director, that the total actual VOC emissions from flexible package printing operations including related cleaning activities, is less than three (3) tons per twelve (12)-month rolling period for sixty (60) consecutive months.

(2) Definitions. Definitions of certain terms specified in this rule may be found in 10 CSR 10-6.020.

(3) General Provisions.

(A) VOC Emission Control for Flexographic and Rotogravure Printing Presses. Each source that satisfies the applicability requirement of paragraph (1)(B)1. of this rule shall meet one (1) of the following:

1. No owner or operator shall use or permit the use of any of the following printing presses unless they are equipped with a control device. The control device shall remove, destroy, or prevent the emission of VOCs into the ambient air by at least the percentage indicated by weight of the uncontrolled VOC emissions on a daily weighted basis.

Printing Press	Percentage
Flexographic	60
Publication Rotogravure	75
Other Rotogravure	65

or

2. Low solvent technology may be used to achieve VOC emission reductions instead of the methods in paragraph (3)(A)1. of this rule. If low solvent technology is used, the following limits must be met for each press:

A. For waterborne inks, the volatile portion of the ink as applied to the substrate must contain no more than twenty-five percent (25%) by volume of VOC; and

B. For water-based or high solids inks, the ink as applied to the substrate must be at least sixty percent (60%) by volume non-VOC material.

(B) VOC Emission Control for Flexible Package Printing Presses. Each source that satisfies the applicability requirement of paragraph (1)(B)2. of this rule shall meet one (1) of the following:

1. No owner or operator shall use or permit the use of any of the following flexible packaging printing presses unless they are equipped with a control device. The control device shall remove, destroy, or prevent the emission of VOCs into the ambient air by at least the percentage indicated by weight of the uncontrolled VOC emissions on a daily weighted basis.

Flexible Package Printing Press First Installed	VOC Control Device First Installed	VOC Control Percentage
Prior to March 14, 1995	Prior to March 1, 2012	65
Prior to March 14, 1995	On or after March 1, 2012	70
On or after March 14, 1995	Prior to March 1, 2012	75
On or after March 14, 1995	On or after March 1, 2012	80

or

2. Low solvent technology may be used to achieve VOC emission reductions instead of the methods in paragraph (3)(B)1. of this rule. If low solvent technology is used, all inks, coatings, and adhesives combined must meet one (1) of the following limits for each press:

A. Contain no more than 0.8 pounds of VOC per pound solids applied; or

B. Contain no more than 0.16 pounds of VOC per pound materials applied.

(C) Press Cleaning. For the purpose of this rule, a cleaning operation is any activity involving the cleaning of a press or press parts or removal of dried ink from areas around a press including the off-line cleaning of inks, coatings, and adhesives from press parts that have been removed from the press for cleaning. It does not include the use of parts washers or cold cleaners for purposes other than removing inks, coatings, or adhesives or the use of janitorial supplies (e.g., detergents or floor cleaners) to clean areas around a press. For sources meeting any of the applicability requirements of subsection (1)(B) of this rule, no owner or operator of any applicable printing press shall perform a cleaning operation that uses cleaning solvents containing VOCs unless—

1. The cleaning solvents are kept in tightly-covered tanks or containers during transport and storage;

2. The used cleaning cloths contaminat-

ed with the cleaning solvents are placed in tightly-closed containers while awaiting off-site transportation. The cleaning cloths shall be properly cleaned and disposed of; and

3. An owner or operator may use an alternate method for reducing cleaning solvent VOC emissions, including the use of low VOC cleaning solvents, if the owner or operator shows the emission reduction is equal to or greater than paragraphs (3)(C)1. and 2. of this rule. This alternate method must be approved by the director.

(4) Reporting and Record Keeping. All owners and operators subject to this rule shall maintain records as required by this section to determine continuous compliance with this rule. These records shall be kept for at least five (5) years or longer if enforcement action is pending. These records shall be available immediately upon request for review by the Department of Natural Resources' personnel and other air pollution control agencies upon presentation of proper credentials.

(A) For owners or operators using an add-on control device(s) to meet the requirements of paragraph (3)(A)1. or (3)(B)1. of this rule, the following parameters shall be monitored and recorded to determine compliance with the applicable provisions of this rule:

1. Operating temperature of all VOC destruction devices monitored on a continuous basis while a connected printing press is operating and logged at least once every fifteen (15) minutes. The operating temperature is the gas temperature upstream of the catalyst bed for catalytic oxidizers and the oxidizer operating temperature for thermal and regenerative oxidizers;

2. VOC breakthrough on a carbon adsorption unit on a continuous basis;

3. Results of all emissions testing and inspections of control equipment as required in section (5) of this rule when performed;

4. Maintenance, repairs, and malfunction of any air pollution control equipment when performed;

5. The cumulative amount of VOC recovered during a calendar month for all VOC recovery equipment; and

6. Any other monitoring parameter required by the director to determine compliance with paragraph (3)(A)1. or (3)(B)1. of this rule.

(B) For owners or operators meeting the requirements of paragraphs (3)(A)2. and (3)(B)2. of this rule, for each ink formulation used, the following shall be recorded for each press to determine continuous compliance with the applicable provisions of this rule:



1. Volume-weighted ink VOC content in percent by volume for each ink formulation as applied on a monthly basis;

2. Results of ink testing as required in section (5) of this rule when performed, manufacturer's formula specification sheet, or Material Safety Data Sheets (MSDS) for each ink purchased; and

3. Any other information required by the director to determine compliance with paragraph (3)(A)2. or (3)(B)2. of this rule.

(C) For owners and operators using low solvent technology without the use of control equipment to meet the requirements of paragraphs (3)(A)2. and (3)(B)2. of this rule, and for whom subsection (4)(B) of this rule does not apply, the following shall be recorded in addition to the records required by subsection (4)(B) of this rule to determine daily compliance with the applicable provisions of this rule:

1. Ink usage in gallons for each ink formulation as applied on a daily basis for each press;

2. Volume-weighted density of VOCs in ink in pounds per gallon for each ink formulation as applied on a daily basis;

3. Volume-weighted average of the VOC content of each ink formulation as applied in percent by volume for each press on a daily basis;

4. Ink water content in percent by volume for each ink formulation as applied on a daily basis for each press; and

5. Ink exempt solvent content in percent by volume for each ink formulation as applied on a daily basis for each press.

(5) Test Methods.

(A) Testing and compliance demonstrations for the emission limits of paragraph (3)(A)1. or (3)(B)1. of this rule shall follow the procedures contained in 10 CSR 10-6.030(14)(A) and 10 CSR 10-6.030(20). The averaging time for these tests shall be three (3) one (1)-hour tests. These procedures will determine control device capture efficiency and destruction efficiency. Control device testing will be required as the director determines necessary to verify the capture and destruction efficiencies. At a minimum, an initial emission test shall be performed after any required control equipment is installed. The emission limits of paragraphs (3)(A)1. or (3)(B)1. of this rule shall not have been met until compliance has been verified at least once through this testing. Testing shall also be required within one hundred eighty (180) days after significant modifications to any control equipment required by this rule. Significant modifications include any repairs or changes that might substantially alter or

affect the overall control efficiency. The oxidizer operating temperature or the temperature of the gas upstream of the catalyst bed monitored and recorded in accordance with paragraph (4)(A)1. of this rule shall be used as the operating parameter for determining continuous compliance. These temperatures shall be monitored with an accuracy of the greater of plus or minus three-fourths percent ($\pm 0.75\%$) of the temperature being measured expressed in degrees Celsius or two and one-half degrees Celsius ($2.5\text{ }^{\circ}\text{C}$). The operating parameter temperatures shall be computed as the time-weighted average of the temperature values recorded during the test. The owner or operator must maintain the oxidizer at a three (3)-hour average temperature equal to or greater than a temperature fifty degrees Fahrenheit ($50\text{ }^{\circ}\text{F}$) below the average temperature observed during the most recent stack test to demonstrate continuous compliance.

(B) Testing and compliance demonstrations for the emission limits of paragraph (3)(A)2. or (3)(B)2. of this rule shall follow the procedures contained in 10 CSR 10-6.030 subsections (14)(C) and (D), respectively. These procedures will determine the VOC content of inks. Ink testing will be required as the director determines necessary to verify the manufacturers' formula specifications. Ink manufacturer's formula specifications or MSDS shall be used to determine compliance.

(C) Control Device Inspection. For catalytic oxidizers, the catalyst bed material shall be inspected annually for general catalyst condition and any signs of potential catalyst depletion. The owner or operator shall also collect a representative sample of the catalyst from the oxidizer, per manufacturer's recommendations, and have it tested to evaluate the catalyst's capability to continue to function at or above the required control efficiency. An evaluation of the catalyst bed material shall be conducted whenever the results of the inspection indicate signs of potential catalyst depletion or poor catalyst condition based on manufacturer's recommendations, but not less than once per year.

*AUTHORITY: section 643.050, RSMo 2000. * Original rule filed March 13, 1980, effective Sept. 12, 1980. Amended: Filed Nov. 10, 1981, effective May 13, 1982. Amended: Filed Oct. 4, 1988, effective March 11, 1989. Amended: Filed July 15, 1991, effective Feb. 6, 1992. Amended: Filed Nov. 30, 2010, effective Aug. 30, 2011.*

**Original authority: 643.050, RSMo 1965, amended 1972, 1992, 1993, 1995.*

10 CSR 10-5.350 Control of Emissions From Manufacture of Synthesized Pharmaceutical Products

PURPOSE: This rule restricts volatile organic compound emissions from the manufacture of synthesized pharmaceutical products.

(1) Application.

(A) This rule shall apply throughout St. Louis City and Jefferson, St. Charles, Franklin and St. Louis Counties.

(B) This rule applies to all synthesized pharmaceutical manufacturing installations.

(C) This rule applies only to operations including reactors, distillation units, dryers, storage of volatile organic compounds (VOCs), transfer of VOC, extraction equipment, filters, crystallizers and centrifuges that individually and uncontrolled would emit fifteen pounds (15 lbs.) per day or more of VOC.

(D) This rule does not apply to operations used exclusively for chemical or physical analysis or determination of product quality and commercial acceptance (such as research facilities, pilot plant operations and laboratories) unless—

1. The operation is an integral part of the production process; or

2. The emissions from the operation exceed three hundred sixty-three kilograms (363 kg) (eight hundred 800 lbs.) in any calendar month.

(2) Definitions of certain terms specified in this rule may be found in 10 CSR 10-6.020.

(3) Operating Equipment and Operating Procedure Requirements.

(A) The owner or operator of a synthesized pharmaceutical manufacturing facility subject to this rule shall control the VOC emissions from all reactors, distillation operations, crystallizers, centrifuges and vacuum dryers by the use of surface condensers or equivalent controls.

1. If surface condensers are used, with vapor pressures as measured at twenty degrees Celsius ($20\text{ }^{\circ}\text{C}$), the condenser outlet gas temperature must not exceed—

A. Minus twenty-five degrees Celsius ($-25\text{ }^{\circ}\text{C}$), when condensing VOC of vapor pressure greater than 40.0 kilopascals (kPa) (5.8 psi);

B. Minus fifteen degrees Celsius ($-15\text{ }^{\circ}\text{C}$), when condensing VOC of vapor pressure greater than 20.0 kPa (2.9 psi);

C. Zero degrees Celsius ($0\text{ }^{\circ}\text{C}$), when condensing VOC of vapor pressure greater than 10.0 kPa (1.5 psi);



D. Ten degrees Celsius (10 °C), when condensing VOC of vapor pressure greater than 7.0 kPa (1.0 psi); or

E. Twenty-five degrees Celsius (25 °C), when condensing VOC of vapor pressure greater than 3.50 kPa (0.5 psi).

2. If equivalent controls are used, the VOC emissions must be reduced by an amount equivalent to the reductions achieved in paragraph (3)(A)1. Equivalent controls may not be used unless approved by the director.

(B) The owner or operator of a synthesized pharmaceutical manufacturing installation subject to this rule shall reduce the VOC emissions from all air dryers and production equipment exhaust systems—

1. By at least ninety percent (90%) if emissions are one hundred fifty (150) kg/day, three hundred thirty (330) lbs./day or more of VOC; or

2. To fifteen (15) kg/day thirty-three (33) lbs./day or less if emissions are less than one hundred fifty (150) kg/day, three hundred thirty (330) lbs./day of VOC.

(C) The owner or operator of a synthesized pharmaceutical manufacturing installation subject to this rule shall—

1. Provide a vapor recovery system or equivalent control that is ninety percent (90%) or more effective in reducing daily average emissions from truck or railcar deliveries to storage tanks with capacities greater than seven thousand five hundred (7,500) liters (two thousand (2,000) gallons) that store VOC with vapor pressures greater than 28.0 kPa (4.1 psi) at twenty degrees Celsius (20 °C); and

2. Install pressure/vacuum conservation vents set at ± 0.2 kPa on all storage tanks that store VOC with vapor pressures greater than 10.0 kPa (1.5 psi) at twenty degrees Celsius (20 °C), unless a more effective control system is used.

(D) The owner or operator of a synthesized pharmaceutical manufacturing installation subject to this rule shall enclose all centrifuges, rotary vacuum filters and other filters having an exposed liquid surface, where the liquid contains VOC and exerts a total VOC vapor pressure of 3.50 kPa (0.5 psi) or more at twenty degrees Celsius (20 °C).

(E) The owner or operator of a synthesized pharmaceutical manufacturing installation subject to this rule shall install covers on all in-process tanks containing a VOC at any time. These covers must remain closed, unless production, sampling, maintenance or inspection procedures require operator access.

(F) The owner or operator of a synthesized pharmaceutical manufacturing installation

subject to this rule shall repair all leaks from which a liquid containing VOC can be observed running or dripping. The repair shall be completed the first time the equipment is off-line for a period of time long enough to complete the repair.

(4) Compliance Determination and Record Keeping.

(A) Compliance with this rule in subsections (3)(A) and (B) and paragraph (3)(C)1. shall be determined by the testing methods referenced in 10 CSR 10-6.030(14)(A).

(B) Owners or operators utilizing add-on control technology shall monitor and record the following parameters continuously while the affected equipment is in operation:

1. Exhaust gas temperature of all incinerators;

2. Temperature rise across a catalytic incinerator bed;

3. VOC breakthrough on a carbon adsorption unit;

4. Exit stream temperature on all condensers; and

5. Any other monitoring device requested by the director.

(C) Records shall be kept on production rates sufficient to determine daily VOC emissions and any equipment test results performed in conjunction with this rule.

(D) Records of all information requested in subsection (4)(B) shall be kept for a period of not less than two (2) years and all these records shall be made available to the director upon his/her request.

(5) Compliance Dates.

(A) The owner or operator of a synthesized pharmaceutical manufacturing installation subject to this rule must submit a final control plan to the director by December 31, 1980, for his/her approval. This plan must include the following:

1. A detailed plan of process modifications; and

2. A time schedule for compliance containing increments of progress and a final compliance date.

(B) Compliance with this rule shall be accomplished by any installation as expeditiously as practicable, but in no case shall final compliance extend beyond December 31, 1982.

*AUTHORITY: section 643.050, RSMo 1994. * Original rule filed March 13, 1980, effective Sept. 12, 1980. Amended: Filed Oct. 4, 1988, effective March 11, 1989.*

**Original authority: 643.050, RSMo 1965, amended 1972, 1992, 1993.*

10 CSR 10-5.360 Control of Emissions From Polyethylene Bag Sealing Operations

PURPOSE: This rule reduces volatile organic compound emissions in the St. Louis metropolitan area as part of the Missouri State Implementation Plan for Ozone.

(1) Application.

(A) This rule shall apply throughout St. Louis City and Jefferson, St. Charles, Franklin and St. Louis Counties.

(B) This rule applies to all installations which have the uncontrolled potential to emit more than one hundred (100) tons per year or two hundred fifty kilograms (250 kg) per day of volatile organic compounds (VOCs) from any polyethylene bag sealing operation. This rule also shall apply to any installation which does not have an allowable VOCs emission limit established under 10 CSR 10-6.060 or legally enforceable state implementation plan revision and which has uncontrolled potential emissions greater than or equal to two hundred fifty kilograms (250 kg) per day or one hundred (100) tons per year. The uncontrolled potential to emit is the potential emissions (as defined) plus the emissions removed by control devices.

(2) Definitions of certain terms specified in this rule may be found in 10 CSR 10-6.020.

(3) Emission Limits. No owner or operator shall use or permit the use of any polyethylene bag sealing operations unless the operations are equipped with a control method that will remove, destroy or prevent discharge into the ambient air a daily average of no less than sixty-five percent (65%) by weight of uncontrolled VOC emissions.

(4) Reporting and Record Keeping.

(A) The owner or operator of a polyethylene bag sealing operation covered by this rule must maintain records consisting of the compositions and amount of sealant used, the amount and type of solvent used, the amount and type of clean-up solvent used and discarded, maintenance and repairs of air pollution control equipment, results of any emissions testing and all other information necessary to determine daily compliance with this rule. The information shall be made available to the director upon request.

(B) For owners or operators utilizing add-on control technology, the following parameters will be monitored:

1. Exhaust gas temperature of all incinerators;

2. Temperature rise across a catalytic incinerator bed;

3. VOC breakthrough on a carbon adsorption unit; and



4. Any other parameter requested by the director.

(C) Inventory records of all information required in subsections (4)(A) and (B) shall be kept for a period of not less than two (2) years and all those records shall be made available to the director upon his/her request.

(D) For add-on control technology, compliance with this rule shall be determined by the testing methods referenced in 10 CSR 10-6.030(14)(A).

(5) Compliance Schedules.

(A) The owner or operator of a polyethylene bag sealing operation achieving compliance with section (3) of this rule through the use of add-on control equipment must meet the applicable increments of progress in the following schedule:

1. Award contracts, issue purchase orders or otherwise order the emission control system and process equipment before April 1, 1983;
2. Complete installation of the emission control equipment before March 1, 1984; and
3. Achieve final compliance, determined in accordance with subsection (4)(D) before April 1, 1984.

(B) The owner or operator of a polyethylene bag sealing operation achieving compliance with section (3) of this rule through the use of exempted solvents must achieve—

1. A five percent (5%) reduction in emissions by March 31, 1983;
2. A thirty-five percent (35%) reduction in emissions by March 31, 1984; and
3. A final compliance by March 31, 1985.

(C) In the event that an installation utilizing exempted solvents cannot achieve the emissions reduction required in section (3) of this rule, final compliance through the use of add-on control equipment shall be no later than March 31, 1985.

(6) Seasonal Afterburner Exemption.

(A) The owner or operator of an installation who achieves compliance with this rule through the use of a natural gas-fired afterburner may discontinue operation of the afterburner for a period not longer than six (6) consecutive months beginning October 15 and ending April 15 if—

1. The afterburner is not used to control odors; and
2. The discontinuance of operation will not violate local ordinances.

(B) If, in the opinion of the director, the discontinued operation of an afterburner causes a nuisance, the afterburner shall be operated in a manner prescribed by the director.

AUTHORITY: section 643.050, RSMo 1994. Original rule filed June 14, 1982, effective*

Nov. 11, 1982. Amended: Filed Oct. 4, 1988, effective March 11, 1989.

**Original authority: 643.050, RSMo 1965, amended 1972, 1992, 1993.*

10 CSR 10-5.370 Control of Emissions From the Application of Deadeners and Adhesives

PURPOSE: This rule restricts emissions of volatile organic compounds from the application of deadeners and adhesives.

(1) Applicability.

(A) This rule shall apply throughout St. Louis City and Jefferson, St. Charles, Franklin and St. Louis Counties.

(B) This rule applies to all installations which have the uncontrolled potential to emit more than one hundred (100) tons per year or two hundred fifty kilograms (250 kg) per day of volatile organic compounds (VOCs) from the application of automotive underbody deadeners and adhesives. This rule shall also apply to any installation which does not have an allowable VOC emission limit established under 10 CSR 10-6.060 or legally enforceable state implementation plan revision and which has uncontrolled potential emissions greater than or equal to two hundred fifty kilograms per day (250 kg/day) or one hundred (100) tons per year. The uncontrolled potential to emit is the potential emissions (as defined) plus the emissions removed by control devices.

(2) Definitions of certain terms specified in this rule may be found in 10 CSR 10-6.020.

(3) General Provisions.

(A) No person shall emit to the atmosphere any VOC from the application of automotive underbody deadeners and adhesives in excess of the emission limit in section (4).

(B) The emission limit contained in section (4) shall be based on a daily weighted average of all deadeners and/or adhesives delivered to the coating applicator.

(4) Emission Limitations and Dates of Compliance.

Application Process	Emission Limit	Dates of Compliance
	lb./gal. Coating (minus water) and non-VOC Organic Compounds	
Chrysler Corp. Car—		
Deadeners	2.22	7/31/85

Vinyl Top Adhesives 5.33 7/31/85

(5) Record Keeping.

(A) The owner or operator of a deadener and/or adhesive application covered by this rule shall keep records detailing specific VOC sources as necessary to demonstrate daily compliance. These may include daily records of the amount of deadener and/or adhesive used, the composition of deadener and/or adhesive, solvent used, solvent discarded and production levels.

(B) Records, such as daily production rates, may be substituted for actual daily used measurements provided the owner submits a demonstration approvable by the director that these records are adequate for the purpose of this rule.

(C) Records of all information required under subsections (5)(A) and (B) shall be kept for a period of not less than two (2) years and all the records shall be made available to the staff director upon request.

(6) Compliance Method. Compliance with this rule shall be demonstrated using the test method referenced at 10 CSR 10-6.030(14)(C) to determine deadener composition. The deadener manufacturer's formulation data may be used to demonstrate compliance, but only after confirmation by the test method previously referenced.

AUTHORITY: section 643.050, RSMo 1994. Original rule filed Aug. 15, 1983, effective Jan. 13, 1984. Amended: Filed June 4, 1985, effective Oct. 26, 1985. Amended: Filed Oct. 4, 1988, effective March 11, 1989.*

**Original authority: 643.050, RSMo 1965, amended 1972, 1992, 1993.*

10 CSR 10-5.375 Motor Vehicle Emission Inspection Waiver
(Rescinded August 30, 2007)

AUTHORITY: section 307.366.4, RSMo Supp. 1999. Original rule filed Jan. 14, 1997, effective Aug. 30, 1997. Amended: Filed Aug. 4, 2000, effective March 30, 2001. Rescinded: Filed Jan. 16, 2007, effective Aug. 30, 2007.

10 CSR 10-5.380 Motor Vehicle Emissions Inspection
(Rescinded August 30, 2007)

AUTHORITY: section 643.310.1, RSMo 2000. Original rule filed June 14, 1982, effective Jan. 13, 1983. Amended: Filed Aug. 15, 1983, effective Jan. 13, 1984.



Emergency rescission and rule filed Aug. 15, 1994, effective Aug. 28, 1994, expired Dec. 25, 1994. Emergency amendment filed Dec. 12, 1994, effective Dec. 25, 1994, expired April 23, 1995. Rescinded and readopted: Filed July 20, 1994, effective March 30, 1995. Amended: Filed April 17, 1995, effective Nov. 30, 1995. Amended: Filed Dec. 13, 1996, effective July 30, 1997. Amended: Filed May 14, 1999, effective Dec. 30, 1999. Emergency amendment filed Nov. 30, 1999, effective Jan. 1, 2000, expired June 28, 2000. Amended: Filed Dec. 1, 1999, effective July 30, 2000. Amended: Filed May 15, 2002, effective Dec. 30, 2002. Rescinded: Filed Jan. 16, 2007, effective Aug. 30, 2007.

10 CSR 10-5.381 Onboard Diagnostics Motor Vehicle Emissions Inspection

PURPOSE: This rule enacts the provisions of 643.300–643.355, RSMo, and meets the 1990 Federal Clean Air Act Amendments requirement that the ozone state implementation plan contains necessary enforceable measures to maintain the mandatory vehicle emissions inspection and maintenance program. The purpose of the inspection and maintenance program is to reduce vehicle emissions in the St. Louis nonattainment area.

PUBLISHER'S NOTE: The secretary of state has determined that the publication of the entire text of the material which is incorporated by reference as a portion of this rule would be unduly cumbersome or expensive. This material as incorporated by reference in this rule shall be maintained by the agency at its headquarters and shall be made available to the public for inspection and copying at no more than the actual cost of reproduction. This note applies only to the reference material. The entire text of the rule is printed here.

(1) Applicability.

(A) Except as provided in subsection (1)(B) of this rule, subject vehicles include all vehicles operated on public roadways in the geographical area containing the City of St. Louis and the counties of Franklin, Jefferson, St. Charles, and St. Louis, and which are—

1. Registered in the area with the state of Missouri Department of Revenue (MDOR);

2. Leased, rented, or privately owned and are not registered in the geographical area but are primarily operated in the area. A vehicle is primarily operated in the area if at least fifty-one percent (51%) of the vehicle's annual miles are in the area;

3. Owned or leased by federal, state, or local government agencies, and are primarily operated in the geographical area, but are not required to be registered by the state of Missouri; or

4. Owned, leased, or operated by civilian and military personnel on federal installations located within the geographical area, regardless of where the vehicles are registered.

(B) The following vehicles are exempt from this rule:

1. Heavy-duty gasoline-powered and heavy-duty diesel-powered vehicles that receive a gross vehicle weight rating (GVWR) exemption described in subsection (4)(I) of this rule;

2. Light-duty gasoline-powered vehicles and trucks manufactured prior to the 1996 model year and light-duty diesel-powered vehicles and trucks manufactured prior to the 1997 model year;

3. Motorcycles and motortricycles;

4. Vehicles powered exclusively by electric or hydrogen power or by fuels other than gasoline, ethanol (E10 and E85), or diesel;

5. Motor vehicles registered in an area subject to the inspection requirements of 643.300–643.355, RSMo, that are domiciled and operated exclusively in an area of the state not subject to the inspection requirements of 643.300–643.355, RSMo, that receive an out-of-area exemption described in subsection (4)(J) of this rule;

6. New and unused motor vehicles, of model years of the current calendar year and of any calendar year within two (2) years of such calendar year, that have an odometer reading of fewer than six thousand (6,000) miles at the time of original sale by a motor vehicle manufacturer or licensed motor vehicle dealer to the first user;

7. New motor vehicles that have not been previously titled and registered for the four (4)-year period following their model year of manufacture that have an odometer reading of fewer than forty thousand (40,000) miles showing at the first required biennial safety inspection. These vehicles qualify for a mileage-based exemption described in subsection (4)(H) of this rule. Otherwise, such motor vehicles shall be subject to the emissions inspection requirements of subsection (3)(B) of this rule during the same period that the biennial safety inspection is conducted;

8. Motor vehicles driven fewer than twelve thousand (12,000) miles between biennial safety inspections that receive a mileage-based exemption described in subsection (4)(H) of this rule.

A. Prior to October 1, 2009, handwritten MVI-2 safety inspection forms or

printed safety Vehicle Inspection Reports (VIRs) shall be provided by the owner to the department.

(I) The proof of exemption from the emissions inspection requirement shall consist of two (2) vehicle safety inspection reports issued to the owner of the vehicle being exempted.

(II) The first safety inspection report shall have been issued during the vehicle's previous biennial safety inspection. The second safety inspection report shall have been issued during the current biennial inspection cycle, performed within sixty (60) days of the owner's registration request.

(III) Each vehicle safety inspection report must document the odometer reading at the time of the vehicle's biennial safety inspections, and the difference between these two (2) odometer readings shall be no greater than eleven thousand nine hundred ninety-nine (11,999).

B. Beginning October 1, 2009, this exemption shall be issued automatically by licensed emissions inspection stations using the contractor's Missouri Decentralized Analyzer System (MDAS) equipment and lane software;

9. Historic motor vehicles registered pursuant to 301.131, RSMo;

10. School buses;

11. Tactical military vehicles;

12. Visitor, employee, or military personnel vehicles on federal installations provided appointments do not exceed sixty (60) calendar days;

13. Specially constructed vehicles; and

14. Plug-in hybrid electric vehicles (PHEVs).

(2) Definitions.

(A) Plug-in hybrid electric vehicle (PHEV)—A plug-in hybrid electric drive vehicle that is made by a manufacturer, has not been modified from original manufacturer specifications, and can operate solely on electric power and is capable of recharging its battery from an onboard generation source and an off-board electricity source.

(B) Definitions of certain terms specified in this rule, other than those defined in this rule section, may be found in 10 CSR 10-6.020.

(3) General Provisions.

(A) Subject Vehicle Compliance.

1. Private entity vehicle compliance.

A. Motor vehicles subject to this rule shall demonstrate compliance with emissions standards in this rule. Such demonstration shall be made through the test methods specified in section (5) of this rule and be



completed according to the compliance cycle as defined in 10 CSR 10-6.020, the inspection intervals specified in subsection (3)(B) of this rule, and the inspection periods specified in subsection (3)(C) of this rule.

B. Completion of the emissions inspection requirements is necessary for vehicle registration renewal or registration transfer.

C. Failure to complete a vehicle emissions inspection during the compliance cycle or before vehicle registration shall be a violation of this rule. These violations are subject to penalties specified in 643.355.5., RSMo.

2. Public entity vehicle compliance.

A. All subject vehicles owned by federal, state, and local governments shall be emissions inspected according to the compliance cycle as defined in 10 CSR 10-6.020 and the inspection intervals specified in subsection (3)(B) of this rule.

B. All federal agencies shall ensure employee and military personnel vehicles meet the requirements of paragraph (3)(A)2. according to the December 1999 *Interim Guidance for Federal Facility Compliance With Clean Air Act Sections 118(c) and 118(d) and Applicable Provisions of State Vehicle Inspection and Maintenance Programs*. This guidance document is incorporated by reference in this rule, as published by the U.S. Environmental Protection Agency (EPA), Office of Transportation and Air Quality, 2000 Traverwood, Ann Arbor, MI 48105. This rule does not incorporate any subsequent amendments or additions to this guidance document.

C. Failure to complete a vehicle emissions inspection within the compliance cycle as defined in 10 CSR 10-6.020, shall be a violation of this rule. These violations are subject to penalties specified in 643.355.5., RSMo.

3. Vehicle fleets.

A. Vehicle fleets of any size may be emissions inspected by the fleet operator, provided the owners or operators of such vehicle fleets acquire the state contractor's equipment to conduct the emissions inspections.

B. Vehicle fleets using such equipment shall be subject to the same inspection requirements as non-fleet vehicles.

C. Fleet inspection facilities shall be subject to quality assurance evaluations at least as stringent as those performed at public inspection stations.

D. Fleet owners or operators may make repairs to fleet vehicles on-site.

(B) Emissions Inspection Intervals.

1. Subject vehicles manufactured as odd-numbered model year vehicles are

required to be inspected in each odd-numbered calendar year. Subject vehicles manufactured as even-numbered model year vehicles are required to be inspected in each even-numbered calendar year.

2. At the time of registration transfer, subject vehicles are required by 643.315.1., RSMo, to be inspected regardless of the vehicle model year. At the time of registration transfer, prior to the sale of a vehicle, private sellers of vehicles are required to provide the purchaser with an emissions inspection compliance certificate or compliance waiver that is valid for registering the vehicle according to inspection period requirements of subsection (3)(C) of this rule.

(C) Emissions Inspection Periods.

1. An emissions inspection performed on a subject vehicle via the vehicle inspection process described in subsections (3)(H)–(K) of this rule is valid, for the purposes of obtaining registration or registration renewal, for a duration of sixty (60) days from the date of passing inspection or waiver issuance. An emissions inspection provided by a licensed motor vehicle dealer to the purchaser of a used vehicle being sold by the licensed motor vehicle dealer is valid for registration purposes for one hundred twenty (120) days after the date of inspection. Vehicles being sold shall not be subject to another emissions inspection for ninety (90) days after the date of sale or transfer of such vehicle.

2. Reinspections occurring fewer than ninety (90) days after the initial emissions inspection are subject to subsections (3)(J) and (3)(K) of this rule.

3. Reinspections occurring more than ninety (90) days after the initial emissions inspection shall be considered to be an initial emissions inspection as defined in 10 CSR 10-6.020 and are subject to subsection (3)(H) of this rule.

(D) Emissions Inspection Fees.

1. Initial vehicle emissions inspection fee. At the time of an initial emissions inspection, the vehicle owner or driver shall pay no more than twenty-four dollars (\$24) to the licensed emissions inspection station. The inspection station shall determine the forms of payment accepted. Fleet operators inspecting their own fleet vehicles at their own inspection facility are exempt from initial vehicle emissions inspection fees.

2. Vehicle emissions reinspection fee. Each initial vehicle emissions inspection fee shall include one (1) free reinspection, provided that the reinspection is conducted within twenty (20) business days of the initial emissions inspection at the same inspection station that performed the initial inspection.

A. To qualify for one (1) free reinspection, the vehicle owner or driver shall present the previous VIR and the completed repair data sheet described in subsection (4)(D) of this rule to the emissions inspection station that conducted the initial emissions inspection, within twenty (20) business days of the initial emissions inspection. The emissions inspector shall return the previous VIR to the vehicle owner.

B. At the emissions inspection station's discretion, reinspections occurring more than twenty (20) business days after the initial emissions inspection may be performed upon payment of the initial emissions inspection fee to the emissions inspection station.

C. Fleet operators reinspecting their own fleet vehicles at their own inspection facility are exempt from vehicle emissions reinspection fees.

3. Emissions inspection oversight fee.

A. Licensed emissions inspection stations shall pre-pay the state two dollars and fifty cents (\$2.50) for each passing emissions inspection that they intend to perform. The fee shall be paid to the Director of Revenue and submitted to the Missouri State Highway Patrol (MSHP). The MSHP shall deposit the fee into the "Missouri Air Emissions Reduction Fund" as established by 643.350, RSMo. The MSHP will then use the contractor's vehicle inspection database (VID) to credit the number of pre-paid emissions inspections to the licensed emissions inspection station's MDAS. The MDAS shall deduct one (1) emissions credit authorization for each passing emissions inspection.

B. Licensed inspection stations are required to maintain a sufficient positive quantity of emissions credits on their analyzer(s) to prevent having to turn away motorists who have requested an inspection.

C. At the time that a licensed emissions inspection station discontinues operation or chooses not to renew its emissions inspection license, the department will issue the licensed emissions inspection station a full refund of two dollars and fifty cents (\$2.50) for each paid emissions inspection credit authorization that remains on the licensed emissions inspection station's MDAS. The department shall withdraw the pre-paid fees from the "Missouri Air Emissions Reduction Fund" as established by 643.350, RSMo, and send the existing balance of the pre-paid fees to the licensed inspection station. The MSHP will then delete all pre-paid emissions inspections from the inspection equipment.

4. Vehicle inspection database (VID) service fee. Licensed emissions inspection



stations shall pay the contractor three dollars and forty-five cents (\$3.45) for each paid emissions inspection that they perform. The fee shall be made payable to the contractor and submitted monthly according to the terms of the contract between the contractor and the licensed emissions inspection stations. The contractor shall reimburse any VID service fee overcharges to an inspection station within sixty (60) days of the date of notification by the emissions inspection station manager.

(E) Emissions Inspection Equipment.

1. Performance features of emissions inspection equipment. The MDAS is required for performing any emissions inspections on subject vehicles. The MDAS shall meet or exceed all applicable EPA requirements.

A. The MDAS shall be capable of testing all subject vehicles as required by paragraph (3)(E)3. of this rule. The emissions inspection equipment shall be updated as needed to accommodate new technology vehicles. The updates shall be provided by the state's contractor without cost to the state or the licensed emissions inspection stations.

B. At a minimum, the MDAS shall be—

(I) Automated to the highest degree commercially available to minimize the potential for intentional fraud and/or human error;

(II) Secure from tampering and/or abuse; and

(III) Based upon written specifications.

2. Functional characteristics of emissions inspection equipment. The MDAS shall be composed of vehicle inspection equipment controlled by a computer.

A. The MDAS shall automatically—

(I) Make pass/fail decisions for all computer-determined aspects of the emissions inspection as described in paragraphs (5)(B)3. through (5)(B)5. of this rule;

(II) Record test data to the MDAS hard drive and the contractor's VID;

(III) Conduct regular self-testing of recording accuracy;

(IV) Perform electrical calibration and system integrity checks before each test, as applicable; and

(V) Initiate immediate system lock-outs for—

(a) Tampering with security aspects of the MDAS;

(b) Fraudulent inspection activity;

(c) Exceeding the limit of offline emissions inspections established by the department and the MSHP; or

(d) Failing the onboard diagnostics (OBD) verification tool self-check.

B. The MDAS shall include a telecommunications data link to the contractor's VID as specified in the contract between the department and the contractor. Emissions inspection information shall be uploaded immediately to the VID via this telecommunications data link according to subparagraphs (3)(F)2.C. and (3)(F)5.D. of this rule so that all inspection information can be electronically verified by the department, the MSHP, and the MDOR using the contractor-provided internet solution.

C. The MDAS shall ensure accurate data collection by limiting, cross-checking, and/or confirming manual data entry.

3. OBD test equipment. OBD test equipment shall meet the standards specified in 40 CFR 85.2231, which is incorporated by reference in this rule, as published by the EPA, Office of Transportation and Air Quality, 2000 Traverwood, Ann Arbor, MI 48105 on April 5, 2001. This rule does not incorporate any subsequent amendments or additions to 40 CFR 85.2231. The OBD test equipment shall be able to communicate with all known OBD protocols and connect to and communicate with a minimum of ninety-eight percent (98%) of all subject vehicles.

4. All emissions inspection equipment shall meet the quality control requirements described in paragraph (3)(L)5. of this rule. Newly acquired emissions inspection equipment and all applicable MDAS software updates shall be subject to the acceptance test procedures administered by the department's contractor to ensure compliance with the emissions inspection program specifications.

(F) Emissions Inspection Station Requirements.

1. Premises.

A. Each licensed emissions inspection station shall have an emissions inspection area within an enclosed building of sufficient length, width, and height to accommodate a full size light-duty vehicle or light-duty truck.

B. The licensed emissions inspection station shall be in compliance with applicable city, county, and state regulations relating to zoning, merchant licensing, fictitious names, and retail sales tax numbers.

C. The emissions inspection area shall be sufficiently lighted, adequately heated and cooled, and properly ventilated to conduct an emissions inspection.

2. Equipment. Each licensed emissions inspection station shall have the following equipment located at or near the inspection area:

A. Scraper. The scraper may be used to remove old windshield stickers;

B. Emissions inspection equipment, including hardware, software, forms, and

windshield stickers. The equipment hardware, as described under the definition for Missouri Decentralized Analyzer System found in 10 CSR 10-6.020, shall be purchased or leased by the inspection station from the state's contractor. All of the equipment must be present and functional. The equipment software shall be provided with the MDAS equipment purchase or lease and updated periodically at no cost to the licensed inspection stations. The forms described in section (4) of this rule shall be provided by the MDAS software. The windshield stickers described in section (4) of this rule shall be provided by the contractor at no cost to licensed emissions inspection stations; and

C. Telecommunications. The station shall provide dedicated data transmission capabilities for the emissions inspection equipment to stay online with the contractor's VID. The telecommunications capabilities may be either high-speed or low-speed. The cost of this telecommunications service, including initial installation and ongoing maintenance, is the responsibility of the licensed emissions inspection station.

3. Personnel.

A. Each licensed emissions inspection station shall have a minimum of one (1) licensed emissions inspector on duty during all business days during the station's hours of inspection, except for short periods of time due to illness or annual vacation.

B. Each licensed emissions inspection station will designate, on the station license application, the emissions inspection station manager who will be in charge of emissions inspections. The emissions inspection station manager shall be responsible for the daily operation of the station and will ensure that complete and proper emissions inspections are being performed. The emissions inspection station manager shall be present at the licensed emissions inspection station during all business days during the station's hours of inspection, except for short periods of time due to illness or annual vacation.

C. If the station is without at least one (1) emissions inspector or one (1) emissions inspection station manager, then the station shall be prohibited from conducting emissions inspections.

4. Licensing.

A. Any person, firm, corporation, partnership, or governmental entity requesting an emissions inspection station license shall submit a completed emissions inspection station application to the department or to the MSHP.



B. A vehicle emissions inspection station license shall be valid for twelve (12) months from the date of issuance. A completed emissions inspection station license application shall be accompanied by a check or money order for one hundred dollars (\$100) made payable to the Director of Revenue and submitted to either the Missouri Department of Natural Resources, Air Pollution Control Program, Attn: Inspection and Maintenance, PO Box 176, Jefferson City, MO 65102-0176 or the MSHP. Under no circumstances will cash be accepted for the license fee.

C. For the purposes of emissions and safety inspection license synchronization, a vehicle emissions inspection station license may be valid for fewer than twelve (12) months from the date of issuance. A completed emissions inspection station license application shall be accompanied by a check or money order made payable to the Director of Revenue and submitted to either the Missouri Department of Natural Resources, Air Pollution Control Program, Attn: Inspection and Maintenance, PO Box 176, Jefferson City, MO 65102-0176 or the MSHP. The check or money order shall submit the pro-rated fee of eight dollars and thirty-three cents (\$8.33) times the number of months between the month of the application, including the month of application, for the emissions inspection license and the month that the safety inspection license will be renewed. Under no circumstances will cash be accepted for the license fee.

D. Except as provided by subparagraph (3)(F)4.C. of this rule, station licenses are valid for a period of one (1) year from the date of issuance, unless the license is suspended or revoked by the department or the MSHP. The owners of licensed emissions inspection stations that are renewing their emissions inspection license shall complete the requirements of subparagraph (3)(F)4.B. of this rule.

E. Along with the application fee, applicants shall submit the following information on a form provided by either the department or the MSHP:

- (I) Proof of liability insurance;
- (II) The business's federal and state taxpayer identification number;
- (III) The physical address of the inspection station;
- (IV) The mailing address, if different from physical address, of the inspection station;
- (V) The phone number and, if available, fax number of the inspection station;
- (VI) The last name, first initial,

and, if already licensed by the MSHP, the inspector number of the licensed emissions inspector(s) employed by that station; and

(VII) The first and last name of the emissions inspection station manager(s) employed by that station.

F. No license issued to an emissions inspection station may be transferred or used at any other location. Any change in ownership or location shall void the current station license. The department must be notified immediately when a change of ownership or location occurs or when a station discontinues operation. Businesses that change locations will be charged another license fee for the cost of the new license. Businesses that change owners will be treated as new licensees and charged another license fee for the new license.

G. When an emissions inspection station license has been suspended or revoked, or when a station discontinues operation, all emissions inspection supplies including, but not limited to, blank windshield stickers described in section (4) of this rule and the emissions inspection station sign described in subparagraph (3)(F)7.C., shall be released on demand to the department or the MSHP. The failure to account for all emissions inspection supplies will be sufficient cause for the department or the MSHP to not reinstate an emissions inspection station license.

H. No emissions inspection station license will be issued to a spouse, child or children, son/daughter-in-law, employee, or any person having an interest in the business for the privilege to conduct emissions inspections at the same location or in close proximity to the location of an emissions inspection station whose license is under suspension or revocation, unless the applicant can provide reasonable assurance that the licensee under suspension or revocation will not be employed, manage, assist in the station operation, or otherwise benefit financially from the operation of the business in any way.

5. Operations.

A. All emissions inspections must be conducted at the licensed emissions inspection station in the approved emissions inspection area described in paragraph (3)(F)1. of this rule.

B. The inspection of a vehicle shall be made only by an individual who has a current, valid emissions inspector license. No person without a current, valid emissions inspector license shall issue an emissions VIR or a windshield sticker. No owner, operator, or employee of an inspection station shall furnish, loan, give, or sell an emissions VIR or windshield sticker to any person except those entitled to receive it because

their vehicle has passed the emissions inspection.

C. If an emissions inspector or an emissions inspection station manager or owner resigns or is dismissed, the emissions inspection station manager or station owner shall report these changes to the department and the MSHP immediately or within two (2) business days. The emissions inspection station manager or station owner shall complete an amendment form to inform the department and the MSHP of these changes in personnel.

D. All current manuals, bulletins, or other rules issued by the department must be read by the station owner or operator and each emissions inspector. These resources must be available, either in printed or electronic form, at all times for ready reference by emissions inspectors, department, and MSHP staff.

E. If the department is asked to settle a difference of opinion between a vehicle owner and an emissions inspection station manager or emissions inspector concerning the inspection standards and procedures, the decisions of the department concerning emissions inspection standards and procedures will be final.

F. Emissions inspection station operators are permitted to advertise as official emissions inspection stations.

6. Hours of operation.

A. The normal business hours and business days of every public inspection station shall be at least eight (8) continuous hours per day, five (5) days per week, excluding all state holidays.

B. Emissions inspectors are obligated to conduct emissions inspections and reinspections of vehicles during normal business hours.

(I) A vehicle shall be emissions inspected within a two (2)-hour period after being presented unless other vehicles are already being emissions inspected.

(II) A reinspection must begin within one (1) hour when a vehicle is presented during the twenty (20) consecutive-day period for reinspections excluding Saturdays, Sundays, and state holidays.

7. Display of inspection station and inspector licenses, sign, and poster.

A. The department or the department's designee shall provide each licensed emissions inspection station with one (1) station license certificate. The station license certificate shall be framed under clean glass or plastic and displayed in a conspicuous location discernible to those presenting vehicles for emissions inspections.

B. The department or the department's designee shall provide each licensed



emissions inspector with one (1) inspector license certificate. The emissions inspector licenses must be framed under clean glass or plastic and displayed in a conspicuous location discernible to those presenting vehicles for emissions inspections.

C. The department or the department's designee shall provide each licensed emissions inspection station one (1) official sign, made of metal or other durable material, to designate the station as an official emissions inspection station. The sign designating the station as an emissions inspection station shall be displayed in a location visible to motorists driving past the inspection station. Additional signs may be purchased for a fee equal to the cost to the state for each additional sign.

D. The department or the department's designee shall provide each licensed emissions inspection station with one (1) poster that informs the public that required repairs or corrections need not be made at that inspection station. The poster must be displayed in a conspicuous location discernible to those presenting vehicles for emissions inspections. Additional posters may be purchased for a fee equal to the cost to the state for each additional poster.

(G) Emissions Inspector Requirements.

1. Every person requesting a vehicle emissions inspector license shall submit a completed vehicle emissions inspector application to the department or the department's designee. The emissions inspector application shall include a facial photograph with dimensions of two inches (2") in length and two inches (2") in width.

2. All vehicle emissions inspectors must be at least eighteen (18) years of age and able to read and understand documents written in English. The emissions inspector written exam may include an oral component to evaluate the applicant's ability to read and understand documents written in English.

3. Emissions inspectors must pass a written test that demonstrates their knowledge of the fundamentals of OBD testing and repairs and the procedures of the emissions inspection program. A minimum grade of eighty percent (80%) is required to pass the written examination or reexamination.

A. The contractor shall design the training material and corresponding written exam and have the training material and written exam certified by the department prior to issuing the training material and written exam to potential emissions inspectors.

B. After emissions inspectors have passed the contractor's written exam, if they wish to also be licensed to conduct vehicle safety inspections, they must submit an appli-

cation to the MSHP to take the safety inspection exam.

C. Currently licensed safety inspectors working at newly-licensed emissions inspection stations will only have to pass the written emissions exam conducted by the contractor.

4. Emissions inspectors must be thoroughly familiar with the emissions inspection equipment and demonstrate competency to either the department or the MSHP while performing an emissions inspection on a vehicle prior to the issuance of the inspector's license. A minimum grade of eighty percent (80%) is required to pass the practical examination or reexamination.

5. If the applicant meets the requirements of paragraphs (3)(G)1.–(3)(G)4. of this rule, an emissions inspector license will be issued without charge. Licenses are valid for a period of three (3) years from the date of issuance, or until suspended or revoked by the department or the MSHP. An emissions inspector whose license has been suspended or revoked shall be required to successfully complete the contractor's training program and pass the written and practical exams described in paragraphs (3)(G)3. and (3)(G)4. of this rule before the emissions license will be reinstated.

6. If the emissions inspector leaves the employment of one licensed emissions inspection station and enters the employment of another licensed emissions inspection station, the emissions inspection station manager of the station that the inspector is transferring to shall follow the procedures described in subparagraph (3)(F)5.K. of this rule. The emissions inspector's license is transferable with the licensed emissions inspector, provided the emissions inspector's license has not expired.

7. An emissions inspector may be reexamined at any time, and if s/he fails the reexamination or refuses to be reexamined, the license issued to him/her shall be suspended. If a vehicle emissions inspector fails a reexamination, s/he cannot again be tested until a period of thirty (30) days has elapsed.

8. An emissions inspector license may be renewed before the expiration date or sixty (60) days after expiration without a reexamination. If the license has expired more than sixty (60) days before the license renewal application is submitted, a reexamination will be required. A vehicle emissions inspector does not have authority to conduct any inspections during the sixty (60)-day grace period unless the license has been properly renewed.

(H) Emissions Inspection Procedures. The emissions inspection procedure shall meet the following requirements:

1. Every emissions inspection must be performed according to the procedures described in this rule. Once an emissions inspection has begun, it shall be completed and shall not be terminated. A vehicle may not be passed or failed based upon a partial inspection;

2. A proper and complete emissions inspection shall consist of the OBD test method described in section (5) of this rule, the immediate printing and subsequent issuance of a VIR to the motorist, and the immediate uploading of the emissions inspection data to the contractor's VID;

3. All emissions inspection records shall be transmitted to the state's contractor as soon as an inspection is complete for the purpose of real time registration verification by the MDOR and program oversight by the department or the MSHP;

4. The emissions inspection fees shall be charged for each inspection performed as described in subsection (3)(D) of this rule;

5. Emissions inspection windshield stickers will be issued to an emissions inspection station by the MSHP and can be printed by only that station. Emissions inspection windshield stickers shall be kept secure to prevent them from being lost, damaged, or stolen. If windshield stickers are lost, damaged, or stolen, the incident shall be reported immediately to the MSHP;

6. The emissions inspector will ensure that all required information is properly and accurately entered into the MDAS. This includes three (3) mandatory photos, a vehicle description including the license plate number at the time of inspection, vehicle identification number (VIN), vehicle make, vehicle model, vehicle model year, fuel type, GVWR range, odometer reading at the time of the emissions inspection, and the complete mailing address (street address, city, and zip code) of the vehicle owner;

7. Using the MDAS digital camera, the emissions inspector shall take three (3) readily identifiable digital pictures showing the current license plate, VIN, and odometer reading. The picture of the license plate, VIN, and odometer must match the plate, VIN, and odometer reading that is printed on the VIR. These pictures shall then be immediately uploaded to the VID via the docking station provided with the MDAS.

A. License plate pictures. Pictures of the rear license plate shall be of the entire rear portion of the vehicle from taillight to taillight. If the vehicle license plate is located only on the front of the vehicle, then the



license plate picture shall be of the entire front of the vehicle. License plate pictures must be clearly legible.

B. VIN pictures. The camera should be set to the macro picture-taking mode. VIN pictures should be of the dashboard VIN plate. It may be helpful to illuminate the VIN plate with supplemental lighting, block overhead lighting with a solid object, or take the photo at an angle so that the camera flash or overhead lights are not reflected by the windshield glass. VIN pictures must be clearly legible.

C. Odometer pictures. The camera should be set to the macro picture-taking mode. In the case of digital odometers, the ignition switch must be on to illuminate the odometer reading. Trip odometer photos are not permissible. It may be helpful to turn on the dashboard lights to help illuminate the odometer without the use of the camera's flash. Odometer pictures must be clearly legible;

8. Inspection stations shall ensure that the station analyzer universal serial bus (USB) digital camera is mounted on top of the station analyzer monitor and aimed, with a clear line of sight, towards the emissions inspection bay every time a vehicle emissions inspection is performed so that the inspection process can be remotely observed by state agencies throughout the entire vehicle emissions inspection;

9. Vehicles shall be inspected in as-received condition, including vehicles whose malfunction indicator lamp (MIL) is lit or whose readiness monitors are unset. The inspector shall connect the OBD cable or wireless transmitter to the data link connector (DLC) of the actual vehicle submitted for emissions testing. The connection shall remain intact and functioning during the entire test procedure. Clean scanning as defined in 10 CSR 10-6.020 is prohibited. An official inspection, once initiated, should be performed in its entirety regardless of immediate outcome, except in the case of an invalid test condition or determination by the emissions inspector;

10. The initial emissions inspection shall be performed according to the test method described in section (5) of this rule without repair or adjustment at the emission inspection station prior to commencement of any tests. Emissions inspections performed within ninety (90) days of the initial emissions inspection shall be considered a reinspection and are subject to provisions of subsection (3)(J) of this rule;

11. If a subject vehicle passes the emissions test method described in section (5) of this rule, according to the standards

described in subsection (3)(I) of this rule, the emissions inspection station shall issue the vehicle owner or driver a passing VIR described in subsection (4)(A) of this rule, certifying that the vehicle has passed the emissions inspection, and provide a windshield sticker for the windshield of the subject vehicle according to subsection (4)(A) of this rule. The positioning of the windshield sticker on the windshield of the vehicle shall take place on the premises of the emissions inspection station;

12. If a subject vehicle fails the emissions test method described in section (5) of this rule, according to the standards described in subsection (3)(I) of this rule, the emissions inspection station shall provide the vehicle owner or driver with a failing VIR described in subsection (4)(B) of this rule that indicates what parts of the OBD test method the vehicle failed, a repair facility performance report described in subsection (4)(H) of this rule that lists the ten (10) nearest Missouri Recognized Repair Technicians (MRRTs) to the licensed emissions inspection station, and a repair data sheet described in subsection (4)(D) of this rule that is used to collect emissions repair data for the repair facility performance report;

13. If a subject vehicle fails the emissions test method described in section (5) of this rule, the vehicle owner shall have the vehicle repaired. The vehicle shall be reinspected according to the appropriate inspection period as determined by paragraphs (3)(C)2. and (3)(C)3. of this rule and the reinspection procedures described in subsection (3)(J) of this rule; and

14. If the emissions inspection is aborted by the MDAS software or the emissions inspector, the emissions inspection station shall provide the vehicle owner or driver with the emissions VIR described in subsection (4)(K) of this rule that indicates that the OBD test was aborted.

(I) Emissions Inspection Standards. Subject vehicles shall fail the emissions inspection if the vehicle does not meet the OBD test standards specified in 40 CFR 85.2207, which is incorporated by reference in this rule, as published by the EPA, Office of Transportation and Air Quality, 2000 Traverwood, Ann Arbor, MI 48105 on April 5, 2001. This rule does not incorporate any subsequent amendments or additions to 40 CFR 85.2207.

(J) Emissions Reinspection Procedures.

1. Vehicles that fail the emissions inspection described in section (5) of this rule shall be reinspected according to the test method described in section (5) of this rule to determine if the repairs were effective for correcting failures on the previous inspection,

thereby reducing or preventing an increase in present and future tailpipe or evaporative emissions.

A. The inspector shall enter the data from the repair data sheet described in subsection (4)(D) of this rule in the MDAS prior to initiating the reinspection, even if the vehicle receives multiple reinspections.

B. The inspector shall ensure that the VIN of the reinspected vehicle matches the VIN of the originally inspected vehicle.

C. The inspector shall enter the current odometer reading of the vehicle at the time of the reinspection into the MDAS.

D. The inspector shall take three (3) new photographs following the procedure described in paragraph (3)(H)7. of this rule.

E. The inspector shall connect the OBD cable or wireless transmitter to the data link connector of the actual vehicle submitted for emissions testing. The connection shall remain intact and functioning during the entire test procedure. Clean scanning as defined in 10 CSR 10-6.020 is prohibited.

2. If the subject vehicle passes a reinspection, then the procedures in paragraph (3)(H)11. of this rule shall be followed.

3. If the subject vehicle fails a reinspection, the vehicle owner may either:

A. Have more repairs performed on the vehicle and have the vehicle reinspected; or

B. Apply for a cost-based waiver according to the requirements in paragraphs (3)(K)1.–(3)(K)5. of this rule.

(K) Emissions Inspection Waivers and Exemptions.

1. Cost-based waivers. Vehicle owners or purchasers shall be issued a cost-based waiver for their vehicle under the following conditions:

A. The subject vehicle has failed the initial emissions inspection, has had qualifying repairs, and has failed an emissions reinspection;

B. The vehicle has passed the bulb check test described in subparagraph (5)(B)2.A. of this rule, the data link connector test described in subparagraph (5)(B)3.A. of this rule, the communications test described in subparagraph (5)(B)3.B. of this rule, and the readiness monitor test described in paragraph (5)(B)4. of this rule.

C. The subject vehicle has all of its emissions control components correctly installed and operating as designed by the vehicle manufacturer.

(I) To the extent practical, the department representative shall use the MSHP air pollution control device inspection method described in 11 CSR 50-2.280 to fulfill the requirement of this subparagraph.



(II) If the vehicle fails the visual inspection described in 11 CSR 50-2.280, then the vehicle will be denied a cost-based waiver;

D. The vehicle operator has submitted to the department the appropriate waiver application with all required information and necessary signatures completed, along with all itemized receipts of qualifying repairs. The qualifying repairs must meet the requirements of paragraph (3)(K)2. of this rule. The itemized receipts must meet the requirements of paragraph (3)(K)3. of this rule;

E. At the discretion of the department, the vehicle owner or operator may be required to make arrangements to bring the vehicle to the department or the department's designee for visual verification of the vehicle's repairs or estimated repairs in the case of a cost-based estimate waiver application; and

F. To the extent practical, the department representative has verified that the repairs indicated on the itemized receipts for qualifying repairs were made and that the parts were repaired/replaced as claimed.

2. The minimum amount spent on qualifying repairs for cost-based waivers shall—

A. Exceed four hundred fifty dollars (\$450) for vehicles not fully repaired solely by the owner of the failed vehicle;

B. Exceed four hundred dollars (\$400) for all vehicles repaired solely by the owner of the failed vehicle. Only qualified repairs that include the part costs for the purchase and installation of the following parts listed in 40 CFR 51.360(a)(5) will be accepted:

- (I) Oxygen sensors;
- (II) Catalytic converters;
- (III) Exhaust gas recirculation (EGR) valves;
- (IV) Evaporative canisters;
- (V) Positive crankcase ventilation (PCV) valves;
- (VI) Air pumps;
- (VII) Distributors;
- (VIII) Ignition wires;
- (IX) Coils;
- (X) Spark plugs; and
- (XI) Any hoses, gaskets, belts, clamps, brackets, or other accessories directly associated with these parts. If the emissions failure is not related to the parts listed in this subparagraph, the cost of replacing such parts will not count towards the waiver minimum;

C. Exceed two hundred dollars (\$200) for all motorists who provide the department representative with reasonable and reliable proof that the owner is financially dependent on state and federal disability benefits and

other public assistance programs. The proof shall consist of government issued documentation providing explanation of the motorist's disability and financial assistance with regard to personal income. The motorist must also submit the appropriate cost-based waiver application with their "Financial Eligibility Waiver Request";

D. Be inclusive of part costs paid by motorists performing qualified vehicle repairs by themselves or for qualified emissions repair services performed by any repair technician. Labor costs shall only be applied toward a cost-based waiver if the qualified repair work was performed by a Recognized Repair Technician;

E. Not include the fee for an emissions inspection or reinspection;

F. Not include the fee for a safety inspection or reinspection;

G. Not include charges for obtaining a written estimate of needed repairs;

H. Not include the charges for repairs necessary for the vehicle to pass a safety inspection;

I. Not include costs for repairs performed on the vehicle before the initial emissions inspection failure or more than ninety (90) days after the initial emissions inspection failure;

J. Not include expenses that are incurred for the repair of—

(I) Emissions control devices or data link connectors that have been found during either a safety or an emissions inspection to be tampered with, rendered inoperative, or removed;

(II) The MIL; or

(III) For OBD communications failures;

K. Not include the state sales tax for the following motor vehicle parts that are air pollution control devices:

(I) Air injection parts, air pumps, check valves, and smog pumps;

(II) Catalytic converters (universal converters, direct fit converters, converter kits);

(III) EGR valves;

(IV) Evaporative canisters and canister purge valves;

(V) PCV valves; and

(VI) Any vehicle parts that serve the equivalent functions of the parts listed in parts (3)(K)2.K.(I)–(3)(K)2.K.(V) of this rule;

L. Not include costs and expenses associated with aftermarket catalytic converter replacements that do not conform to the EPA's Aftermarket Catalytic Converter (AMCC) enforcement policy. The EPA's AMCC enforcement policy, which includes

the following three (3) documents, is hereby incorporated by reference in this rule:

(I) The Notice of Proposed Enforcement Policy regarding the "Sale and Use of Aftermarket Catalytic Converters," published on August 5, 1986, by 51 FR 28114 as published by the Office of the Federal Register, U.S. National Archives and Records, 700 Pennsylvania Avenue NW, Washington, DC 20408;

(II) The publication "What You Should Know About Using, Installing Or Buying Aftermarket Catalytic Converters" published in September 2000 by the U.S. Environmental Protection Agency (EPA), Office of Air and Radiation, Office of Transportation and Air Quality, 1200 Pennsylvania Avenue NW, Washington, DC 20460; and

(III) The letter "Sale and Use of Aftermarket Catalytic Converters for Vehicles Equipped with Onboard Diagnostic (OBD-II) Systems" sent on September 30, 2004, by the U.S. Environmental Protection Agency (EPA), Office of Enforcement and Compliance Assurance, 1200 Pennsylvania Avenue NW, Washington, DC 20460 to the Manufacturers of Emission Control Association. This rule does not incorporate any subsequent amendments or additions to the EPA's AMCC enforcement policy;

M. Not include expenses that are incurred for the restoration of the vehicle manufacturer's emissions control system due to the installation of sensor simulators, engine control module upgrades, or other aftermarket components that disable readiness monitors or in any way bypass or compromise the vehicle manufacturer's emissions control system; and

N. Not include costs for emissions repairs or adjustments covered by a vehicle manufacturer's warranty, including the minimum federal catalytic converter warranty period of eight (8) years or eighty thousand (80,000) miles, insurance policy, or contractual maintenance agreement. The emissions repair costs covered by warranty, insurance, or maintenance agreements shall be separated from other emissions repair costs and shall not be applied toward the cost-based waiver minimum amount. The operator of a vehicle within the statutory age and mileage coverage under subsection 207(b) of the federal Clean Air Act shall present a written denial of warranty coverage, with a complete explanation, from the manufacturer or authorized dealer in order for this provision to be waived.

3. The vehicle operator shall present the original of all itemized repair receipts to the department representative to demonstrate



compliance with paragraph (3)(K)2. of this rule. The itemized repair receipt(s) shall—

A. Include the name, physical address, and phone number of the repair facility and the model year, make, model, and VIN of the vehicle being repaired;

B. Describe the diagnostic test(s) performed to identify the reason the vehicle failed an emissions inspection;

C. Describe the emissions repair(s) that were indicated by the diagnostic test(s);

D. Document the emissions repairs performed were authorized by the vehicle owner or operator;

E. Describe the emissions repairs that were performed by the repair technician or vehicle owner;

F. For catalytic converter replacements, include, as a separate attachment, the documentation that the EPA's AMCC enforcement policy requires of the catalytic converter retail seller, vehicle owner, and/or installer. Catalytic converter replacements will only be accepted towards a cost-based waiver if they are installed on gasoline-powered vehicles that have failed the most recent OBD test with at least one (1) catalytic converter Diagnostic Trouble Code (DTC) (P0420–P0439) as recorded on a failing VIR described in subsection (4)(B) of this rule;

G. Describe the vehicle part(s) and the quantity of each type of part(s) that were serviced or replaced;

H. Describe the readiness monitors that were either set to ready or left unset;

I. Describe the diagnostic test(s) performed after the repairs were completed to verify that the vehicle's emissions control system is now operating as it was designed to operate by the manufacturer;

J. Clearly list the labor costs, if the vehicle was repaired by a repair technician, and the part(s) costs separately for each repair item;

K. Include the repair technician's name (printed or typed), signature and, if applicable, the unique identification number of the Recognized Repair Technician that performed the repair work; and

L. Confirm that payment was collected and/or financed for the services rendered and/or parts replaced as listed on the itemized repair receipt(s).

4. Cost-based estimate waivers. Vehicles shall be issued a cost-based estimate waiver under the following conditions:

A. The subject vehicle has failed the initial emissions inspection or reinspection after repair(s) with a single DTC;

B. The vehicle has passed the bulb check test described in subparagraph (5)(B)2.A. of this rule, the data link connec-

tor test described in subparagraph (5)(B)3.A. of this rule, the communications test described in subparagraph (5)(B)3.B. of this rule, and the readiness monitor test described in paragraph (5)(B)4. of this rule;

C. The subject vehicle cannot have received either a cost-based waiver or a cost-based estimate waiver during a previous biennial inspection cycle for the same single DTC;

D. The vehicle owner has paid for a diagnostic test of that DTC by a Recognized Repair Technician or a vehicle repair business that specializes in a particular make of vehicle or type of repair (e.g., transmission repairs), with the items tested and the results described on the repair estimate; and

E. The diagnostic test results and parts required for the repair of the single DTC are documented by the shop to exceed four hundred fifty dollars (\$450).

5. The department reserves the right to investigate all cost-based waiver requests and submitted receipts. Cost-based waiver requests with incomplete information and/or receipts that do not identify the vehicle that was repaired, do not itemize the actual cost of the parts that were serviced, do not list the labor costs separately from the part costs, indicate that state sales tax was charged on air pollution control parts exempted from state sales tax as defined in paragraph (3)(K)2. of this rule, or contain fraudulent information or part costs as determined by department representatives will not be accepted by the department. If the conditions of paragraphs (3)(K)1.–(3)(K)4. of this rule have been met, the department representative shall issue a cost-based waiver and provide the windshield sticker to be affixed to the vehicle by the vehicle owner. The windshield sticker shall meet the requirements of paragraph (4)(F)2. of this rule.

6. The contractor shall provide the means to issue cost-based waivers, VIRs, and windshield stickers from either the department's offices or from a portable solution as required by the contract.

7. Out-of-area exemptions. Provided the vehicle owner or driver submits a completed, signed out-of-area affidavit to the department indicating that the vehicle will be operated exclusively in an area of the state not subject to the inspection requirements of 643.300–643.355, RSMo, for the next twenty-four (24) months, the department shall issue an emissions inspection VIR, with an indicator to show that the vehicle has received an out-of-area exemption to the vehicle owner or driver, and a windshield sticker shall be affixed to the subject vehicle.

8. Reciprocity waivers. Provided the vehicle owner or driver presents proof,

acceptable to the department, that the subject vehicle has successfully passed an OBD emissions inspection in another state within the previous sixty (60) calendar days, the department shall issue an emissions inspection VIR with an indicator to show that the vehicle has received a reciprocity waiver to the vehicle owner or driver, and a windshield sticker shall be affixed to the subject vehicle.

A. Reciprocity waivers shall be issued if the motorist submits proof of a passing OBD emissions inspection from one (1) of the following states: Alaska, Arizona, Connecticut, Delaware, District of Columbia, Georgia, Illinois, Louisiana, Maine, Massachusetts, Maryland, Nevada, New Hampshire, New Jersey, New York, North Carolina, Ohio, Oregon, Pennsylvania, Tennessee unless tested in Shelby County (Memphis), Rhode Island, Texas, Utah, Vermont, Virginia, Washington, and Wisconsin.

B. Should any of these states discontinue the use of pass/fail OBD inspections, the reciprocity waiver shall not be granted.

9. Mileage exemptions. Provided the vehicle owner or driver submits the required information described in subsection (4)(H) of this rule, the department or the MDAS shall issue an emissions inspection VIR, with an indicator to show that the vehicle has received a mileage-based exemption to the vehicle owner or driver.

10. GVWR exemptions. Provided the emissions inspector verifies that the vehicle is over eight thousand five hundred pounds (8,500 lbs.) GVWR, the MDAS shall issue an emissions inspection VIR, with an indicator to show that the vehicle has received a GVWR exemption to the vehicle owner or driver.

11. The contractor shall provide the means to issue out-of-area, reciprocity, mileage, and GVWR waivers, exemptions, and VIRs, from either the department's offices or from a portable solution as required by the contract.

(L) Quality Control Requirements.

1. Quality control for the contractor(s). The department shall appoint entities under contractual agreement with the department to facilitate the operating of decentralized emissions inspection stations that will conduct vehicle emissions for the purpose of reducing or preventing vehicle pollution that contributes to ground-level ozone formation.

2. Quality control for emissions inspection stations.

A. Licensed emissions inspection stations shall conduct their business in such a way that it satisfies the intent of the vehicle emissions inspection program, which is to accurately identify the vehicles that fail to



meet the OBD emissions test standards so that these vehicles may be effectively repaired.

B. Failure to comply with the provisions of this rule and the purposes stated in subparagraph (3)(L)2.A. of this rule shall be considered a violation of this rule and will result in the penalties described in paragraphs (3)(N)2.–(3)(N)5. of this rule.

C. Licensed emissions inspection stations shall be financially responsible for all vehicles that are being inspected.

3. Quality control for emissions inspectors.

A. The contractor shall provide to the department an education and training plan, to be approved by the department prior to implementation, for licensed emissions inspectors. Inspectors shall not be licensed unless they have passed all training requirements.

B. Failure to comply with the provisions of this rule and the contract shall be considered a violation of this rule and will result in the penalties described in paragraphs (3)(N)2.–(3)(N)5. of this rule.

C. As specified in the contract, the contractor shall maintain for the department an electronic database of licensed emissions inspector information that, at a minimum, includes the inspector's name, unique identification number, date of license issuance, stations of employment, date of any license suspensions or revocations, and a list of inspection results by date and by model year, make, model, and VIN.

4. Quality control for emissions inspection records.

A. All inspection records, calibration records, and control charts shall be accurately created, recorded, maintained, and secured by the contractor.

B. The contractor shall make available all records and information requested by the department and shall fully cooperate with the department, MSHP, and other state agency representatives who are authorized to conduct audits and other quality assurance procedures.

C. The contractor shall maintain emissions inspection records, including all inspection results and repair information.

(I) These records shall be kept readily available to the department and the MSHP for at least three (3) years after the date of an initial emissions inspection.

(II) These records shall be made available to the department and the MSHP on a real time continual basis through the use of the contractor's VID as specified in the contract.

(III) These records shall also be

made available immediately upon request for review by department and MSHP personnel.

5. Quality control for all emissions inspection equipment.

A. At a minimum, the practices described in this section and in the contract shall be followed.

B. Preventive maintenance on all emissions inspection equipment shall be performed on a periodic basis, as provided by the contract between the department and the contractor and consistent with the EPA's and the equipment manufacturer's requirements.

C. To assure quality control, computerized analyzers shall automatically record quality control check information, lockouts, attempted tampering, and any circumstances which require a service representative to work on the equipment.

D. To assure test accuracy, equipment shall be maintained by the contractor according to demonstrated good engineering procedures.

E. Computer control of quality assurance checks shall be used whenever possible. The emissions inspection equipment shall transmit the quality control results to the department's contractor as prescribed in the contract between the department and the contractor.

(M) Vehicle Registration. After a subject vehicle has passed the emissions inspection according to either paragraphs (3)(H)11. or (3)(J)2. of this rule, or received a waiver according to subsection (3)(K) of this rule, the contractor shall make electronically available to the MDOR on a real time basis the emissions and any associated safety inspection compliance records to enable vehicle registration and compliance enforcement. Paper VIRs may not be used for registration purposes, unless the contractor's real time vehicle inspection database is not providing inspection information to the MDOR on a real time basis. The department shall expressly authorize, either in writing or by voice authorization, the use of the paper VIRs by the MDOR and/or its contract offices.

(N) Violations and Penalties.

1. Criminal penalties. Persons violating this rule shall be subject to the criminal penalties contained in 643.355, RSMo.

2. Procedural penalties. Fraudulent emissions inspections or repairs are a violation of this rule. All emissions inspection station operators and emissions inspectors shall comply with the emissions inspection law, 643.300–643.355, RSMo, and this emissions inspection rule. All emissions inspections and repairs shall be conducted in accordance with this emissions inspection rule. The department shall cause unannounced tests of facilities

that inspect, repair, service, or maintain motor vehicle emissions components and equipment, including submitting known high emission vehicles with known defects for inspection and repair without prior disclosure to the repair facility. Failure to comply with the emissions inspection law or the emissions inspection rule will subject the emissions inspection station manager and emissions inspector(s) to one (1) or more of the following procedural penalties:

A. Warning;

B. Lockouts as described in paragraph (3)(N)3. of this rule;

C. Fines as described in paragraph (3)(N)4. of this rule;

D. Suspension or revocation of emissions inspection station and/or inspector licenses as described in paragraph (3)(N)5. of this rule;

E. The department's refusal to accept repair receipts from an inspection station or repair facility for the purpose of issuing cost-based waivers;

F. The department's revocation of Recognized Repair Technician status if the repair technician is reported by the department to the attorney general for unlawful merchandising practices according to 643.330.4., RSMo;

G. Reporting of unlawful merchandising practices as defined in Chapter 407, RSMo, by the department to the attorney general for appropriate legal proceedings under 407.095 and 407.100, RSMo; and

H. Department or MSHP requests for investigation and/or criminal and civil penalties by the U.S. Environmental Protection Agency.

3. Lockouts. The department or MSHP may electronically lockout any emissions inspector, station, MRRT, or equipment if the department or MSHP identifies any irregularities within the emissions inspection database or any irregularities identified during either overt or covert audits. The lockout may precede warnings, license suspensions or revocations, or arrests. The state's contractor shall display a lockout warning on the monitor of any inspection equipment that is locked out by the department or MSHP. Lockouts shall prevent the performing of emissions inspections by the locked out party. Lockouts shall be cleared when the department or MSHP is satisfied that there is no longer a need for the lockout. Irregularities include, but are not limited to:

A. Failure to enter all required information properly and accurately as described in paragraph (3)(H)6. of this rule;

B. Uploading unclear pictures, uploading license plate pictures that do not



match the license plate recorded on the VIR, or failing to upload pictures as described in paragraph (3)(H)7. of this rule;

C. Disconnecting or misdirecting the view of the USB lane camera described in paragraph (3)(H)8. of this rule;

D. Clean scanning as described in paragraph (3)(H)9. of this rule and defined in 10 CSR 10-6.020;

E. Performing more inspections than are physically possible for a given time duration;

F. Performing emissions inspections using another emissions inspector's fingerprint or password;

G. Conducting off-line inspections while the MDAS is not connected to the VID, unless the VID is off-line;

H. Conducting improper safety inspection of the air pollution control devices described in 11 CSR 50-2.280;

I. Bad faith or fraudulent repairs performed at the emissions inspection station or MRRT repair facility where—

(I) Vehicles repeatedly fail reinspections for the same reasons that they initially failed the OBD test;

(II) Vehicle repairs are not qualifying repairs as defined in 10 CSR 10-6.020; or

(III) Physical visual inspection of the repaired vehicles determines that the repairs were not performed as described on the submitted repair receipts;

J. Installing or assisting motorists with the installation of aftermarket catalytic converters that do not conform to EPA's AMCC enforcement policy, which is incorporated by reference in subparagraph (3)(K)2.L. of this rule;

K. Installing or assisting motorists with the installation of aftermarket components that disable or compromise the capabilities of the vehicle manufacturer's EPA-certified emissions control system;

L. Failure to maintain a positive balance of emissions inspection credit authorizations described in subparagraph (3)(D)3.B. of this rule;

M. Failure to upload the emissions inspection results to the VID immediately upon completion of the inspection per paragraph (3)(H)2. of this rule;

N. Failure to properly reinspect vehicles that failed an initial emissions test per paragraph (3)(J)1. of this rule;

O. Failure to pay the VID Service Fees according to the terms of the contract between the contractor and licensed emissions inspection stations as described in paragraph (3)(D)4. of this rule;

P. Failure to download and install the latest version of lane software to the MDAS; and

Q. Failure to maintain dedicated data transmission capabilities for the emissions inspection equipment to stay online with the contractor's VID.

4. Fines. If anyone is found to have committed an intentional procedural violation of this rule or that anyone's procedural violation involved gross negligence of this rule, they are subject to a fine, and such fine shall be not less than five (5) times the amount of the fee described in paragraph (3)(D)1. of this rule.

5. Emissions inspection license suspension and revocation. Before any emissions inspection station license or emissions inspector license is suspended or revoked by the department or the MSHP, the holder will be notified, either in writing by certified mail or by personal service at the station's address of record, and given the opportunity to have an administrative hearing as provided by 643.320.3., RSMo.

A. Suspension of emissions inspection station and/or inspector licenses shall be for a period no less than thirty (30) days and not more than one (1) year.

B. Revocation of emissions inspection station and/or inspector licenses shall be for a period no less than one (1) year and not more than three (3) years.

6. Civil penalties. Installing catalytic converters that do not conform to EPA's AMCC enforcement policy, which is incorporated by reference in subparagraph (3)(K)2.L. of this rule, or installing aftermarket components that in any way bypass or compromise the vehicle manufacturer's emissions control system on a vehicle operated in the ozone nonattainment area is a violation of this rule and the federal Clean Air Act section 203(a)(3) (42 U.S.C. 7522 (a)(3)) and may result in the penalties described in the federal Clean Air Act section 205(a) (42 U.S.C. 7524 (a)).

A. Any manufacturer or new vehicle dealer who violates section 203(a)(3)(A) (42 U.S.C. 7522 (a)(3)(A)) of the federal Clean Air Act shall be subject to a civil penalty of not more than thirty-seven thousand five hundred dollars (\$37,500), as promulgated on December 11, 2008, by 73 FR 75340 by the Office of the Federal Register, U.S. National Archives and Records, 700 Pennsylvania Avenue NW, Washington, DC 20408, which is hereby incorporated by reference in this rule. This rule does not incorporate any subsequent amendments or additions to the *Federal Register*. Any violation of section 203(a)(3)(A) (42 U.S.C. 7522 (a)(3)(A))

shall constitute a separate offense with respect to each motor vehicle or motor vehicle engine.

B. Any person other than a manufacturer or new vehicle dealer who violates section 203(a)(3)(A) of the federal Clean Air Act (42 U.S.C. 7522 (a)(3)(A)) or any person who violates section 203(a)(3)(B) of the federal Clean Air Act (42 U.S.C. 7522 (a)(3)(B)) shall be subject to a civil penalty of not more than three thousand seven hundred fifty dollars (\$3,750), as promulgated on December 11, 2008 by 73 FR 75340, which is incorporated by reference in paragraph (3)(N)6.A. of this rule. Any violation of section 203(a)(3)(A) (42 U.S.C. 7522 (a)(3)(A)) shall constitute a separate offense with respect to each motor vehicle or motor vehicle engine. Any violation of section 203(a)(3)(B) (42 U.S.C. 7522 (a)(3)(B)) shall constitute a separate offense with respect to each part or component.

(4) Reporting and Record Keeping.

(A) Passing Vehicles.

1. The VIR for the passing vehicle shall include:

A. A vehicle description, including the license plate number at the time of inspection, VIN, vehicle make, vehicle model, vehicle model year, fuel type, GVWR range, odometer reading at the time of the vehicle's passing the OBD test, county of registration, and the complete mailing address (street address, city, and zip code) of the vehicle owner;

B. The date and time of inspection;

C. The unique identification number of the licensed emissions inspector performing the inspection, the unique identification number and location of the inspection station, and the unique identification number of the inspection equipment;

D. The applicable inspection standards;

E. The passing OBD test results;

F. The results of the recall provisions check, if applicable, including the recall campaign;

G. A statement that the emissions inspection was performed in accordance with this state regulation;

H. A waiver indicator, if applicable;

I. An off-line test indicator if the MDAS was not connected to the VID when the inspection was performed;

J. The statement: "This inspection is mandated by your United States Congress"; and

K. A statement that the results have been transmitted directly to the MDOR, and



that the paper VIR may not be used for vehicle registration purposes.

2. The windshield sticker for the passing vehicle shall—

A. Be affixed on the inside of the vehicle's front windshield in the lower left hand corner by the emissions inspector for each vehicle that passes the emissions inspection, or by the department representative for each vehicle that has been issued a waiver. A windshield sticker affixed to a vehicle that has been issued a waiver shall have a waiver indicator clearly visible on the sticker. Previous windshield stickers affixed to the windshield shall be removed;

B. Be as fraud resistant as required by the contract between the department and the contractor;

C. Be valid until the next emissions inspection is required as defined in subsection (3)(B) of this rule; and

D. Contain the statement: "This inspection is mandated by your United States Congress."

(B) Failing Vehicles. The VIR for the failing vehicle shall include:

1. A vehicle description, including the license plate number at the time of inspection, VIN, vehicle make, vehicle model, vehicle model year, fuel type, GVWR range, odometer reading at the time of the vehicle's OBD test, county of registration, and the complete mailing address (street address, city, and zip code) of the vehicle owner;

2. The date and time of inspection;

3. The unique identification number of the licensed emissions inspector performing the test, the unique identification number and location of the inspection station, and the unique identification number of the inspection equipment;

4. The applicable inspection standards;

5. The passing and failing OBD test results according to 40 CFR 85.2223, which is incorporated by reference in this rule, as published by the EPA, Office of Transportation and Air Quality, 2000 Traverwood, Ann Arbor, MI 48105 on April 5, 2001. This rule does not incorporate any subsequent amendments or additions to 40 CFR 85.2223;

6. The results of the recall provisions check, if applicable, including the recall campaign;

7. A statement that the emissions inspection was performed in accordance with this state regulation;

8. The statement: "This inspection is mandated by your United States Congress";

9. A statement that the vehicle may be reinspected for free according to paragraph (3)(D)2. of this rule;

10. An off-line test indicator if the MDAS was not connected to the VID when the inspection was performed;

11. If the vehicle fails the DLC test described in subparagraph (5)(B)3.A. of this rule, the DLC failure reason as determined by the emissions inspector; and

12. If the vehicle fails the communications test described in subparagraph (5)(B)3.B. of this rule, the non-communications reason as determined by the MDAS.

(C) Repair Facility Performance Report. The repair facility performance report shall be printed by the MDAS for each failing vehicle and provided by the inspection station to the motorist with the VIR described in subsection (4)(B) of this rule. The repair facility performance report shall, at a minimum, list the ten (10) facilities employing at least one (1) Recognized Repair Technician that are nearest to the inspection station that conducted the failing emissions inspection. If the inspection station employs at least one (1) Recognized Repair Technician, the repair facility performance report shall include the inspection station in the list of ten (10) facilities. The report shall include, but not be limited to, the following:

1. The name of each facility, address, and phone number;

2. The percentage of vehicles repaired by the repair facility that passed the first reinspection;

3. Other information as required by the contract between the department and the contractor; and

4. How motorists may obtain the full or customized list of facilities employing Recognized Repair Technicians from the contractor at no cost to the motorist. The list shall be viewable on a publicly available website maintained by the contractor.

(D) Repair Data Sheet. The repair data sheet shall be printed by the MDAS for each failing vehicle and provided by the inspection station to the motorist. The information on repair data sheets shall be collected and entered by emissions inspectors into the MDAS as described in subparagraph (3)(J)1.A. of this rule and used to generate the repair facility performance report described in subsection (4)(C) of this rule. The information to be collected shall include, but not be limited to, the following:

1. The total cost of repairs, divided into parts and labor;

2. The name of the person who performed the repairs and, if applicable, their Recognized Repair Technician's identification number;

3. The name of the repair facility and, if applicable, the repair business's inspection

station number and/or the MRRT facility's identification number; and

4. The inspection failure the vehicle was being repaired for and the emissions-related repairs performed.

(E) Motorist Comment Form. Inspection stations may print motorist comment forms from the MDAS to give to motorists for providing feedback on emissions inspections. The motorist comment form shall include the telephone numbers of the department and the MSHP and the complete mailing address (street address, city, and zip code), phone number, fax number, and website of the contractor.

1. Any challenge regarding the performance or results of the emissions inspection must be made within twenty (20) business days of the failing emissions inspection.

2. Any challenge regarding the results or effectiveness of the repairs made by either licensed emissions inspection stations or Missouri Recognized Repair Technicians must be made within twenty (20) business days of the date of vehicle repair.

(F) Cost-Based Waivers.

1. The cost-based waiver VIR shall include:

A. A vehicle description, including the license plate number at the time of inspection, VIN, vehicle make, vehicle model, vehicle model year, fuel type, GVWR range, odometer reading at the time of the most recent emissions inspection, county of registration, and the complete mailing address (street address, city, and zip code) of the vehicle owner;

B. The amount of money accepted by the department toward the cost-based waiver and the date and time that the cost-based waiver is issued;

C. The unique identification number of the department staff issuing the cost-based waiver, the location of the department staff person issuing the cost-based waiver, and the unique identification number of the inspection equipment used to issue the cost-based waiver;

D. A statement that the results have been transmitted directly to the MDOR, and that the paper VIR may not be used for vehicle registration purposes; and

E. The statement: "This inspection is mandated by your United States Congress."

2. The front of the cost-based waiver windshield sticker shall—

A. Be affixed on the inside of the vehicle's front windshield in the lower left-hand corner by the motorist. A waiver indicator shall be clearly visible on the sticker. Previous windshield stickers affixed to the windshield shall be removed;



B. Be as fraud resistant as required by the contract between the department and the contractor;

C. Be valid until the next emissions inspection is required as defined in subsection (3)(B) of this rule; and

D. Contain the statement: “This inspection is mandated by your United States Congress.”

(G) Reciprocity Waivers.

1. The reciprocity waiver VIR shall include:

A. A vehicle description, including the license plate number at the time of inspection, VIN, vehicle make, vehicle model, vehicle model year, fuel type, GVWR range, odometer reading at the time of the vehicle’s passing the OBD test, county of registration, and the complete name and address of the vehicle owner;

B. The reciprocity waiver determination;

C. The date and time that the reciprocity waiver is issued;

D. The unique identification number of the department staff person issuing the reciprocity waiver, the location of the department staff person, and the unique identification number of the inspection equipment used to issue the reciprocity waiver;

E. The state where the vehicle passed its OBD test;

F. A statement that the results have been transmitted directly to the MDOR, and that the paper VIR may not be used for vehicle registration purposes; and

G. The statement: “This inspection is mandated by your United States Congress.”

2. The reciprocity waiver windshield sticker shall—

A. Be affixed on the inside of the vehicle’s front windshield in the lower left-hand corner by the motorist. A waiver indicator shall be clearly visible on the sticker. Previous windshield stickers affixed to the windshield shall be removed;

B. Be as fraud resistant as required by the contract between the department and the contractor;

C. Be valid until the next emissions inspection is required as defined in subsection (3)(B) of this rule; and

D. Contain the statement: “This inspection is mandated by your United States Congress.”

(H) Mileage-Based Emissions-Exempt Vehicles. The VIR for the mileage-based emissions-exempt vehicle shall include:

1. A vehicle description, including the license plate number at the time of inspection, VIN, vehicle make, vehicle model, vehicle model year, fuel type, GVWR range,

odometer reading at the time of the most recent safety inspection, county of registration, and the complete mailing address (street address, city, and zip code) of the vehicle owner;

2. The date that the exemption is applied for and/or the date and time that the exemption was issued;

3. The unique identification number of the licensed emissions inspector performing the safety inspection, the unique identification number and location of the inspection station, and the unique identification number of the inspection equipment;

4. The type of mileage exemption, as described in paragraphs (1)(B)7. and (1)(B)8. of this rule;

5. A statement that the results have been transmitted directly to the MDOR, and that the paper VIR may not be used for vehicle registration purposes; and

6. The statement: “This inspection is mandated by your United States Congress.”

(I) GVWR-Based Emissions-Exempt Vehicles. The VIR for the GVWR-based emissions-exempt vehicle shall include:

1. A vehicle description, including the license plate number at the time of inspection, VIN, vehicle make, vehicle model, vehicle model year, fuel type, GVWR range, odometer reading at the time of the most recent safety inspection, county of registration, and the complete mailing address (street address, city, and zip code) of the vehicle owner;

2. The date and time of the vehicle’s safety inspection during which the licensed inspector verified that the vehicle had a GVWR in excess of eight thousand five hundred pounds (8,500 lbs.);

3. The unique identification number of the licensed emissions inspector performing the safety inspection, the unique identification number and location of the inspection station, and the unique identification number of the inspection equipment;

4. The GVWR exemption determination;

5. A statement that the results have been transmitted directly to the MDOR, and that the paper VIR may not be used for vehicle registration purposes; and

6. The statement: “This inspection is mandated by your United States Congress.”

(J) Out-of-Area Emissions-Exempt Vehicles. The out-of-area waiver VIR shall include:

1. A vehicle description, including the license plate number at the time of inspection, VIN, vehicle make, vehicle model, vehicle model year, fuel type, county of reg-

istration, and the complete name and address of the vehicle owner;

2. The date and time that the out-of-area exemption is issued;

3. The unique identification number of the department staff person issuing the out-of-area waiver, the location of the department staff person, and the unique identification number of the inspection equipment used to issue the out-of-area waiver;

4. The county where the vehicle is being operated;

5. A statement that the results have been transmitted directly to the MDOR, and that the paper VIR may not be used for vehicle registration purposes; and

6. The statement: “This inspection is mandated by your United States Congress.”

(K) Aborted Emissions Inspections. The aborted emissions VIR shall include:

1. A vehicle description, including the license plate number at the time of inspection, VIN, vehicle make, vehicle model, vehicle model year, fuel type, GVWR range, odometer reading at the time of the most recent safety inspection, county of registration, and the complete mailing address (street address, city, and zip code) of the vehicle owner;

2. The date and time that the vehicle’s emissions inspection was aborted;

3. The unique identification number of the licensed emissions inspector performing the emissions inspection, the unique identification number and location of the inspection station, and the unique identification number of the inspection equipment;

4. The aborted test result; and

5. The statement: “This inspection is mandated by your United States Congress.”

(L) Beginning January 1, 2008, using a method provided by the contractor, federal, state, and local government agencies shall submit a list of vehicles, by VIN, that are operated by the government agencies and that are required to be inspected during each calendar year. Submittals are due by February 1 of each calendar year. If the first is not a business day or is a state holiday, the list shall be submitted to the contractor by the following business day. The contractor will audit these submittals by comparing the list of submitted vehicles to the database of inspected vehicles to track government fleet compliance. The contractor shall provide the department with the results of this audit by April 1 of each calendar year.

(5) Test Methods.

(A) To the extent possible, an OBD test, as defined in 10 CSR 10-6.020 and the contract, shall be performed on all 1996 and later



model year light-duty vehicles and light-duty trucks powered by gasoline and all 1997 and later model year light-duty vehicles and light-duty trucks powered by diesel.

(B) The OBD test shall follow the procedures described in 40 CFR 85.2222, which is incorporated by reference in this rule, as published by the EPA, Office of Transportation and Air Quality, 2000 Traverwood, Ann Arbor, MI 48105 on April 5, 2001. This rule does not incorporate any subsequent amendments or additions to 40 CFR 85.2222.

1. If the subject vehicle cannot be tested with the OBD test due to manufacturer design, then the subject vehicle shall be tested with only a bulb check test described in paragraph (5)(B)2. of this rule.

2. Bulb check test.

A. Vehicles will fail the bulb check portion of the OBD test if the MIL is not illuminated while the key is in the on position and the engine is off (KOEO).

B. Vehicles will fail the bulb check portion of the OBD test if the MIL is illuminated while the key is in the on position and the engine is running (KOER).

C. Vehicles with keyless ignitions shall be subject to a bulb check test.

D. Vehicles that fail the KOEO bulb check portion of the OBD test described in subparagraph (5)(B)2.A. of this rule shall fail the OBD test. Repairs made to correct bulb check failures shall not be eligible for cost-based or estimate-based waivers.

3. Data link connector and communications tests.

A. Data link connector test. Vehicles will fail the data link connector portion of the OBD test if the DLC is inaccessible due to manufacturer design, tampered with, blocked, or not located where the manufacturer located the DLC. The emissions inspector shall determine and record the reason for this failure in the MDAS for printing on the emissions VIR.

B. Communications test. Vehicles will fail the communications portion of the OBD test if the vehicle does not maintain sufficient voltage to the DLC during OBD communication or transmit the necessary information to the inspection equipment after three (3) thirty (30)-second attempts.

(I) If the vehicle does not communicate after two (2) thirty (30)-second communication attempts, inspectors shall verify that a valid communications failure exists by using the MDAS OBD verification tool to verify the communication failure according to the lane software procedures.

(II) If the OBD verification tool determines that the equipment is not capable of communicating with the vehicle, the

MDAS shall automatically abort the OBD test and generate the emissions VIR described in subsection (4)(K) of this rule.

(III) If the OBD verification tool determines that the equipment is capable of communicating with the vehicle, inspectors shall make one (1) additional thirty (30)-second communication attempt. If the vehicle does not communicate with the MDAS, the MDAS shall determine and record the reason for this failure and print this reason on the emissions VIR.

C. Vehicles that fail the DLC or communications portion of the OBD test shall fail the OBD test.

D. Repairs made to correct failures for DLCs that have been tampered with, rendered inoperative, or removed, or failures for OBD communications as described in subparagraphs (5)(B)3.A. and (5)(B)3.B. of this rule, shall not be eligible for cost-based or estimate-based waivers.

4. Readiness monitor test.

A. 1996–2000 model year gasoline-powered vehicles may pass the readiness monitor portion of the OBD test if they have no more than two (2) unset non-continuous readiness monitors.

B. 2001 and newer model year gasoline-powered vehicles may pass the readiness monitor portion of the test if they have no more than one (1) unset non-continuous readiness monitor.

C. Gasoline-powered vehicles that fail the OBD test with a catalytic converter DTC (P0420–P0439) present must have the catalyst monitor reset to pass the readiness monitor portion of the OBD retest.

D. Gasoline-powered vehicles will fail the readiness monitor portion of the OBD test if the following non-continuous monitors are not supported:

- (I) Oxygen sensor; and
(II) Catalyst.

E. Vehicles that are on the readiness exemption table maintained by the contractor and authorized by the department shall be exempt from the readiness monitor portion of the OBD test.

F. Vehicles that fail the readiness monitor portion of the OBD test shall fail the OBD test. Vehicles must pass the readiness monitor portion of the OBD test to be eligible for a cost-based or estimate-based waiver.

G. Repairs made to correct failures for readiness monitor tampering caused by the installation of aftermarket components shall not be eligible for cost-based or estimate-based waivers.

5. Diagnostic trouble code test.

A. Vehicles will fail the diagnostic trouble code test if the OBD system has

stored at least one (1) mature (non-pending, non-historic) DTC that commands the MIL to be illuminated.

B. Vehicles will fail the diagnostic trouble code test if the vehicle commands the MIL to be illuminated but the OBD system has no mature (non-pending, non-historic) DTCs stored in the system.

C. The contractor shall ensure that their inspection equipment’s request for DTCs does not cause the MIL to be illuminated.

D. Vehicles that fail the DTC portion of the OBD test shall fail the OBD test.

(C) If the subject vehicle passes the OBD test according to the OBD test standards specified in subsection (3)(I) of this rule and all of the OBD test procedures described in section (5) of this rule, then the procedures in paragraph (3)(H)3. of this rule shall be followed.

(D) If the subject vehicle fails the OBD test according to the OBD test standards specified in subsection (3)(I) of this rule or any of the OBD test procedures described in section (5) of this rule, then the procedures in paragraphs (3)(H)6., (3)(H)7., and (3)(J)2. of this rule shall be followed.

AUTHORITY: section 643.310.1., RSMo Supp. 2011.* Original rule filed Jan. 16, 2007, effective Aug. 30, 2007. Amended: Filed Oct. 1, 2008, effective May 30, 2009. Amended: Filed May 15, 2012, effective Dec. 30, 2012.

*Original authority: 643.310, RSMo 1994, amended 1998, 1999, 2003, 2006.

10 CSR 10-5.385 Control of Heavy-Duty Diesel Vehicle Idling Emissions

PURPOSE: The purpose of this rule is to implement restrictions on the idling of heavy-duty diesel vehicles in the St. Louis Ozone Nonattainment Area. The evidence supporting the need for this rule, per section 536.016, RSMo, is the federally approved 2007 Revision of the State Implementation Plan for the St. Louis Eight (8)-Hour Ozone Nonattainment Area.

(1) Applicability.

(A) This regulation applies throughout St. Louis City and Franklin, Jefferson, St. Charles, and St. Louis Counties.

(B) This regulation applies to owners or operators of commercial, public, and institutional heavy-duty diesel vehicles that are designed to operate on public streets and highways, whether or not the vehicles are operated



on public roadways.

(C) This regulation applies to owners or operators of load/unload locations where commercial, public, and institutional heavy-duty diesel vehicles load or unload passengers.

(D) Passenger vehicles as defined in subsection (2)(H) of this rule are exempt from this rule.

(2) Definitions.

(A) Auxiliary Power Unit (APU)—An integrated system that—

1. Provides heat, air conditioning, engine warming, or electricity to components on a heavy duty vehicle; and

2. Is certified by the administrator under part 89 of title 40, *Code of Federal Regulations* (or any successor regulation), as meeting applicable emissions standards.

(B) Commercial Vehicle—Any motor vehicle, other than a passenger vehicle, and any trailer, semitrailer, or pole trailer drawn by such motor vehicle, that is designed, used, and maintained for the transportation of persons or property for hire, compensation, profit, or in the furtherance of a commercial enterprise.

(C) Gross Vehicle Weight Rating (GVWR)—The value specified by the manufacturer as the maximum design loaded weight of a single vehicle.

(D) Heavy Duty Diesel Vehicle—A vehicle that—

1. Has a gross vehicle weight rating greater than ten thousand pounds (10,000 lbs.);

2. Is powered by a diesel engine; and

3. Is designed primarily for transporting persons or property on a public street or highway.

(E) Idling—The operation of an engine where the engine is not engaged in gear.

(F) Institutional Vehicles—Any motor vehicle, other than a passenger vehicle, and any trailer, semitrailer, or pole trailer drawn by such a motor vehicle, that is designed, used, and maintained for the transportation of persons or property for an establishment, foundation, society, or the like, devoted to the promotion of a particular cause or program especially one of a public, educational, or charitable character.

(G) Load/Unload Locations—Distribution centers, warehouses, retail stores, railroad facilities, ports, and any other sites where heavy duty diesel vehicles may idle their engines while waiting to load or unload.

(H) Passenger Vehicle—Every motor vehicle, except motorcycles, motor-driven cycles,

and ambulances, designed for carrying ten (10) passengers or less and used for the transportation of persons.

(I) Public Vehicles—Any motor vehicle, other than a passenger vehicle, and any trailer, semitrailer, or pole trailer drawn by such a motor vehicle, which is designed, used, and maintained for the transportation of persons or property at the public expense and under public control.

(J) Definitions of certain terms specified in this rule, other than those defined in this rule section, may be found in 10 CSR 10-6.020.

(3) General Provisions.

(A) Passenger Load/Unload Locations. No passenger load/unload location owner or operator shall cause or allow vehicles covered by this rule to idle for a period greater than five (5) minutes in any sixty (60)-minute period.

(B) Requirement for Heavy-Duty Diesel Vehicles. No owner/operator of a heavy-duty diesel vehicle covered by this rule shall idle the vehicle for more than five (5) minutes in any sixty (60)-minute period except as noted in subsection (3)(C) of this rule.

(C) Exempt Idling Activities. The following activities are exempt from 10 CSR 10-5.385:

1. A heavy-duty diesel vehicle idling while forced to remain motionless because of road traffic, an official traffic control device or signal, or at the direction of a law enforcement official;

2. A heavy-duty diesel vehicle idling when operating defrosters, heaters, air conditioners, safety lights, or other equipment solely to prevent a safety or health emergency;

3. A police, fire, ambulance, public safety, utility service vehicle, military, other emergency or law enforcement vehicle, or any heavy-duty diesel vehicle being used in an emergency capacity, idling while in an emergency or training mode, and not for the convenience of the heavy-duty diesel vehicle operator;

4. The primary propulsion engine idling for maintenance, servicing, repairing, or diagnostic purposes if idling is necessary for such activity or if idling of the primary propulsion engine is being conducted in accordance with the manufacturer's recommendations;

5. A heavy-duty diesel vehicle idling as part of a state or federal inspection to verify that all equipment is in good working order, provided idling is required as part of the inspection;

6. A primary propulsion engine idling when necessary to power work-related mechanical or electrical operations other than propulsion (e.g., mixing, operating hydraulic lifts, processing cargo, or straight truck refrigeration). This exemption does not apply when idling for cabin comfort or to operate non-essential onboard equipment;

7. An armored vehicle idling when a person remains inside the vehicle to guard the contents, or while the vehicle is being loaded or unloaded;

8. A bus idling for no greater than fifteen (15) minutes in any sixty (60)-minute period to maintain passenger comfort while non-driver passengers are onboard;

9. An occupied heavy-duty diesel vehicle with a sleeper berth compartment idling for purposes of air conditioning or heating during government mandated rest periods;

10. A heavy-duty diesel vehicle idling due to mechanical difficulties over which the driver has no control;

11. Heavy-duty diesel vehicles used exclusively for agricultural operations and only incidentally operated or moved upon public roads;

12. Operating an auxiliary power unit as an alternative to idling the main engine; and

13. A heavy-duty diesel vehicle idling for no greater than thirty (30) minutes in any sixty (60)-minute period while waiting to load or unload at a freight load/unload location.

(4) Reporting and Record Keeping. *(Not Applicable)*

(5) Test Methods. *(Not Applicable)*

AUTHORITY: section 643.050, RSMo 2000. Original rule filed July 11, 2008, effective Feb. 28, 2009. Amended: Filed Oct. 28, 2011, effective July 30, 2012.*

Original authority: 643.050, RSMo 1965, amended 1972, 1992, 1993, 1995, 2011.

10 CSR 10-5.390 Control of Emissions From Manufacture of Paints, Varnishes, Lacquers, Enamels and Other Allied Surface Coating Products

PURPOSE: This rule specifies operating equipment requirements and operating procedures for the reduction of volatile organic compounds from the manufacture of paints, varnishes, lacquers, enamels and other allied



surface coating products in the St. Louis metropolitan area.

(1) Application.

(A) This rule shall apply throughout St. Louis City and Jefferson, St. Charles, Franklin and St. Louis Counties.

(B) This rule applies to all installations which have the uncontrolled potential to emit more than two hundred fifty kilograms (250 kg) per day or one hundred (100) tons per year of volatile organic compounds (VOCs) from the manufacture of paints, varnishes, lacquers, enamels and other allied surface coating products.

(2) Definitions of certain terms specified in this rule may be found in 10 CSR 10-6.020.

(3) General. No owner or operator of a manufacturing installation subject to this rule and producing the products listed in section (1) shall cause or allow the manufacture of these products unless the operating equipment meets the requirements contained in this rule and without adhering to operating procedures specified in this rule and operating procedures recommended by the equipment manufacturer and approved by the director.

(4) Operating Equipment and Operating Procedure Requirements.

(A) Tanks storing VOC with a vapor pressure greater than or equal to 10 kilopascals (kPa) (1.5 psi) at twenty degrees Celsius (20 °C), shall be equipped with pressure/vacuum conservation vents set at ± 0.2 kPa (.029 psi), except where more effective air pollution control is used and has been approved by the director. Stationary VOC storage containers with a capacity greater than two hundred fifty (250) gallons shall be equipped with a submerged-fill pipe or bottom fill, except where more effective air pollution control is used and has been approved by the director.

(B) Covers shall be installed on all open-top tanks used for the production of nonwaterbase coating products. These covers shall remain closed except when production, sampling, maintenance or inspection procedures require operator access.

(C) Covers shall be installed on all tanks containing VOC used for cleaning equipment. These covers shall remain closed except when operator access is required.

(D) All vapors from varnish cooking operations shall be collected and passed through a control device which removes at least eighty-five percent (85%) on a daily basis of the

VOC from the vapors before they are discharged to the atmosphere.

(E) All grinding mills shall be operated and maintained in accordance with manufacturers' specifications. The manufacturers' specifications shall be kept on file and made available to the director upon his/her request.

(F) The polymerization of synthetic varnish or resin shall be done in a completely enclosed operation with the VOC emissions controlled by the use of surface condensers or equivalent controls.

1. If surface condensers are used, they must be maintained to ensure a ninety-five percent (95%) overall removal efficiency for total VOC emissions when condensing total VOC of a vapor pressure greater than 26 mmHg (as measured at 20 degrees Celsius).

2. If equivalent controls are used, the VOC emissions must be reduced by an amount equivalent to the reduction which would be achieved under paragraph (4)(F)1. Any owner or operator desiring to use equivalent controls to comply with this subsection shall submit proof of equivalency as part of the control plan required under subsection (5)(A) of this rule. Equivalent controls may not be used unless approved by the director.

(5) Compliance Dates.

(A) The owner or operator of a paint, varnish, lacquer, enamel or other allied surface coating production manufacturing installation subject to this rule shall submit a final control plan to the director for his/her approval no later than six (6) months after the effective date of this rule (September 11, 1984). This plan shall include a time schedule for compliance containing an engineering design, increments of progress and a final compliance date.

(B) Compliance with this rule shall be accomplished by any installation as expeditiously as practicable but in no case later than August 12, 1985.

(6) Compliance Methods and Record Keeping.

(A) The control efficiency specified in subsections (4)(D) and (F) shall be determined by the testing methods referenced at 10 CSR 10-6.030(14)(A).

(B) Owners or operators utilizing add-on control technology shall monitor the following parameters continuously while the affected equipment is in operation:

1. Exit stream temperature on all condensers; and

2. Any other parameter which the director determines is necessary to quantify emis-

sions or otherwise determine compliance with this rule.

(C) Records shall be kept on production rates sufficient to determine daily VOC emissions.

(D) The owner or operator shall record all information derived from monitoring required under subsections (6)(B) and (C) and shall keep records for a period of not less than two (2) years. All these records shall be made available to the director upon request.

AUTHORITY: section 643.050, RSMo Supp. 1999. Original rule filed Oct. 13, 1983, effective March 11, 1984. Amended: Filed Oct. 4, 1988, effective March 11, 1989. Amended: Filed Jan. 3, 2000, effective Aug. 30, 2000.*

**Original authority: 643.050, RSMo 1965, amended 1972, 1992, 1993, 1995.*

10 CSR 10-5.400 Control of Emissions From Production of Maleic Anhydride
(Rescinded March 11, 1989)

AUTHORITY: section 203.059, RSMo 1986. Original rule filed June 4, 1985, effective Oct. 26, 1985. Rescinded: Filed Oct. 4, 1988, effective March 11, 1989.

10 CSR 10-5.410 Control of Emissions From Manufacture of Polystyrene Resin

PURPOSE: This rule restricts emissions of volatile organic compounds from the manufacture of polystyrene resin.

(1) Applicability.

(A) This rule shall apply throughout St. Louis City and Jefferson, St. Charles, Franklin and St. Louis Counties.

(B) This rule shall apply to all installations engaged in the manufacture of polystyrene resin.

(2) Emissions Limitation.

(A) Volatile organic compound (VOC) emissions shall be limited to a daily average of 0.24 pounds of VOC per two thousand pounds (2,000 lbs.) of resin produced by the installation.

(B) The emissions limitation set forth in this section shall be achieved through the use of a condensation device which recycles styrene monomer through the resin manufacturing process or by the use of a capital



device approved by the director that will provide an equivalent emissions reduction.

(3) Compliance Method. Compliance with section (2) of this rule shall be determined by the test method referenced in 10 CSR 10-6.030(14)(A).

(4) Compliance Date. Compliance with this rule by any affected installation shall occur no later than June 1, 1985.

(5) Record Keeping. The owners or operators of polystyrene manufacturing plants subject to this rule shall keep records of all emission testing and maintenance of all emission control devices. Records shall be kept for two (2) years and shall be made available to the director upon request.

AUTHORITY: section 643.050, RSMo 1994. Original rule filed Dec. 11, 1984, effective May 11, 1985. Amended: Filed June 5, 1986, effective Sept. 26, 1986. Amended: Filed Oct. 4, 1988, effective March 11, 1989.*

**Original authority: 643.050, RSMo 1965, amended 1972, 1992, 1993.*

10 CSR 10-5.420 Control of Equipment Leaks From Synthetic Organic Chemical and Polymer Manufacturing Plants

PURPOSE: This rule is designed to control leaks of volatile organic compounds from synthetic organic chemical and polymer manufacturing equipment.

PUBLISHER'S NOTE: The secretary of state has determined that the publication of the entire text of the material which is incorporated by reference as a portion of this rule would be unduly cumbersome or expensive. Therefore, the material which is so incorporated is on file with the agency who filed this rule, and with the Office of the Secretary of State. Any interested person may view this material at either agency's headquarters or the same will be made available at the Office of the Secretary of State at a cost not to exceed actual cost of copy reproduction. The entire text of the rule is printed here. This note refers only to the incorporated by reference material.

(1) Definitions.

(A) A component shall be considered in gas volatile organic compounds (VOC) service if it contacts a process fluid containing

ten percent (10%) or greater VOC by weight that is in a gaseous state at operating conditions.

(B) A component shall be considered in light liquid VOC service if it contacts a process fluid containing ten percent (10%) or greater light liquid VOC by weight.

(C) A light liquid VOC is defined as a fluid VOC with a vapor pressure greater than 0.3 kilopascals (kPa) at twenty degrees Celsius (20 °C).

(D) Definitions of certain terms specified in this rule may be found in 10 CSR 10-6.020.

(2) Applicability.

(A) This rule shall apply throughout St. Louis City and Jefferson, St. Charles, Franklin and St. Louis Counties.

(B) This rule applies to all source operations with the potential of processing at least nine hundred eighty (980) tons per year of light liquid and gaseous VOC and producing as intermediate or final products any of those chemicals listed in 10 CSR 10-6.070 (40 CFR part 60, subpart VV).

(3) General Provisions.

(A) Leaking components shall be repaired within fifteen (15) days of the date the leak was detected. A source shall be considered leaking if monitoring results in an instrument reading of ten thousand parts per million (10,000 ppm) by volume or greater at a distance no more than five centimeters (5 cm) from the source or if visual inspection indicates leaks. Repair shall be considered as reduction of the measured VOC concentration below ten thousand (10,000) ppm by volume at a distance of no more than five centimeters (5 cm) from the source. Leaking components which cannot be repaired without a unit shutdown shall be repaired at the next scheduled unit shutdown or within ninety (90) days of the date the leak was detected, whichever comes first.

(B) The detection instrument and the monitoring method employed shall be in accordance with 10 CSR 10-6.070 (40 CFR part 60, Appendix A, method 21).

(C) Pumps with double mechanical seals including a barrier fluid system shall be exempt from the requirements of subsection (3)(F) if—

1. Operated with the barrier fluid at a pressure greater than the pump stuffing box pressure;

2. Equipped with a barrier fluid degassing reservoir that is connected by a closed vent system to a control device; or

3. Equipped with a system that purges the barrier fluid into a process stream with zero VOC emissions to the atmosphere.

(D) Safety/relief valves equipped in series with a rupture disk and a spring return valve or any pressure relief device that is equipped with a closed vent system capable of capturing and transporting leakage to a control device shall be exempt from the requirements of subsections (3)(E)–(J).

(E) Open-ended valves or lines shall be equipped with a cap, plug or second valve to seal the open end except during operations requiring process fluid flow through the open-ended valve or line, during maintenance procedures or to ensure safe operations.

(F) Quarterly monitoring shall be required for the following components in VOC service:

1. Pumps in light liquid VOC service; and
2. Compressors in gas VOC service.

(G) Valves in VOC service not regulated externally or that are difficult or unsafe to monitor shall be monitored annually during April and repaired if leaking.

(H) All valves in VOC service shall be performance tested annually during April. Performance testing shall consist of monitoring all valves in VOC service and repairing any that are leaking. If more than two percent (2%) of the valves monitored in any process unit are leaking, all valves in VOC service in that process unit except those covered by subsection (3)(E) shall be monitored quarterly until less than two percent (2%) are leaking.

(I) Pumps in light liquid VOC service weekly shall be inspected visually for indications of leaks.

(J) Safety/relief valves and any other pressure relief devices in VOC services shall be additionally monitored after each pressure relief.

(4) Reporting and Record Keeping. The owner or operator of a synthetic organic chemical or polymer manufacturing plant covered by this rule shall maintain a listing of the pumps, compressors and valves in VOC service and identify the VOC contained in each component. The owner or operator also shall maintain records of the results of the monitoring required in section (3) including tagging any leaking components and actions taken to repair any leaks that are discovered. These records shall be kept by the owner or



operator for at least two (2) years and submitted to the director upon request.

(5) Compliance Date. Owners or operators subject to this rule shall be in compliance with the monitoring, leak repair and record-keeping procedures described in sections (3) and (4) of this rule no later than October 11, 1986.

AUTHORITY: section 643.050, RSMo 1994. Original rule filed April 2, 1986, effective Sept. 26, 1986. Amended: Filed Oct. 4, 1988, effective March 11, 1989.*

**Original authority: 643.050, RSMo 1965, amended 1972, 1992, 1993.*

10 CSR 10-5.430 Control of Emissions From the Surface Coating of Chrome-Plated and Resist Plastic Parts (Rescinded March 30, 2009)

AUTHORITY: section 643.050, RSMo 1994. Original rule filed Aug. 4, 1987, effective Dec. 24, 1987. Rescinded: Filed Aug. 1, 2008, effective March 30, 2009.

10 CSR 10-5.440 Control of Emissions From Bakery Ovens

PURPOSE: This rule restricts the emission of volatile organic compounds from bakery ovens at large commercial bakeries.

PUBLISHER'S NOTE: The secretary of state has determined that the publication of the entire text of the material which is incorporated by reference as a portion of this rule would be unduly cumbersome or expensive. Therefore, the material which is so incorporated is on file with the agency who filed this rule, and with the Office of the Secretary of State. Any interested person may view this material at either agency's headquarters or the same will be made available at the Office of the Secretary of State at a cost not to exceed actual cost of copy reproduction. The entire text of the rule is printed here. This note refers only to the incorporated by reference material.

(1) Definitions. Definitions of some of the terms used in this rule may be found in 10 CSR 10-6.020 Definition and Common Reference Tables.

(2) Applicability.

(A) This rule shall apply throughout the City of St. Louis, and Jefferson, St. Charles, Franklin, and St. Louis Counties.

(B) This rule shall apply to new or existing commercial bakeries whose potential emissions are greater than one hundred tons per year (100 tpy).

(3) Requirement. The applicability level in subsection (2)(B) of this rule shall change to the level of major source as defined for any ozone nonattainment classification. Existing or new commercial bakeries that emit or have the potential to emit, in ozone nonattainment areas, one hundred (100) tpy or more of volatile organic compounds in areas classified as marginal or moderate, fifty (50) tpy or more in areas classified as serious, twenty-five (25) tpy or more in areas classified as severe, and ten (10) tpy or more in areas classified as extreme shall install volatile organic compound (VOC) emissions control device(s) in order to achieve at least eighty percent (80%) total removal efficiency on the combined emissions of all baking ovens.

(4) Determination of Compliance. Compliance with this rule shall be determined by the following methods:

(A) The destruction efficiency shall be determined by using (EPA) Test Method 25A or another equivalent method approved by the director;

(B) The amount of VOC per ton of baked bread shall be based on the EPA emission factors published in the Environmental Protection Agency document entitled "Alternative Control Technology Document for Bakery Oven Emissions," EPA 453/R-92-017, December 1992, or administrator approved alternative methods determined through stack testing or industry literature acceptable to the administrator and to the director. Alternative methods must be approved by the director; and

(C) The capture efficiency of the air pollution control device shall be determined by an administrator approved method. Administrator approved alternative plans that demonstrate a bakery's oven(s) operate under negative pressure may preclude the need for capture efficiency determination. Alternative methods and plans must be approved by the director.

(5) Record Keeping.

(A) The owner or operator of a bakery oven shall maintain a daily record of operations. The daily records shall include at least:

1. The amount of raw material processed;
2. The percentage of yeast used;
3. The fermentation time;
4. The type of product baked;
5. The amount of product baked;
6. The emission factor used for each product; and
7. The quarterly emissions.

(B) Bakery owners or operators employing VOC emission control device(s) shall, as applicable, continuously monitor and record the following parameters of such device(s) while the bakery oven is in operation:

1. Exhaust temperature of all combustion devices, if used. Combustion devices must be operated at temperatures high enough to achieve optimum destruction efficiency. The optimum operating temperatures will be established at the time of compliance determination;
2. Temperature rise across a catalytic oxidation bed, if used;
3. Exit stream temperature on all condensers, if used; and
4. Any other monitoring parameters as found necessary by the director.

(C) Records under subsections (5)(A) and (B) shall be retained by the owner or operator for a minimum of five (5) years. These records shall be made available immediately upon request for review by the Missouri Department of Natural Resources personnel and other air pollution control agencies upon presentation of proper credentials.

(6) Compliance Schedules. Any bakery owner or operator of an existing source subject to this rule shall submit a compliance plan to the director within three (3) months of the rule effective date or on the date that the commercial bakery becomes subject to this rule whichever is more recent. The compliance plan shall include, but shall not be limited to, control device description, testing protocol, date of compliance, and an operating and maintenance plan for the control device(s). The owner or operator shall demonstrate compliance with this rule within twelve (12) months of the date that the source becomes subject to the rule.

AUTHORITY: section 643.050, RSMo Supp. 1995. Original rule filed Oct. 7, 1994, effective May 28, 1995. Amended: Filed May 15, 1996, effective Dec. 30, 1996.*



*Original authority: 643.050, RSMo 1965, amended 1972, transferred from 203.050 in 1986, 1992, 1993, 1995.

10 CSR 10-5.442 Control of Emissions From Lithographic and Letterpress Printing Operations

PURPOSE: This rule restricts volatile organic compound emissions from lithographic and letterpress printing operations.

(1) Applicability.

(A) This rule shall apply to installations that operate offset lithographic or letterpress printing presses including heatset web, non-heatset web (newspaper and non-newspaper), and non-heatset sheet-fed presses in the City of St. Louis and Jefferson, St. Charles, Franklin, and St. Louis Counties.

(B) This rule shall apply only to installations described in subsection (1)(A) of this rule, with total actual emissions from lithographic and letterpress printing operations, including related cleaning activities, before consideration of controls, of more than three (3) tons per twelve (12)-month rolling period of volatile organic compounds (VOCs).

(C) This rule shall not apply to printing on fabric, metal, or plastic.

(D) Once the installation exceeds the applicability level of this rule, it shall remain subject to this rule even if its actual emissions drop below the applicability level of this rule until it can demonstrate, to the satisfaction of the director, that the total actual VOC emissions from lithographic and letterpress printing operations including related cleaning activities, before consideration of controls, is less than three (3) tons per twelve (12)-month rolling period for sixty (60) consecutive months.

(E) VOC emissions calculations guidance may be found in subsection (5)(D) of this rule. As an alternative, the material use guidance in subsection (5)(E) of this rule may be used to determine applicability.

(2) Definitions. Definitions of certain terms specified in this rule may be found in 10 CSR 10-6.020.

(3) General Provisions.

(A) Fountain Solutions. This subsection applies only to offset lithographic presses with a total fountain solution reservoir capacity of one (1) gallon or more.

1. No owner or operator shall use or permit the use of any applicable offset lithographic printing press unless—

A. For each heatset web press—

(I) The fountain solution, as applied, contains one and six-tenths percent (1.6%) or less by weight of alcohol; or

(II) The fountain solution, as applied, contains three percent (3.0%) or less by weight of alcohol and is refrigerated to a temperature of sixty degrees Fahrenheit (60 °F) or less; or

(III) The fountain solution, as applied, contains five percent (5.0%) or less by weight of alcohol substitutes; and

(IV) The fountain solution mixing tanks are covered for alcohol-based solutions;

B. For each sheet-fed press with a maximum sheet size greater than eleven inches by seventeen inches (11" × 17")—

(I) The fountain solution, as applied, contains five percent (5.0%) or less by weight of alcohol; or

(II) The fountain solution, as applied, contains eight and five-tenths percent (8.5%) or less by weight of alcohol and is refrigerated to a temperature of sixty degrees Fahrenheit (60 °F) or less; or

(III) The fountain solution, as applied, contains five percent (5.0%) or less by weight of alcohol substitutes or a combination of alcohol and alcohol substitutes; and

(IV) The fountain solution mixing tanks containing alcohol-based solutions are covered; and

C. For each non-heatset web press, the fountain solution, as applied, contains no alcohol and five percent (5.0%) or less by weight of alcohol substitutes.

2. Direct measurement of the alcohol content of the fountain solution, as applied, shall be performed and recorded with a hydrometer, equipped with temperature correction or with readings adjusted for temperature, at least once per day or once per batch, whichever is longer. A standard solution shall be used to calibrate the hydrometer once per month for the type of alcohol used in the fountain.

3. For fountain solutions, as applied, containing alcohol substitutes or nonalcohol additives and, as an alternative to paragraph (3)(A)2. of this rule, the VOC content shall be established with proper record keeping which may include, as necessary to determine compliance, the amount of concentrated substitute added per quantity of fountain water, date of preparation, calculated VOC content

of the final solution, or by measurement using U.S. Environmental Protection Agency (EPA) Method 24 analysis as outlined in paragraph (5)(C)1. of this rule. For automatic mixing systems, verification and record keeping of the mixer settings shall be performed at least once each month.

4. The fountain solution temperature for each required refrigerated fountain reservoir containing alcohol-based solutions shall be measured at least once per day or once per batch, whichever is longer, by a thermometer or other temperature detection device capable of reading to one-half degree Fahrenheit (0.5 °F).

(B) Press Cleaning. No owner or operator shall use or permit the use of any applicable offset lithographic or letterpress printing press unless—

1. All cleaning solutions, excluding a quantity not to exceed one hundred ten (110) gallons per facility in any twelve (12) consecutive months, shall have a VOC content of seventy percent (70%) or less, by weight, or a composite partial vapor pressure less than or equal to ten (10) millimeters of mercury (Hg) at twenty degrees Celsius (20 °C);

2. The cleaning solutions are kept in tightly-covered containers at all times except when being dispensed as needed for cleaning operations;

3. The used cleaning cloths contaminated with cleaning solutions are placed in tightly-closed containers while awaiting off-site transportation. The cleaning cloths should be properly cleaned and disposed; and

4. The VOC content or composite partial vapor pressure of the cleaning solution, as applied, shall be established with proper record keeping which may include, as necessary to determine compliance, the amount of concentrated cleaning solution added per quantity of water, date of preparation, calculated VOC content, composite partial vapor pressure of the final solution, by measurement using EPA Method 24 analysis as outlined in paragraph (5)(C)2. of this rule, or the formula in paragraph (5)(C)3. of this rule. For automatic blanket wash systems, verification and record keeping of the mixer settings shall be performed at least once each month.

(C) Heatset Web Press Emission Control Systems. This subsection applies only to heatset web lithographic and letterpress printing presses with the potential to emit (PTE) VOCs from ink oil greater than twenty-five tons per year (25 tpy) unless any such press



is used for book printing or has a maximum web width of twenty-two inches (22") or less.

1. No owner or operator shall use or permit the use of any press without a dryer which has one hundred percent (100%) of its exhaust ducted to a control device that is maintained and operated to achieve, at all times while the press is operating, at least the indicated percentage by weight control efficiency.

VOC Control Device First Installed	VOC Control Percentage
Prior to March 1, 2012	90
On or after March 1, 2012	95

The dryer pressure shall be maintained below the pressure of the press room at all times while the press is operating. Continuous dryer air flow monitoring is not required.

2. As an alternative to achieving the applicable control efficiency in paragraph (3)(C)1. of this rule, any press shall operate its control device to maintain a maximum VOC outlet concentration of twenty parts per million by volume (20 ppmv) as hexane (C₆H₁₄) on a dry basis.

(D) Use of emission control equipment under subsection (3)(C) of this rule shall require that continuous temperature monitors be installed, calibrated, maintained, and operated at all times while a connected printing press is operating. Temperatures shall be measured with an accuracy of plus or minus seventy-five hundredths of one percent (±0.75%) measured in degrees Celsius, or two and one-half degrees Celsius (2.5 °C). The operating temperatures to be used as the parameters for demonstrating continuous compliance shall be determined per subsection (5)(A) of this rule. The monitors continuously shall measure—

1. For catalytic oxidizers, the gas temperature upstream of the catalyst bed;
2. For thermal and regenerative oxidizers, the oxidizer operating temperature; and
3. Any other parameters considered necessary by the director to verify compliance and proper operation of emission control equipment.

(4) Reporting and Record Keeping.

(A) All persons subject to this rule shall maintain records as required by this section sufficient to determine continuous compliance with this rule. These records shall be kept for at least five (5) years or longer if enforcement action is pending. These records

shall be available immediately upon request for review by the Department of Natural Resources' personnel and other air pollution control agencies upon presentation of proper credentials.

(B) All persons subject to subsection (3)(C) of this rule shall maintain records for each control device sufficient to demonstrate that the control efficiency is being maintained. These records shall include, but are not limited to:

1. The temperature readings, logged at least once every fifteen (15) minutes, from the monitors required by paragraphs (3)(D)1. and (3)(D)2. of this rule; and

2. The operating parameters of any required control device determined from any initial or subsequent control efficiency compliance testing as outlined in subsection (5)(A) of this rule.

(C) For each applicable printing press, records shall be maintained to show—

1. For each fountain solution whose VOC content is modified, the calculation or direct measurement data that indicates the resultant VOC content by weight. The calculation or measurement need only be performed once for each batch of fountain solution used except that it need not be performed at all for the dilution of a fountain solution containing alcohol substitutes purchased with less than five percent (5.0%) VOC content before dilution or for alcohol containing fountain solutions requiring refrigeration purchased with less than three percent (3%) or eight and five tenths percent (8.5%) VOC content, for heatset web and sheet-fed presses, respectively;

2. For each fountain solution, a manufacturer's formulation data sheet or Material Safety Data Sheet (MSDS) listing the physical properties of alcohol or alcohol substitute(s) such as density and percent VOC as purchased from the supplier;

3. Results of any testing conducted on an emission unit at a regulated facility;

4. Maintenance records and inspection results of any air pollution control equipment; and

5. The temperature, as required by paragraph (3)(A)1. of this rule, at least once per day or once per batch, whichever is longer.

(D) For each lithographic and letterpress printing installation subject to this rule, records shall be maintained to show—

1. A Material Safety Data Sheet or manufacturer's formulations data listing the percentage by weight of VOC in the cleaning

solution, the composite partial vapor pressure of VOC in the cleaning solution, or the necessary data to make a determination thereof as outlined in subsection (5)(C) of this rule;

2. For each cleaning solution whose VOC content is modified, the calculation that indicates the resultant VOC content by weight or composite partial vapor pressure. The calculation need only be performed once for each batch of cleaning solution used except that it need not be performed at all for the dilution of a cleaning solution which does not exceed the VOC limits of paragraph (3)(B)1. of this rule; and

3. The quantity of all cleaning solution used which does not meet the VOC limits set forth in paragraph (3)(B)1. of this rule on a twelve (12)-consecutive-month basis.

(E) The director may require other records as reasonable and necessary to carry out the provisions of the Missouri Air Conservation Law.

(5) Test Methods. Certain test methods mentioned in this rule may be found in 10 CSR 10-6.030. Other EPA test methods specific to this rule may be found in 40 CFR 60, Appendix A.

(A) Control Efficiency Testing. To demonstrate compliance with the emission limits of subsection (3)(C) of this rule, an initial emission test shall be performed after any required control equipment is installed. The emission limits shall not have been met until compliance has been verified through this testing. Testing shall also be required within one hundred eighty (180) days after significant modifications to any control equipment required by this rule. Significant modifications include any repairs or changes that might substantially alter or affect the overall control efficiency. This subsection outlines the methods to be used for any such testing.

1. The emission unit shall be run at typical operating conditions and flow rates compatible with scheduled production during any emission testing.

2. Capture efficiency testing for heatset dryers is not required if it is demonstrated that pressure in the dryer is negative relative to the surrounding press room and the airflow is into the dryer. This test may be performed with a differential pressure gauge or an airflow direction indicator (e.g., smoke stick or aluminum ribbons).

3. EPA Method 1 or 1A, as appropriate, shall be used to select the sampling sites.

4. EPA Method 2, 2A, 2C, or 2D, as appropriate, shall be used to determine the



velocity and volumetric flow rate of the exhaust stream.

5. EPA Method 3 or 3A, as appropriate, shall be used to determine the concentration of oxygen (O₂) and carbon dioxide (CO₂).

6. EPA Method 4 shall be used to determine moisture content.

7. EPA Method 18, 25, or 25A shall be used to determine the VOC concentration of the exhaust stream entering and exiting the control device, unless the alternate limit in paragraph (3)(C)2. of this rule is being used for compliance, in which case only the VOC concentration of the exit exhaust shall be determined. In cases where the anticipated outlet VOC concentration of the control device is less than fifty (50) ppmv as carbon, EPA Method 25A shall be used.

8. If EPA Method 25A is used—

A. The outlet readings from a thermal or catalytic oxidizer may be corrected by using EPA Method 18 or 25 to determine non-VOC components (methane and ethane) and subtracting these from the Method 25A result; and

B. The director may require a retest by EPA Method 18 or 25 if the average corrected outlet reading is greater than fifty (50) ppmv VOC as carbon.

9. A compliance test shall consist of up to three (3) separate runs, each lasting a minimum of sixty (60) minutes unless the director determines that the circumstances dictate shorter sampling times.

10. EPA Method 25 specifies a minimum probe temperature of two hundred sixty-five degrees Fahrenheit (265 °F). To prevent condensation, the probe should be heated to at least the gas stream temperature, typically close to three hundred fifty degrees Fahrenheit (350 °F).

11. EPA Method 25A specifies a minimum temperature of two hundred twenty degrees Fahrenheit (220 °F) for the sampling components leading to the analyzer. To prevent condensation when testing heatset printing presses, the sampling components and flame ionization detector lock should be heated to at least the gas stream temperature, typically close to three hundred fifty degrees Fahrenheit (350 °F).

12. The oxidizer operating temperature or the temperature of the gas upstream of the catalyst bed may be used as the operating parameter for determining continuous compliance with the emission standard of subsection (3)(C) of this rule. This temperature shall be computed as the time-weighted aver-

age of the temperature values recorded during the test. The owner or operator must maintain the oxidizer at a three (3)-hour average temperature equal to or greater than a temperature fifty degrees Fahrenheit (50 °F) below the average temperature observed during the most recent stack test to demonstrate continuous compliance.

13. Use of an adaptation to any of the methods specified in this subsection may be approved by the director on a case-by-case basis. The owner or operator shall submit sufficient documentation for the director to find that the methods specified in this subsection will yield inaccurate results and that the proposed adaptation is appropriate.

(B) Control Device Inspection. For catalytic oxidizers, the catalyst bed material shall be inspected annually for general catalyst condition and any signs of potential catalyst depletion. The owner or operator shall also collect a representative sample of the catalyst from the oxidizer, per manufacturer's recommendations, and have it tested to evaluate the catalyst's capability to continue to function at or above the required control efficiency. An evaluation of the catalyst bed material shall be conducted whenever the results of the inspection indicate signs of potential catalyst depletion or poor catalyst condition based on manufacturer's recommendations, but not less than once per year.

(C) VOC Content Testing.

1. Fountain solutions. Compliance with the VOC content limits for fountain solutions established in subsection (3)(A) of this rule shall be determined by one (1) of the following:

A. If fountain solution is diluted prior to use, a calculation that combines EPA Method 24 analytical data for the concentrated materials used to prepare the fountain solution and the proportions in which they are mixed to make the as-applied material. The analysis of the concentrated materials may be performed by the supplier of those materials. Owners or operators may use formulation information provided with the concentrated materials used to prepare the fountain solution, such as the container label, the product data sheet, or the MSDS sheet to document the VOC content of the concentrated material;

B. If fountain solution is not diluted prior to use, MSDS or manufacturer's formulation data sheet may be used; or

C. EPA Method 24 of a sample of fountain solution, as applied.

2. Cleaning solutions. The VOC content or VOC composite partial vapor pressure of cleaning solutions shall be determined by one (1) of the following:

A. Analysis by EPA Method 24 for VOC content or by an appropriate method for VOC composite partial vapor pressure of a sample of the cleaning solution. See formula in paragraph (5)(C)3. of this rule. The analysis may be performed by the supplier of those materials; or

B. Calculation for VOC content that combines EPA Method 24 analytical data for the concentrated materials used to prepare the cleaning solution and the proportions in which they are mixed to make the cleaning solution as applied. Owners or operators may use formulation information provided with the concentrated materials used to prepare the cleaning solution, such as the container label, the product data sheet, or the MSDS sheet to document the VOC content of the concentrated material;

C. If cleaning solution is not diluted prior to use, MSDS or manufacturer's formulation data sheet may be used.

3. Calculations. The VOC composite partial vapor pressure is the sum of the partial pressure of the compounds defined as VOCs. VOC composite partial vapor pressure is calculated as follows:

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

Where:

- W_i = Weight of the ith VOC compound, in grams
- W_w = Weight of water, in grams
- W_c = Weight of exempt compound, in grams
- MW_i = Molecular weight of the ith VOC compound, in g/g-mole
- MW_w = Molecular weight of water, in g/g-mole
- MW_c = Molecular weight of exempt compound, in g/g-mole
- n = Number of VOC compounds
- PP_c = VOC composite partial vapor pressure at 20 °C (68 °F), in mmHg
- VP_i = Vapor pressure of the ith VOC compound at 20 °C (68 °F), in mmHg



(D) VOC Emission Calculations, Retention Factors, and Capture Efficiencies. For purposes of determining VOC emissions from lithographic and letterpress printing operations, the following retention factors and capture efficiencies and formula shall be used:

1. A portion of the VOC contained in inks and cleaning solution is retained in the printed web or in the shop towels used for cleaning. The following retention factors shall be used:

A. For heatset inks printed on absorptive substrates, a twenty percent (20%) VOC retention factor shall be used meaning eighty percent (80%) of the VOC in the ink is emitted during the printing process and is available for capture and control by an add-on pollution control device;

B. For sheet-fed and non-heatset web inks printed on absorptive substrates, a ninety-five percent (95%) VOC retention factor shall be used, meaning five percent (5%) of the VOC in the ink is emitted during the printing process; and

C. For cleaning solution VOC emissions from shop towels using cleaning solutions with a VOC composite vapor pressure of no more than ten (10) mmHg at twenty degrees Celsius (20 °C) (sixty-eight degrees Fahrenheit (68 °F)), a fifty percent (50%) VOC retention factor shall be used if the contaminated shop towels are kept in closed containers;

2. A portion of the VOC contained in inks, fountain solutions, and automatic blanket washes on heatset presses is captured in the press dryer for control by add-on pollution control devices. The following capture factors shall be used:

A. For inks, a one hundred percent (100%) VOC capture efficiency shall be used. All the VOC in the ink that is not retained is assumed to be volatilized in the press dryer if it is demonstrated that the pressure in the dryer is negative relative to the surrounding press room and the airflow is into the dryer;

B. For fountain solutions containing alcohol substitutes, a seventy percent (70%) VOC capture factor shall be used; and

C. For automatic blanket wash solutions with a VOC composite partial vapor pressure of no more than ten (10) mmHg at twenty degrees Celsius (20 °C) (sixty-eight degrees Fahrenheit (68 °F)), a forty percent (40%) VOC capture factor shall be used; and

3. For calculating VOC emissions, the following equations shall be used:

A. For total VOC emissions from an offset lithographic printing facility, including all related cleaning activities—



$$VOC_{TOT} = \sum_{i=1}^m W_{INK_i} * VOC_{INK_i} * \left(1 - \frac{RF_{INK_i}}{100}\right) + \sum_{i=1}^n VOL_{FS_i} * VOC_{FS_i} + \sum_{i=1}^p VOL_{CS_i} * VOC_{CS_i} * \left(1 - \frac{RF_{CS_i}}{100}\right)$$

Where:

- VOC_{TOT} = Total VOC emissions, expressed as pounds
- W_{INK} = Weight of ink used, expressed as pounds
- VOC_{INK} = Weight fraction of VOC in the ink
- RF_{INK} = Retention factor of the ink, expressed as a percent
- m = Number of inks
- VOL_{FS} = Volume of fountain solution used, expressed as gallons
- VOC_{FS} = VOC content of fountain solution, expressed as pounds per gallon
- n = Number of fountain solutions
- VOL_{CS} = Volume of cleaning solution used, expressed as gallons
- VOC_{CS} = VOC content of cleaning solution, expressed as pounds per gallon
- RF_{CS} = Retention factor of the cleaning solution, expressed as a percent
- p = Number of cleaning solutions

this rule, the material use thresholds are as follows:

Type of Printing Operation	12-Month Rolling Material Use Threshold
Sheet-fed	768 gallons of cleaning solvent and fountain solution additives
Non-heatset Web	768 gallons of cleaning solvent and fountain solution additives
Heatset Web	5,400 pounds of ink, cleaning solvent, and fountain solution additives

2. For determining if a web heatset press is subject to subsection (3)(C) of this rule, the material use thresholds are as follows:

Type of Printing Press	Annual Material Use Threshold
Heatset Web	55,800 pounds of ink

*AUTHORITY: section 643.050, RSMo 2000. * Original rule filed Oct. 7, 1994, effective May 28, 1995. Amended: Filed Nov. 30, 2010, effective Aug. 30, 2011.*

**Original authority: 643.050, RSMo 1965, amended 1972, 1992, 1993, 1995; transferred from 203.050 in 1986.*

10 CSR 10-5.443 Control of Gasoline Reid Vapor Pressure
(Rescinded: January 30, 2003)

AUTHORITY: section 643.050, RSMo 1994. Original rule filed Dec. 13, 1993, effective July 30, 1994. Amended: Filed Oct. 7, 1994, effective May 28, 1995. Rescinded: Filed April 2, 2002, effective Jan. 30, 2003.

10 CSR 10-5.450 Control of VOC Emissions from Traffic Coatings

PURPOSE: This rule limits volatile organic compound content of traffic coatings. Volatile organic compounds are precursors to ozone, which poses health and environmental concerns. This rule is part of the fifteen percent state implementation plan for the ozone nonattainment area.

PUBLISHER'S NOTE: The secretary of state

has determined that the publication of the entire text of the material which is incorporated by reference as a portion of this rule would be unduly cumbersome or expensive. Therefore, the material which is so incorporated is on file with the agency who filed this rule, and with the Office of the Secretary of State. Any interested person may view this material at either agency's headquarters or the same will be made available at the Office of the Secretary of State at a cost not to exceed actual cost of copy reproduction. The entire text of the rule is printed here. This note refers only to the incorporated by reference material.

(1) Definitions.

(A) Grams of volatile organic compounds (VOC) per liter of coating, less water and less exempt compounds is the weight of VOC per combined volume of VOC and coating solids and can be calculated by the following equation:

(B) Traffic coatings are coatings formulated for and applied to public streets, highways, and other surfaces including, but not limited to, curbs, berms, driveways, and parking lots.

Grams of VOC per liter of coating, less water and less exempt compounds

$$= \frac{W_s - W_w - W_{es}}{V_m - V_w - V_{es}}$$

Where: W_s = weight of volatile compounds in grams

W_w = weight of water in grams

W_{es} = weight of exempt compounds in grams

V_m = volume of material in liters

V_w = volume of water in liters

V_{es} = volume of exempt compounds in liters

(C) Other definitions of certain terms specified in this rule may be found in 10 CSR 10-6.020.

(2) Applicability.

(A) This rule shall apply throughout the St. Louis metropolitan area which includes the City of St. Louis and Jefferson, Franklin, St. Louis, and St. Charles Counties.

(B) This rule shall apply to any person who supplies, sells, offers for sale, applies, solicits the application of, or manufactures for use any coating intended for use in traffic marking.

(C) This rule shall not apply to traffic coatings sold for shipment outside of the area

and

B. For VOC ink oil emissions from a heatset web lithographic or letterpress printing press—

$$VOC_{TOT} = \sum_{i=1}^n W_{INK_i} * VOC_{INK_i} * \left(1 - \frac{RF_{INK_i}}{100}\right)$$

Where:

- VOC_{TOT} = Total VOC emissions, expressed as pounds
- W_{INK} = Weight of ink used, expressed as pounds
- VOC_{INK} = Weight fraction of VOC in the ink
- RF_{INK} = Retention factor of the ink, expressed as a percent
- n = Number of inks

(E) Material Use Guidance: Applicability Determination. Based on EPA's *Potential to Emit (PTE) Guidance for Specific Source Categories* (April 14, 1998) and the equations of paragraph (5)(D)3. of this rule, the methods in this subsection may be used for determining if a facility or press meets the corresponding applicability thresholds.

1. For determining if a facility meets the applicability limits of subsection (1)(B) of



defined in subsection (2)(A) or for shipment to other manufacturers for repackaging.

(3) Provisions.

(A) Except as provided in subsections (3)(B) and (C), no person shall supply, sell, offer for sale, apply, or solicit the application of, any traffic coating which, at the time of sale or manufacture, contains more than one hundred fifty (150) grams of VOCs per liter of coating one point twenty-six (1.26) pounds per gallon, excluding water, exempt compounds, and any colorant added to tint bases, or manufacture, blend, or repackage such a coating for use within the St. Louis metropolitan area without the approval of the staff director.

(B) If anywhere on the container of any coating, on any sticker or label affixed thereto, or in any sales or advertising literature, any representation is made that the coating may be used as, or is suitable for use as, a coating for which a lower VOC is specified, then the lowest VOC standard shall apply.

(C) Sale or application of a coating manufactured prior to the effective date of the rule, and not complying with the standard in subsection (3)(A), shall not constitute a violation until April 15, 1996.

(D) The manufacture of a coating not complying with subsection (3)(A) shall not constitute a violation until thirty (30) days after the effective date of the rule.

(E) All VOC-containing materials shall be stored in closed containers when not in use. In use includes, but is not limited to, being accessed, filled, emptied, or repaired.

(4) Labeling.

(A) Containers for all traffic coatings shall display the date of manufacture of the contents or a code indicating the date of manufacture. The manufacturers of such coatings shall file with the staff director an explanation of each code.

(B) Containers for all coatings subject to the requirements of this rule shall carry a statement of the manufacturer's recommendation regarding thinning of the coating. The recommendation shall either specify that the coating is to be applied under normal environmental and application conditions without thinning, or limit thinning required for normal environmental and application conditions such that after thinning the coating will not exceed one hundred fifty (150) grams of VOCs per liter.

(C) Containers of any coating subject to this rule shall display the maximum grams of VOC in a liter of traffic coating as produced by the manufacturer, excluding water and any colorant added to tint bases and after any rec-

ommended thinning. The VOC content displayed may be calculated using product formulation data, or may be determined using the test method in section (5).

(5) Test Method.

(A) The VOC content of traffic coatings shall be determined by the Environmental Protection Agency (EPA) Reference Test Method 24 (Determination on Volatile Matter Content, Water Content, Density Volume Solids, and Weight Solids of Surface Coatings, *Code of Federal Regulations* Title 40, part 60, Appendix A).

(B) Other test methods for determining VOC content may be used if found to be equivalent after review by the director.

AUTHORITY: 643.050, RSMo 1994. Original rule filed Oct. 7, 1994, effective May 28, 1995.*

**Original authority: 643.050, RSMo 1965, amended 1972, transferred from 203.050 in 1986, 1992, 1993.*

10 CSR 10-5.451 Control of Emissions from Aluminum Foil Rolling

PURPOSE: This rule specifies operating procedures, materials requirements, and control equipment specifications for the reduction of volatile organic compounds from aluminum foil rolling mills in the St. Louis ozone nonattainment area. Since volatile organic compounds are precursors to ozone formation, ambient ozone levels will be reduced.

(1) Applicability. This rule shall apply to all aluminum foil rolling facilities with potential volatile organic compound (VOC) emissions greater than or equal to one hundred (100) tons per year throughout St. Louis City and Jefferson, St. Charles, Franklin and St. Louis Counties.

(2) Definitions.

(A) Cold rolling mill—Batch process aluminum sheet rolling mill with a preset gap between the work rolls used to reduce the sheet thickness. The process generally occurs at temperatures below two hundred sixty-five degrees Fahrenheit (265 °F.). A cold rolling mill is used mainly for the production of aluminum sheet at gauges between 0.3 inches to 0.002 inches. Reductions to finish gauge may occur in one (1) pass or several passes.

(B) Intermediate foil mill—Batch process aluminum foil rolling mill with the work rolls in contact to reduce foil gauge. This process reduces finished sheet to intermediate foil gauges. An intermediate foil mill is used

mainly in the production of aluminum foil at gauges between 0.010 inches to 0.0004 inches. Reductions to finish gauge may occur in several passes through the mill.

(C) Finish foil mill—Batch process aluminum foil rolling mill with work rolls in contact to reduce foil gauge. This process reduces intermediate foil and in some cases finished sheet to final gauges. A finish foil mill is used mainly in the production of aluminum foil at gauges between 0.005 inches to 0.00018 inches. Reductions to finish gauge may occur in several passes through the mill.

(D) Rolling lubricant—Petroleum based oil usually mixed with additives. The lubricant is used to cool the work rolls and provide lubrication for the product in contact with the work rolls.

(E) Definitions of certain terms specified in this rule may be found in 10 CSR 10-6.020.

(3) Emission Limits.

(A) Rolling Lubricants.

1. Cold rolling mill.

A. Rolling lubricants used on the cold mill shall consist of low vapor pressure lubricants composed of saturated oils and additives. For purposes of this subparagraph, low vapor pressure shall be defined as less than 1.0 mmHg at one hundred degrees Fahrenheit (100 °F).

B. The initial boiling point of the as-received oils shall be three hundred eighty degrees Fahrenheit (380 °F) or greater.

C. The initial boiling point of the as-applied rolling lubricants shall be greater than three hundred eighty degrees Fahrenheit (380 °F).

D. The inlet or as-applied rolling lubricant temperatures at each mill shall not exceed one hundred fifty-five degrees Fahrenheit (155 °F) and such temperatures shall be monitored at all times that the mill is in operation.

2. Intermediate and finishing mills.

A. Rolling lubricants used on the intermediate and finish mills shall consist of low vapor pressure lubricants composed of saturated oils and additives. For purposes of this subparagraph, low vapor pressure shall be defined as less than 1.0 mmHg at one hundred degrees Fahrenheit (100 °F).

B. The initial boiling point of the as-received oils shall be three hundred thirty-five degrees Fahrenheit (335 °F) or greater.

C. The initial boiling point of the as-applied rolling lubricants shall be greater



than three hundred degrees Fahrenheit (300 °F).

D. The inlet or as-applied rolling lubricant temperatures at each mill shall not exceed one hundred sixty degrees Fahrenheit (160 °F) and such temperatures shall be monitored at all times that the mill is in operation.

(B) Large Emission Sources.

1. For any rolling mill that has ever had actual VOC emissions equal to or greater than one thousand (1,000) tons per calendar year—

A. Emissions capture methods and emissions control equipment must be installed and used, which will result in an overall VOC emission reduction of at least eighty percent (80%).

B. An affected facility shall submit a compliance plan that details how the required VOC emissions will be controlled. The compliance plan shall include:

(I) A physical description and the operating characteristics of the rolling mill;

(II) A physical description of the capture methods to be used and the operating characteristics and design specifications of the control equipment;

(III) Expected annual quantities of material throughputs to the mill and the control equipment;

(IV) Potential VOC emissions, expected actual VOC emissions from the mill, both controlled and uncontrolled, and total operating hours from the two (2) previous calendar years to be used as a baseline for determination of overall emissions reductions;

(V) Proposed methods of testing, monitoring, record keeping and reporting for determining compliance with this rule;

(VI) A compliance schedule detailing all important interim dates up to and including final compliance testing; and

(VII) Any additional information as requested by the director.

C. The compliance plan shall be submitted to the director no later than sixty (60) days after the effective date of this rule.

D. The compliance plan shall be subject to the approval of the director.

2. Contingency plans.

A. Should an affected facility not be able to meet the overall eighty percent (80%) VOC emission reduction, the facility must develop and submit a plan detailing corrective actions to obtain VOC emission reductions equivalent to the shortfall. The contingency

plans shall be submitted to the director for approval.

B. The contingency plan shall include the following:

(I) The total VOC emission reductions that will be achieved by the plan;

(II) The emission reduction method of control that will be used to make up for any shortfall in the original compliance plan;

(III) Proposed method of record keeping; and

(IV) A proposed implementation schedule.

C. The contingency plan shall be submitted no later than one hundred twenty (120) days after a determination is made that the compliance plan does not meet the eighty percent (80%) emission reduction.

(4) Record Keeping.

(A) For cold rolling mills—

1. Records of rolling lubricant formulations with identification of all oils and additives shall be maintained;

2. Records of the initial and final boiling points of all as-received oil shipments shall be maintained;

3. Records of the initial boiling points of the as-applied rolling lubricant shall be maintained on a monthly basis;

4. The temperature of the as-applied rolling lubricant shall be continuously recorded; and

5. All records of rolling lubricant formulations, distillation tests for oils, and as-applied rolling lubricants and rolling lubricant temperatures shall be retained for a period of at least three (3) years and be immediately available for inspection upon request by the department or any agency with proper authority.

(B) For intermediate and finishing mills—

1. Records of rolling lubricant formulations with identification of all oils and additives shall be maintained;

2. Records of the initial and final boiling points of all as-received oil shipments shall be maintained;

3. Records of the initial boiling points of the as-applied rolling lubricant shall be maintained on a monthly basis;

4. The temperature of the as-applied rolling lubricant shall be continuously recorded; and

5. All records of rolling lubricant formulations, distillation tests for oils, and as-applied rolling lubricants and rolling lubricant temperatures shall be retained for a period of at least three (3) years and be immedi-

ately available for inspection upon request by the department or any agency with proper authority.

(5) Determination of Compliance.

(A) All incoming shipments of oil shall be sampled and a distillation range test shall be performed using American Society for Testing and Materials (ASTM) methods D86-99, Standard Method for Distillation of Petroleum Products or other methods approved by the director. The results of such tests shall be used for compliance with subparagraph (3)(A)1.B. of this rule and subparagraph (3)(A)2.B. of this rule.

(B) A grab sample of the as-applied rolling lubricants shall be taken on a monthly basis from each mill during any month that a mill is in operation. A distillation range test shall be performed using ASTM methods. The results of such tests shall be used to determine compliance with subparagraphs (3)(A)1.C. and (3)(A)2.C.

(C) Compliance with subparagraphs (3)(A)1.D. and (3)(A)2.D. shall be met with continuous monitoring and recording of the rolling lubricant temperature.

(D) Determination of the eighty percent (80%) emission reduction requirement in subparagraph (3)(B)1.A. shall be determined through control efficiency emissions testing.

*AUTHORITY: section 643.050, RSMo Supp. 1999. *Emergency rule filed March 15, 1995, effective March 25, 1995, expired July 11, 1995. Original rule filed March 15, 1995, effective Nov. 30, 1995. Amended: Filed Feb. 9, 2000, effective Sept. 30, 2000.*

**Original authority: 203.050, RSMo 1965, amended 1972, transferred to 643.050, RSMo 1986, amended 1992, 1993, 1995.*

10 CSR 10-5.455 Control of Emissions From Industrial Solvent Cleaning Operations

PURPOSE: This rule will reduce the volatile organic compounds emissions from industrial cleaning operations that use organic solvents.

(1) Applicability.

(A) This rule shall apply throughout St. Louis City and the Counties of Jefferson, St. Charles, Franklin, and St. Louis.

(B) This rule shall apply to any person who performs or allows the performance of any cleaning operation involving the use of organic solvents or solvent solutions. Except as



provided in subsections (1)(C) through (1)(G) of this rule, the provisions of this rule shall apply to any stationary source that emits at least three (3) tons per twelve (12)-month rolling period or more of volatile organic compounds (VOCs) from cleaning operations at the source, in the absence of air pollution control equipment, and stores and/or disposers of these solvent materials.

(C) The following solvent cleaning operations are not subject to the provisions of this rule:

1. Cold cleaner;
2. Open top vapor degreaser;
3. Conveyorized cold cleaner;
4. Conveyorized vapor degreaser;
5. Stripping of cured coatings, cured ink, or cured adhesives;
6. Cleaning operation in printing pre-press or graphic arts pre-press area, including the cleaning of film processors, color scanners, plate processors, film cleaning, and plate cleaning;
7. Nonmanufacturing area cleaning. Nonmanufacturing areas include cafeterias, laboratories, pilot facilities, restrooms, janitorial cleaning, including graffiti removal, and office buildings; and
8. Cleaning operations for emission units within the following source categories listed for regulation under section 183(e) of the Clean Air Act:
 - A. Aerospace coatings;
 - B. Auto and light-duty truck assembly coatings;
 - C. Fiberglass boat manufacturing materials;
 - D. Flat wood paneling coatings;
 - E. Flexible packaging printing materials;
 - F. Large appliance coatings;
 - G. Letterpress printing materials;
 - H. Lithographic printing materials;
 - I. Metal furniture coatings;
 - J. Miscellaneous industrial adhesives;
 - K. Miscellaneous metals parts coatings;
 - L. Paper, film, and foil coatings;
 - M. Plastic parts coatings;
 - N. Shipbuilding and repair coatings;
 - O. Wood furniture coatings.

(D) The following solvent cleaning operations are exempt from the VOC-content limitations specified in subsection (3)(A) of this rule:

1. Cleaning of solar cells, laser hardware, scientific instruments, and high-precision optics;

2. Cleaning conducted as part of the following: performance laboratory tests on coatings, adhesives, or inks; research and development programs; and laboratory tests in quality assurance laboratories;

3. Cleaning of paper-based gaskets and clutch assemblies where rubber is bonded to metal by means of an adhesive;

4. Cleaning of cotton swabs to remove cottonseed oil before cleaning of high-precision optics;

5. Cleaning at medical device and pharmaceutical facilities using up to one and one-half (1.5) gallons per day of solvents;

6. Cleaning of adhesive application equipment used for thin metal laminating;

7. Cleaning of electronic or electrical cables;

8. Touch-up cleaning performed on printed circuit boards where surface mounted devices have already been attached;

9. Cleaning of coating and adhesive application processes utilized to manufacture transdermal drug delivery product using less than three (3) gallons per day of ethyl acetate;

10. Cleaning of application equipment used to apply coating on satellites and radiation effect coatings;

11. Cleaning of application equipment used to apply solvent-borne fluoropolymer coatings;

12. Cleaning of ultraviolet or electron beam adhesive application;

13. Cleaning of sterilization indicating ink application equipment if the facility uses less than one and one-half (1.5) gallons per day of solvents for such cleaning;

14. Cleaning of metering rollers, dampening rollers, and printing plates;

15. Cleaning of numismatic dies; and

16. Cleaning of operations associated with digital printing.

(E) Cleaning with aerosol products shall be exempt from the requirements of subsection (3)(A) of this rule if the facility uses one and one-quarter (1.25) gallons (one hundred sixty (160) fluid ounces) or less of the aerosol products per day.

(F) Cleaning operations at a manufacturer of coatings, inks, or resins are exempt from subsections (3)(A) and (3)(B) of this rule.

(G) Subsection (3)(E) applies to manufacturers of coatings, inks, and resins only.

(H) Once a source has exceeded the applicability level of this rule, it shall remain subject to this rule even if its actual emissions drop below the applicability level of this rule

until it can demonstrate, to the satisfaction of the director, that the total actual VOC emissions from solvent cleaning operations, before consideration of controls, is less than three (3) tons per twelve (12)-month rolling period for sixty (60) consecutive months.

(2) Definitions. Definitions of certain terms specified in this rule may be found in 10 CSR 10-6.020.

(3) General Provisions.

(A) VOC-Content Limitations. No owner or operator of a source subject to this rule shall perform any cleaning operation subject to this rule unless the owner or operator meets the requirements in paragraph (3)(A)1., (3)(A)2., or (3)(A)3. of this rule—

1. The VOC content of the as-used cleaning solutions (minus water and exempt compounds) shall not exceed the following emissions limitations:

A. Product cleaning during manufacturing process or surface preparation for coating, adhesive, or ink application.

Solvent Cleaning Operation	VOC Emission Limit	
	Kilograms per liter	Pounds per gallon
Electrical apparatus components and electronic components	0.10	0.83
Medical devices and pharmaceuticals	0.80	6.70

B. Repair and maintenance cleaning.

Solvent Cleaning Operation	VOC Emission Limit	
	Kilograms per liter	Pounds per gallon
Electrical apparatus components and electronic components	0.10	0.83
Medical devices and pharmaceuticals: tools, equipment, and machinery	0.80	6.70
Medical devices and pharmaceuticals: general work surfaces	0.60	5.00

C. Cleaning of ink application equipment.



Solvent Cleaning Operation	VOC Emission Limit	
	Kilograms per liter	Pounds per gallon
Rotogravure printing that does not print flexible packaging	0.10	0.83
Screen printing	0.50	4.20
Ultraviolet ink and electro beam ink application equipment, except screen printing	0.65	5.40
Flexographic printing that does not print flexible packaging	0.10	0.83

D. All other solvent cleaning operations.

Solvent Cleaning Operation	VOC Emission Limit	
	Kilograms per liter	Pounds per gallon
All other solvent cleaning operations not subject to specific limitations in paragraphs (3)(A)1., (3)(A)2., or (3)(A)3. of this rule	0.05	0.42

2. The composite vapor pressure of each as-used cleaning solution used does not exceed eight millimeters of mercury (8.0 mmHg) measured at twenty degrees Celsius (20 °C) (sixty-eight degrees Fahrenheit (68 °F)); or

3. An oxidizer or carbon adsorber is installed and operated that reduces VOC emissions from the subject cleaning operation by at least eighty-five percent (85%) overall. The owner or operator may use an emission control system other than an afterburner or carbon adsorber if such device reduces VOC emission from the subject cleaning operation by at least eighty-five percent (85%) by mass, the owner or operator submits a plan to the director detailing appropriate monitoring devices, test methods, record-keeping requirements, and operation parameters for such a control device, and such a plan is approved by the director and the U.S. Environmental Protection Agency (EPA) within federally-enforceable permit conditions.

(B) Cleaning Devices and Methods. The owner or operator of a facility that is subject to this rule shall employ one (1) or more of the following cleaning devices and methods:

1. Wipe cleaning;
2. Closed containers or hand-held spray bottles from which solvents are applied;
3. Cleaning equipment which has a sol-

vent container that can be, and is, closed during cleaning operations, except when depositing and removing objects to be cleaned, and is closed during non-operation with the exception of maintenance and repair to the cleaning equipment itself; and

4. Remote reservoir cleaner, if the operator of the cleaner complies with all of the following:

A. Prevents solvent vapors from escaping from the solvent container by using such devices as a cover or a valve when the remote reservoir is not being used, cleaned, or repaired;

B. Directs solvent flow in a manner that will prevent liquid solvent from splashing outside of the remote reservoir cleaner;

C. Does not clean porous or absorbent materials, such as cloth, leather, wood, or rope;

D. Uses only solvent containers free of all liquid leaks. Auxiliary equipment, such as pumps, pipelines, or flanges, shall not have any liquid leaks, visible tears, or cracks. Any liquid leak, visible tear, or crack detected shall be repaired within one (1) calendar day, or the leaking section of the remote reservoir cold cleaner shall be drained of all solvent and shutdown until it is repaired or replaced;

E. Non-atomized solvent flow method where the cleaning solvent is collected in a container or a collection system which is closed except for solvent collection openings and, if necessary, openings to avoid excessive pressure build-up inside the container; and

F. Solvent flushing method where the cleaning solvent is discharged into a container which is closed except for solvent collection openings, and, if necessary, other openings to avoid excessive pressure build-up inside the container. The discharged solvent from the equipment must be collected into containers without atomizing into the open air. The solvent may be flushed through the system by air or hydraulic pressure or by pumping.

(C) Operating Requirements. The owner or operator of a source subject to the requirements of this section shall comply with the following for each subject cleaning operation:

1. Cover all open containers and properly cover and store applicators used to apply cleaning solvents;
2. Dispose of all used cleaning solutions, cleaning towels, and applicators used to apply cleaning solvents in closed containers that are nonleaking and nonabsorbent;
3. Minimize air circulation around the cleaning operation; and
4. Utilize equipment practices that minimize emissions.

(D) Control Device Inspection. For catalytic oxidizers, the catalyst bed material shall be inspected annually for general catalyst condition and any signs of potential catalyst depletion. The owner or operator shall also collect a representative sample of the catalyst from the oxidizer, per manufacturer's recommendations, and have it tested to evaluate the catalyst's capability to continue to function at or above the required control efficiency. An evaluation of the catalyst bed material shall be conducted whenever the results of the inspection indicate signs of potential catalyst depletion or poor catalyst condition based on manufacturer's recommendations but not less than once per year.

(E) Requirements for coatings, inks, and resin manufacturers. Coating, ink, and resin manufacturers must comply with the following requirements:

1. Clean portable or stationary mixing vats, high dispersion mills, grinding mills, tote tanks, and roller mills by one (1) or more of the following methods:

A. Use a solvent or solvent solution that either contains less than 1.67 pounds per gallon (0.20 kilograms per liter) of VOC or has a composite vapor pressure no more than eight millimeters of mercury (8.0 mmHg) at twenty degrees Celsius (20 °C);

B. Collect and vent the emissions from equipment cleaning to a VOC emission control system that has an overall capture and control efficiency of at least eighty percent (80%) by weight for the VOC emissions. Where such reduction is achieved by incineration, at least ninety percent (90%) of the organic carbon shall be oxidized to carbon dioxide;

C. Use organic solvents other than those allowed in subparagraph (3)(E)1.A. of this rule provided no more than sixty (60) gallons (two hundred twenty-eight (228) liters) of fresh solvent shall be used per month. Organic solvent that is reused or recycled (either onsite or offsite), for further use in equipment cleaning or the manufacture of coating, is not included in this limit; or

D. Comply with the following work practices:

- (I) Equipment being cleaned must be maintained leak free;
- (II) VOC-containing cleaning materials must be drained from the cleaned equipment upon completion of cleaning;
- (III) VOC-containing cleaning materials, including waste solvents, shall not be stored or disposed of in such a manner that will cause or allow evaporation into the atmosphere; and
- (IV) Store all VOC-containing materials in closed containers; and



2. When using solvent for wipe cleaning, the owner or operator of a facility shall—

A. Not use open containers for the storage or disposal of cloth or paper impregnated with organic compounds that is used for cleanup or coating, ink, or resin removal; and

B. Not store spent or fresh organic compounds to be used for cleanup or coating, ink, or resin removal in open containers.

(4) Reporting and Record Keeping. All owners and operators subject to this rule shall maintain records as required by this section sufficient to determine continuous compliance with this rule. These records shall be kept for at least five (5) years to be automatically extended if enforcement action is pending. These records shall be made available immediately upon request for review by the Department of Natural Resources' personnel and other air pollution control agencies upon presentation of proper credentials.

(A) The owner or operator of a facility that includes an industrial solvent cleaning operation shall keep records detailing specific VOC uses as necessary for the director to determine monthly compliance. All facility records must include the following:

1. A list of all solvents currently used and/or stored at the site. The list shall include the following information:

A. Cleaning solvent type by name/code/manufacturer;

B. The actual VOC content of the cleaning solvents, based upon EPA Method 24, of each cleaning material, in pounds per gallon of material, as applied or the VOC composite partial vapor pressures of the solvents or solvent solutions used in the industrial cleaning operations. This calculation need only be performed once for each batch of cleaning solution used; and

C. The actual mixing ratio for the cleaning solvent as applied; and

2. Records of usage including the following information:

A. Monthly records of total applied volume in gallons for each cleaning solvent used;

B. Monthly records of solvent cleaning activity associated with each solvent used;

C. Monthly records of total volume of aerosol products in ounces used; and

D. The total monthly VOC emissions (summation of gallons \times VOC content (in pounds per gallon)).

(B) If a facility includes automatic equipment, records shall also include, as applicable, the following:

1. For a source with automatic equipment that prepares each batch of cleaning solution(s) on site, records for each batch shall include:

A. The name and identification of each cleaning solution;

B. The VOC content of each cleaning solvent in the cleaning solution;

C. Each change to the setting of the automatic equipment, with date, time, description of changes in the cleaning solution constituents (e.g., cleaning solvents), and description of changes to the proportion of cleaning solvent and water (or other non-VOC);

D. The proportion of each cleaning solvent and water (or other non-VOC) used to prepare the as-used cleaning solution;

E. The VOC content of the as-used cleaning solution, with the supporting calculations; and

F. A calibration log for the automatic equipment, detailing periodic checks;

2. For a source with automatic equipment that does not prepare cleaning solution(s) on site, records for each batch of cleaning solution shall include:

A. The name and identification of each cleaning solution;

B. Date, time of preparation, and each subsequent modification of the batch;

C. The VOC content of each cleaning solvent in the cleaning solution;

D. The total amount of each cleaning solvent and water (or other non-VOC) used to prepare the as-used cleaning solution; and

E. The VOC content of the as-used cleaning solution, with supporting calculations; and

3. For cleaning solutions that are not prepared at the site, but are used as-purchased, the manufacturer's specifications for VOC content may be used if such manufacturer's specifications are based on the results of tests of the VOC content in accordance with EPA Method 24.

(C) Any owner or operator using an emission control device pursuant to this rule shall maintain records, on a daily basis, of key system operating parameters for emission control equipment, including, but not limited to:

1. Identification of the type of emissions control system used;

2. Hours of operation;

3. Routine and non-routine maintenance, including dates and duration of any outages;

4. Records of test reports conducted;

5. If an owner or operator of a solvent cleaning operation employs a thermal oxidizer or catalytic oxidizer to achieve and main-

tain compliance, the owner or operator shall comply with the following requirements:

A. Continuous temperature monitoring and continuous temperature recording equipment shall be installed and operated to accurately measure the operating temperature(s) for the control device; and

B. The following information shall be collected and recorded each day of operation of the solvent cleaning operation and the control device, and the information shall be maintained at the facility for a period of five (5) years:

(I) A log or record of the operating time for the control device, monitoring equipment, and the associated solvent cleaning operation;

(II) For thermal oxidizers, all three (3)-hour periods of operation during which the average combustion temperature was more than fifty degrees Fahrenheit (50 °F) below the average combustion temperature during the most recent emission test that demonstrated that the solvent cleaning operation was in compliance; and

(III) For catalytic oxidizers, all three (3)-hour periods of operation during which the average temperature of the dryer exhaust gases immediately before the catalyst bed was more than fifty degrees Fahrenheit (50 °F) below the average temperature of the dryer exhaust gases during the most recent emission test that demonstrated that the solvent cleaning operation was in compliance, and all three (3)-hour periods during which the average temperature difference across the catalyst bed was less than eighty percent (80%) of the average temperature difference during the most recent emission test that demonstrated that the solvent cleaning operation was in compliance; and

6. If an owner or operator of a solvent cleaning operation employs a carbon adsorption system to achieve and maintain compliance, the owner or operator shall comply with the following requirements:

A. Monitoring and recording equipment that records all of the following shall be installed and operated for the carbon adsorption system:

(I) A continuous emission monitoring and recording system that is capable of accurately measuring and recording the concentration of organic compounds in the exhaust gases from the carbon adsorption system;

(II) Monitoring and recording equipment that are capable of accurately measuring and recording the total mass steam flow rate for each regeneration cycle of each carbon bed; and



(III) Monitoring and recording equipment that are capable of accurately measuring and recording the temperature of each carbon bed after regeneration (and after completion of any cooling cycle(s)); and

B. The following information shall be collected and recorded each day of operation of the solvent cleaning operation and the carbon adsorption system:

(I) A log or record of the operating time for the carbon adsorption system, monitoring equipment, and the associated solvent cleaning operation;

(II) For a carbon adsorption system that employs a continuous emission monitoring and recording system to measure and record the concentration of organic compounds in the exhaust gases, all three (3)-hour periods of operation during which the average concentration level or reading in the exhaust gases is more than twenty percent (20%) greater than the exhaust gas organic compound concentration level or reading measured by the most recent performance test that demonstrated that the solvent cleaning operation was in compliance;

(III) For a carbon adsorption system that employs monitoring and recording equipment to measure and record the total mass steam flow rate for each regeneration cycle of each carbon bed, all carbon bed regeneration cycles during which the total mass steam flow rate was more than ten percent (10%) below the total mass steam flow rate during the most recent performance test that demonstrated that the solvent cleaning operation was in compliance; and

(IV) For a carbon adsorption system that employs monitoring and recording equipment to measure and record the temperature of each carbon bed after regeneration (and after completion of any cooling cycle(s)) was more than ten percent (10%) greater than the carbon bed temperature during the most recent performance test that demonstrated that the solvent cleaning operation was in compliance.

(5) Test Methods. Certain test methods mentioned in this rule may be found in 10 CSR 10-6.030. Other EPA test methods specific to this rule may be found in 40 CFR 60, Appendix A.

(A) Control Efficiency Testing. To demonstrate compliance with the emission limits of subsection (3)(C) of this rule, an initial emission test shall be performed after any required control equipment is installed. The emission limits shall not have been met until compliance has been verified through this testing. Testing shall also be required after significant modifications to any control equipment required by this rule. Significant

modifications include any repairs or changes that might substantially alter or affect the overall control efficiency. This subsection outlines the methods to be used for any such testing.

1. The emission unit shall be run at typical operating conditions and flow rates compatible with scheduled production during any emission testing.

2. EPA Method 1 or 1A, as appropriate, shall be used to select the sampling sites.

3. EPA Method 2, 2A, 2C, or 2D, as appropriate, shall be used to determine the velocity and volumetric flow rate of the exhaust stream.

4. EPA Method 3 or 3A, as appropriate, shall be used to determine the concentration of oxygen (O₂) and carbon dioxide (CO₂).

5. EPA Method 4 shall be used to determine moisture content.

6. EPA Method 18, 25, or 25A shall be used to determine the VOC concentration of the exhaust stream entering and exiting the control device, unless the alternate limit in paragraph (3)(C)2. of this rule is being used for compliance, in which case only the VOC concentration of the exit exhaust shall be determined. In cases where the anticipated outlet VOC concentration of the control device is less than fifty parts per million by volume (50 ppmv) as carbon, EPA Method 25A shall be used.

7. If EPA Method 25A is used—

A. The outlet readings from a thermal or catalytic oxidizer may be corrected by using EPA Method 18 or 25 to determine non-VOC components (methane and ethane) and subtracting these from the Method 25A result; and

B. The director may require a retest by EPA Method 18 or 25 if the average corrected outlet reading is greater than fifty (50) ppmv VOC as carbon.

8. A compliance test shall consist of up to three (3) separate runs, each lasting a minimum of sixty (60) minutes unless the director determines that the circumstances dictate shorter sampling times.

9. EPA Method 25 specifies a minimum probe temperature of two hundred sixty-five degrees Fahrenheit (265 °F). To prevent condensation, the probe should be heated to at least the gas stream temperature, typically close to three hundred fifty degrees Fahrenheit (350 °F).

10. EPA Method 25A specifies a minimum temperature of two hundred twenty degrees Fahrenheit (220 °F) for the sampling components leading to the analyzer. To prevent condensation when testing heatset printing presses, the sampling components and flame ionization detector lock should be heated to at least the gas stream temperature, typ-

ically close to three hundred fifty degrees Fahrenheit (350 °F).

11. The oxidizer operating temperature or the temperature of the gas upstream of the catalyst bed may be used as the operating parameter for determining continuous compliance with the emission standard of subsection (3)(C) of this rule. This temperature shall be computed as the time-weighted average of the temperature values recorded during the test. The owner or operator must maintain the oxidizer at a three (3)-hour average temperature no less than fifty degrees Fahrenheit (50 °F) below the average temperature observed during the most recent stack test to demonstrate continuous compliance.

12. Use of an adaptation to any of the methods specified in this subsection may be approved by the director on a case-by-case basis. The owner or operator shall submit sufficient documentation for the director to find that the methods specified in this subsection will yield inaccurate results and that the proposed adaptation is appropriate.

13. To determine capture efficiency, use the procedure in 10 CSR 10-6.030(20).

(B) VOC Content Testing for Cleaning Solutions. The VOC content or VOC composite partial vapor pressure of cleaning solutions shall be determined by one (1) of the following:

1. Analysis by EPA Method 24 for VOC content or by an appropriate method for VOC composite partial vapor pressure of a sample of the cleaning solution. The analysis may be performed by the supplier of those materials;

2. Calculation for VOC content that combines EPA Method 24 analytical data for the concentrated materials used to prepare the cleaning solution and the proportions in which they are mixed to make the cleaning solution as applied. Owners or operators may use formulation information provided with the concentrated materials used to prepare the cleaning solution, such as the container label, the product data sheet, or the Material Safety Data Sheet (MSDS) to document the VOC content of the concentrated material; or

3. If cleaning is not diluted prior to use, MSDS or manufacturer's formulation data sheet may be used.

AUTHORITY: section 643.050, RSMo Supp. 2011. Original rule filed Oct. 7, 1994, effective May 28, 1995. Amended: Filed July 15, 1996, effective Feb. 28, 1997. Amended: Filed Nov. 30, 2010, effective Aug. 30, 2011. Amended: Filed Sept. 16, 2011, effective May 30, 2012.*

**Original authority: 643.050, RSMo 1965, amended 1972, 1992, 1993, 1995, 2011; transferred from 203.050 in 1986.*



10 CSR 10-5.480 St. Louis Area Transportation Conformity Requirements

PURPOSE: This rule implements section 176(c)(4)(E) of the Clean Air Act (CAA), as amended (42 U.S.C. 7401-7671q.), and the related requirements of 23 U.S.C. 109(j), with respect to the conformity of transportation plans, programs, and projects which are developed, funded, or approved by the United States Department of Transportation (DOT) and by metropolitan planning organizations (MPOs) or other recipients of funds under Title 23 U.S.C. or the Federal Transit Laws (49 U.S.C. Chapter 53). This rule sets forth policy, criteria, and procedures for demonstrating and assuring conformity of such activities to the applicable implementation plan, developed pursuant to section 110 and part D of the CAA. This rule applies to the St. Louis ozone and PM2.5 nonattainment and carbon monoxide maintenance areas.

PUBLISHER'S NOTE: The secretary of state has determined that the publication of the entire text of the material which is incorporated by reference as a portion of this rule would be unduly cumbersome or expensive. This material as incorporated by reference in this rule shall be maintained by the agency at its headquarters and shall be made available to the public for inspection and copying at no more than the actual cost of reproduction. This note applies only to the reference material. The entire text of the rule is printed here.

(1) Applicability.

(A) This rule applies to all Environmental Protection Agency (EPA) designated nonattainment and maintenance areas for transportation-related criteria pollutants.

(B) The purpose of this rule is to fulfill the requirement in 40 CFR 51.390(b) to establish a state implementation plan (SIP) revision that includes the following three (3) sections of the federal transportation conformity rule:

- 1. 40 CFR 93.105, which addresses consultation procedures;
2. 40 CFR 93.122(a)(4)(ii), which states that conformity SIPs must require that written commitments to control measures be obtained prior to a conformity determination if the control measures are not included in a metropolitan planning organization (MPO) transportation plan and transportation improvement program (TIP) and that such a commitment be fulfilled; and
3. 40 CFR 93.125(c), which states that conformity SIPs must require that written commitments to mitigation measures be obtained prior to a project-level conformity

determination and that project sponsors comply with such commitments.

(C) Once this rule is approved by the EPA into the Missouri State Implementation Plan, it has full legal effect. Conformity determinations will be governed by these criteria and procedures as well as any applicable portions of the federal conformity rule that are not addressed by the state rule.

(D) The Federal Transportation Conformity Rule (for reference) is located at 40 Code of Federal Regulations (CFR) 93.100 through 93.129.

(2) Definitions.

(A) Definitions for key words and phrases used in this rule may be found in subsection 40 CFR 93.101 of 40 CFR 93 Subpart A, promulgated as of July 1, 2009, including the revision published at 75 FR 14283 (effective April 23, 2010) and hereby incorporated by reference in this rule, as published by the Office of the Federal Register, U.S. National Archives and Records, 700 Pennsylvania Avenue NW, Washington, DC 20408. This rule does not incorporate any subsequent amendments or additions.

(B) Participants in the interagency consultation process will be comprised of management and technical staff members from the following public agencies:

- 1. City of St. Louis Department of Health Air Pollution Control Program—a local air agency;
2. East-West Gateway Council of Governments—the metropolitan planning organization;
3. Federal Highway Administration, Illinois Division—a federal transportation agency;
4. Federal Highway Administration, Missouri Division—a federal transportation agency;
5. Federal Transit Administration, Region 7—a federal transportation agency;
6. Illinois Department of Transportation—a state transportation agency;
7. Illinois Environmental Protection Agency's Bureau of Air—a state air agency;
8. Madison County Highway Department—a local transportation agency;
9. Madison County Transit District—a local mass-transit agency;
10. Metro (Bi-State Development Agency)—a local mass-transit agency;
11. Missouri Department of Natural Resources' Air Pollution Control Program—a state air agency;
12. Missouri Department of Transportation—a state transportation agency;

13. St. Clair County Department of Roads and Bridges—a local transportation agency;

14. St. Clair County Transit District—a local mass-transit agency;

15. St. Louis County Department of Health—a local air agency;

16. St. Louis County Department of Highways—a local transportation agency;

17. U.S. Environmental Protection Agency, Region 5—a federal air agency; and

18. U.S. Environmental Protection Agency, Region 7—a federal air agency.

(C) When a reference is made in this rule to the state air agencies, the local air agencies, the state transportation agencies, the local transportation agencies, the MPO, the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA), and the EPA, this means the corresponding public agencies as indicated in subsection (2)(B) of this rule that are participants in the interagency consultation process.

(D) The process for additional agency participation is as follows:

1. For local transportation agencies, the MPO and the Illinois Department of Transportation will jointly appoint Illinois representatives, and the MPO and the Missouri Department of Transportation will jointly appoint Missouri representatives;

2. For local air agencies, the MPO and the Missouri Department of Natural Resources will jointly appoint Missouri representatives, and the MPO and the Illinois Environmental Protection Agency's Bureau of Air will jointly appoint Illinois representatives;

3. For local mass-transit agencies, the MPO and the Illinois Department of Transportation will jointly appoint Illinois representatives, and the MPO and the Missouri Department of Transportation will jointly appoint Missouri representatives;

4. Nothing in this paragraph will preclude the authority of the lead agencies listed in subparagraphs (3)(B)1.A., B., and C. of this rule to involve additional agencies in the consultation process which are directly impacted by any project or action subject to this rule; and

5. Representatives appointed under paragraphs (2)(D)1., 2., 3., and 4. of this rule will not come from an agency already represented as a consulting agency under subsection (2)(B) of this rule.

(E) Metropolitan planning organization (MPO)—That organization designated as being responsible, together with the state, for conducting the continuing, cooperative, and comprehensive planning process under 23 U.S.C. 134 and 49 U.S.C. 5303. It is the



forum for cooperative transportation decision-making. The East-West Gateway Council of Governments is the MPO for the St. Louis metropolitan area and the organization responsible for conducting the planning required under section 174 of the CAA.

(F) Definitions of certain terms specified in this rule, other than those defined in this rule section, may be found in 10 CSR 10-6.020.

(3) General Provisions.

(A) General. This section of the rule provides the general aspects of the transportation conformity interagency consultation process.

1. Pursuant to 40 CFR 51.390, this rule provides for interagency consultation (federal, state, and local), resolution of conflicts, public consultation procedures (per 40 CFR 93.105), and written commitments to control measures (40 CFR 93.122(a)(4)(ii)) and mitigation measures (40 CFR 93.125(c)).

2. Such consultation procedures will be undertaken by the MPO, the state transportation agencies, and the FHWA and the FTA with state and local air quality agencies and the EPA prior to making conformity determinations and by state and local air agencies and the EPA with the MPO, the state transportation agencies, and the FHWA and the FTA in developing applicable implementation plans.

(B) Interagency Consultation Procedures. This section of the rule provides the specific aspects of the transportation conformity interagency consultation process.

1. General factors.

A. Representatives of the MPO and the public agencies listed in subsection (2)(B) of this rule will undertake an interagency consultation process in accordance with this section with each other and with the EPA, the FHWA, and the FTA on the development of the transportation conformity state implementation plan (SIP), the transportation plan, the transportation improvement plan (TIP), any revisions to the preceding documents, and all conformity determinations required by this rule.

B. The state air agencies will be the lead agencies responsible for preparing the final document or decision and for assuring the adequacy of the interagency consultation process with respect to the development of applicable transportation-related implementation and control strategy SIP revisions for their respective areas of jurisdiction.

C. The East-West Gateway Council of Governments (St. Louis's metropolitan planning agency (MPO)) will be the lead agency responsible for preparing the final document or decision and for assuring the adequacy of

the interagency consultation process with respect to the development of the long-range transportation plan, the TIP, any amendments or revisions thereto, and for providing assistance for technical analyses by employing travel-demand modeling techniques and acquiring all necessary data in the metropolitan area under its jurisdiction.

D. In addition to the lead agencies identified in subparagraphs (3)(B)1.A., B., and C. of this rule, other agencies entitled to actively participate in the interagency consultation process under this rule are listed in subsection (2)(B) of this rule.

E. It will be the role and responsibility of each lead agency in an interagency consultation process, as specified in subparagraphs (3)(B)1.A., B., and C. of this rule, to confer with all other agencies identified in subparagraphs (3)(B)1.A., B., C., and D. of this rule, to provide all appropriate information to those agencies needed for meaningful input, to solicit early and continuing input from those agencies, to conduct the consultation process described in 40 CFR 93.105, to assure policy-level contact with those agencies, to consider the views of each such agency and respond to those views in a period not to exceed thirty (30) days from the date received prior to any final decision on such document, and to assure that such views and written response are made part of the record of any decision or action. Each lead agency will provide all necessary documentation for review at the initiation of, or prior to, the review and comment period. Information for scheduled meetings will be distributed to participants at least seven (7) days before the scheduled meeting. It will be the role and responsibility of each agency specified in subparagraphs (3)(B)1.A., B., C., and D. of this rule, when not fulfilling the role and responsibilities of a lead agency, to confer with the lead agency and other participants in the consultation process, to review and comment as appropriate (including comments in writing) on all proposed documents and decisions in a period not to exceed thirty (30) days, to attend consultation and decision meetings, to assure policy-level contact with other participants, to provide input on any area of substantive expertise or responsibility, and to provide technical assistance to the lead agency or consultation process in accordance with this rule when requested.

F. Consultation on specific transportation conformity issues, other than the continual process of keeping all the agencies informed on all conformity and SIP actions, may be initiated at any time during the document development process by any of the agencies specified in subparagraphs (3)(B)1.A.,

B., C., and D. of this rule. It will be the responsibility of the initiate to ensure that all other agencies identified in subparagraphs (3)(B)1.A., B., C., and D. of this rule are notified of any such action. All agencies so notified must respond to the issue(s) raised within fourteen (14) days unless an alternate schedule is agreed upon by all participants.

G. It will be the responsibility of the MPO and the state transportation agencies to provide the state and local air agencies with the latest version of the TIP, the statewide transportation improvement plan (STIP), and the transportation plan.

H. It shall be the responsibility of the state air agencies to provide the MPO, state transportation agencies, the FHWA, the FTA, and the EPA with the latest version of the SIP.

I. It will also be the responsibility of each of the agencies specified in subparagraphs (3)(B)1.A., B., C., and D. of this rule to keep their own superiors and constituents properly informed of conformity determinations.

J. The agencies specified in subparagraphs (3)(B)1.A., B., C., and D. of this rule may employ consultant services at their own discretion.

2. Specific roles and responsibilities of various participants in the interagency consultation process will be—

A. The state air agencies listed in subsection (2)(B) of this rule will be responsible in relation to SIP development for—

- (I) Developing emissions inventories;
- (II) Developing emissions budgets;
- (III) Conducting air quality modeling;
- (IV) Developing attainment and maintenance demonstrations;
- (V) Revising control strategy implementation plans;
- (VI) Regulatory Transportation Control Measures (TCMs) intended to provide enforceable emission reductions;
- (VII) Compiling motor vehicle emissions factors;
- (VIII) Meeting all the EPA reporting requirements related to air quality; and
- (IX) Responding to all comments concerning the SIP;

B. The local air agencies will be responsible for their areas of jurisdiction, with the state air agencies being responsible for all remaining counties, as well as being responsible for ensuring that the local air agencies fulfill these tasks. Local air agencies may request assistance from the state air agencies in any of the responsibilities listed here;



C. The MPO will be responsible in their area of jurisdiction for—

(I) Developing and monitoring transportation plans and TIPs;

(II) Evaluating the transportation impacts and feasibility of TCMs;

(III) Developing transportation and socioeconomic data and latest planning assumptions and providing such data and planning assumptions to the state air agencies for use in air quality analysis;

(IV) Developing system- or facility-based or other programmatic (non-regulatory) TCMs;

(V) Providing technical and policy input on emissions budgets;

(VI) Performing transportation modeling including:

(a) Selecting and evaluating such models;

(b) Documenting their use in conformity determinations; and

(c) Alerting, for comment, the agencies identified in subparagraphs (3)(B)1.A., B., C., and D. of this rule, when any new model is being tested or employed;

(VII) Developing draft and final conformity determination documents for all transportation plans, TIPs, and projects;

(VIII) Monitoring and coding regionally-significant projects into the transportation networks;

(IX) Developing statistical information such as vehicle miles traveled, vehicle mix, and vehicle speeds for use in on-road mobile emissions analysis;

(X) Making elections regarding the time frame of the conformity determination under 40 CFR 93.106(d);

(XI) Identifying planning assumptions and evaluating those assumptions for consistency with SIP assumptions;

(XII) Developing draft documents, record notes, and distribute agendas prior to meetings (in person or by conference calls or other practical electronic means);

(XIII) Providing all appropriate information to those agencies needed for meaningful input and provide all draft and supportive documentation (hard copy or electronic format) in a timely manner to participating agencies; and

(XIV) Preparing the final document subject to interagency consultation will assure that all relevant documents and information are supplied to all participants in the consultation process prior to the release for public review;

D. The state transportation agencies listed in subsection (2)(B) of this rule will be responsible for—

(I) Developing the Statewide Transportation Plan and the STIP;

(II) Providing technical input on new and proposed revisions to motor vehicle emission budgets;

(III) Distributing draft and final environmental documents to other agencies;

(IV) Providing the transportation-related information needed for mobile emissions analysis;

(V) Developing the statistical information, such as vehicle miles traveled, vehicle mix, and vehicle speeds, for use in on-road mobile emission analysis for areas outside the MPO boundary;

(VI) Developing the draft document(s) related to the National Environmental Policy Act (NEPA) process, providing it for review, responding to comments, and preparing the final document(s);

(VII) Performing transportation modeling, including:

(a) Selecting and evaluating such models;

(b) Documenting their use in conformity determinations; and

(c) Alerting, for comment, the agencies identified in subparagraphs (3)(B)1.A., B., C., and D. of this rule, when any new model is being tested or employed;

(VIII) Making conformity determinations for areas outside of the MPO boundary;

(IX) Convening consultation to cooperatively choose the appropriate conformity test(s) and methodologies for use in isolated rural nonattainment and maintenance areas, as required by 40 CFR 93.109(n)(2)(iii); and

(X) Convening air quality technical review meetings on specific projects when requested by other agencies or as needed;

E. The FHWA and the FTA will be responsible for—

(I) Ensuring timely action on final determinations of conformity after receiving a final conformity determination after consultation with other agencies as provided in this rule and 40 CFR 93.105;

(II) Providing guidance on conformity and the transportation planning process to participating agencies in interagency consultation; and

(III) Reviewing and commenting on conformity determinations; and

F. The EPA will be responsible for—

(I) Reviewing motor vehicle emissions budgets in submitted SIPs and finding them adequate or inadequate based on adequacy criteria and procedures;

(II) Providing guidance on conformity criteria and procedures to agencies in interagency consultation;

(III) Approving or disapproving submitted SIP revisions (including TCMs);

(IV) Providing modeling and emissions inventory development assistance to the state air agencies, the state transportation agencies, and the MPO; and

(V) Providing comments on the regional emissions analyses and conformity determination of transportation plans, TIPs, and projects.

3. Conformity determinations.

A. All conformity determinations will be initiated by the sponsor of the transportation plan, program, or project subject to the conformity rule.

(I) The MPO will be responsible for initiating conformity determinations for plans, programs, or projects within the specific MPO boundary.

(II) The state transportation agencies will be responsible for initiating conformity determination for plans, programs, or projects external to an MPO boundary including isolated rural nonattainment and maintenance areas as required by 40 CFR 93.109(n)(2)(iii).

(III) The MPO and state transportation agencies will employ interagency consultation procedures to ensure compatibility of conformity determinations for the same or overlapping nonattainment or maintenance area(s).

B. It will be the responsibility of the MPO and the state transportation agencies to submit any conformity determinations to the FHWA and the FTA in consultation with the EPA, state air agencies, and local transportation agencies for review and approval before the plan, program, or project subject to the conformity rule may be found to conform or project found to be exempt.

C. All conformity determinations with all supporting documentation and data will be made available for review and comment in a readily-accessible manner to the state air agencies and local air agencies, and the FHWA and FTA in consultation with the EPA no less than thirty (30) days prior to presentation to a policy-making body (electronic copy acceptable). Shorter review periods may be allowed occasionally in emergency situations with participant concurrence.

D. It is the responsibility of the MPO to make all conformity determinations available to the general public by following public participation procedures.

E. Conformity determinations, at a minimum, should include written documentation for:



(I) All the input run streams for the latest mobile emissions model and latest planning assumptions on the date that the conformity analysis began (with the beginning date and the criteria used to identify this date specified) and attestation that the latest mobile emissions model is being used;

(II) Transportation-related information and assumptions used for input into the mobile model, such as vehicle miles traveled, vehicle speeds, and vehicle mix, along with a brief description of the source of this information, including documentation of any transportation-related models used; and

(III) A description of the project, plan, or program that is the subject of the conformity or exemption status determination(s).

F. State air agencies and/or local air agencies, where applicable, will review and provide written comment on final conformity determinations within fourteen (14) days of the date received. This process will consist of—

(I) Review of mobile emissions model inputs and outputs;

(II) Verification that the latest mobile emissions model and planning assumptions are being used;

(III) Review of the reasonableness of transportation-related data; and

(IV) Ensuring consistency with the emissions budget and/or the interim emission tests, as applicable.

G. It will be the responsibility of the MPO, or the state transportation agencies where applicable, making a conformity determination, to provide the state air agencies and the applicable local air agencies, the FHWA, the FTA, and the EPA with documentation of the conformity determination.

H. It will be the responsibility of the state air agencies to provide the affected MPO, the FHWA, the FTA, the EPA, the local air agencies, and the state transportation agencies with appropriate information regarding any SIP changes that could impact the conformity process.

I. It will be the responsibility of the EPA to provide the state air agencies, the local air agencies, the FHWA, the FTA, the state transportation agencies, and the MPO information regarding changes to the conformity rule that could impact conformity determinations.

J. Emissions reduction credit from control measures that are not included in the transportation plan and TIP and that do not require a regulatory action in order to be implemented may not be included in the emissions analysis unless written commitments to implementation are obtained by the

MPO (or the state transportation agencies where applicable) prior to the conformity determination and such commitments must be fulfilled by the implementing entities. This rule satisfies the requirement of 40 CFR 93.122(a)(4)(ii).

K. Written commitments to mitigation measures for project-level mitigation and control measures must be provided by the project sponsors to the FHWA (or the FTA for transit-related projects) prior to a positive project-level conformity determination and the project sponsors must comply with such commitments. This rule satisfies the requirement of 40 CFR 93.125(c).

L. In order to assure the most recent planning assumptions are in place at the time the conformity analysis begins, the “time the conformity analysis begins” is to be determined by interagency consultation and documented. This point in time should occur at the point at which the MPO begins to model the impact of the transportation plan or TIP on travel and/or emissions. New data that becomes available after an analysis begins is required to be used in the conformity determination only if a significant delay in the analysis has occurred as determined through interagency consultation and documented in writing and included in publicly available documentation of conformity analysis.

M. Consultation will be undertaken and conducted in accordance with this rule to evaluate events which will trigger new conformity determinations in addition to those triggering events established in 40 CFR 93.104, including any changes in planning assumptions that may trigger a new conformity determination. The consultation process pursuant to this rule will be initiated by the FHWA, the EPA, the state air agencies, state transportation agencies, or the MPO.

4. Implementation plans.

A. Any proposed revisions to the SIP, which may have a direct or indirect effect upon the motor vehicle emissions budget for an area subject to conformity, will be made available to the MPO specified in this rule, as well as state transportation agencies, the FHWA, the FTA, and the EPA in written or electronic form for their review and comment at least thirty (30) days before presentation to the respective state air commissions.

B. The state air agencies will also provide the public a period from the date of announcement to comment on any proposed SIP revisions which may have a direct or indirect effect upon the motor vehicle emissions budget for an area subject to conformity as defined in subparagraph A. of this paragraph.

C. Any proposed revisions to the SIP will include documentation on methods of analysis, models employed, and purpose of the revision.

5. Other processes.

A. The state air agencies will be responsible for the process whereby the MPO, the local air agencies, the state transportation agencies, the FHWA, the FTA, and the EPA will study and develop supplementary consultation procedures to identify, evaluate, and address, as needed, specific issues. In the absence of supplementary consultation procedures, the state air agencies will include the following items for discussion during interagency consultation meetings in advance of a conformity determination:

(I) Hot-spot analysis methods, models, and assumptions;

(II) Determination of regionally-significant projects and projects considered to have a significant change in design concept and scope;

(III) Evaluating when exempt projects should be treated as non-exempt;

(IV) Timely implementation of TCMs and processing of TCM substitutions;

(V) Identifying conformity determination triggers other than those established in 40 CFR 93.104; and

(VI) Methods, models, and assumptions for regional emissions analysis.

B. These supplementary procedures in subparagraph A. of this paragraph may be specific for the metropolitan area or each nonattainment or maintenance area subject to the conformity rule.

C. The state air agencies will conduct meetings to discuss any supplementary consultation procedure as needed.

D. Final document distribution for conformity determinations associated with plans, TIPs, and STIPs (occasionally, alternate schedules may be used with concurrence by participants)—

(I) The final air quality conformity determination, necessary supporting documentation, and the plan and TIP will be submitted to the FHWA Division Office, the FTA Regional Office, the EPA Regional Office, the state transportation agencies, state air agencies, and any applicable local air agencies. The EPA will respond in writing to the FTA Regional Office and the FHWA Division Office as soon as possible, but not later than thirty (30) days after EPA receives a formal request from FHWA and FTA with all the relevant documentation including the final conformity determination with supporting documentation and data;

(II) Comments will be resolved by the FHWA and the FTA, in concert with the



EPA, the MPO, or the state transportation agencies, in their respective areas, as necessary;

(III) The FHWA and the FTA will jointly prepare correspondence to make the conformity finding. Joint conformity findings will be addressed to the MPO with a copy to the state transportation agencies, the EPA, the state air agencies, and any applicable local air agencies. The findings of the FHWA and the FTA together constitute the U.S. Department of Transportation (DOT) conformity findings;

(IV) In the event that the MPO or the state transportation agencies, in their respective areas, wishes to amend the TIP to add projects that are exempt from the conformity analysis requirement, the FHWA or the FTA, or both if necessary, will concur in the amendment and reaffirm the original DOT conformity finding by letter. This reaffirmation letter will reference the date(s) of the original FHWA and FTA findings. In cases where the amendment involves projects that are not exempt, a new conformity analysis and determination will be required, and will, in turn, require a new DOT conformity finding; and

(V) Within fifteen (15) days subsequent to approval of final documents including transportation plans, TIPs, conformity determinations, applicable implementation plans, and implementation plan revisions, the lead agency will provide copies (electronic copies acceptable) of such documents and supporting information to all affected agencies.

E. Generalized hot-spot determination process. Interagency consultation will be undertaken to evaluate and choose a model(s), associated methods, and planning assumptions to be used in hot-spot analyses. The generalized hot-spot determination process (occasionally, alternate schedules may be used with concurrence by participants) entails—

(I) The project sponsor (or the state transportation agencies or the MPO) will seek consensus if the project is believed to be exempt from hot-spot analysis. This can be accomplished through electronic transmittal, providing for a minimum of fourteen (14) days for review. If requested, an additional fourteen (14) days will be provided for review, as well as any additional information needed to make the determination;

(II) If the project is not exempt, the project sponsor (or the state transportation agencies or the MPO) will collect and organize and distribute specific data needed to determine whether nonexempt projects are or are not of air quality concern. This can be accomplished through electronic transmittal,

providing for a minimum of fourteen (14) days for review. If requested, an additional fourteen (14) days will be provided for review, as well as any additional information needed to make the determination; and

(III) If it is determined the project is a project of air quality concern, the project sponsor (or the state transportation agencies or the MPO) will then engage and begin a consultation process to evaluate and choose a model (or models) and associated methods and assumptions to be used in hot-spot analysis. The project sponsor (or the state transportation agencies or the MPO) will make a PM_{2.5} hot-spot determination (i.e., project-level conformity determination) and request that other stakeholder agencies comment on the conclusions through formal interagency consultation as provided in this rule.

F. Regionally-significant projects. For purposes of regional emissions analysis, the MPO will actively consult with the affected agencies to determine which minor arterials and other transportation projects should be considered “regionally-significant” projects (in addition to those functionally classified as principal arterial or higher or fixed guideway systems or extensions that offer an alternative to regional highway travel) and which projects should be considered to have a significant change in design concept and scope from the transportation plan or TIP. Prior to initiating any final action on these issues, the MPO (or the state transportation agencies, if applicable) will consider the views of each agency that comments and respond in writing.

G. Transportation control measures (TCMs).

(I) For each plan or TIP update, the agencies specified in subparagraphs (3)(A)2.A., B., C., and D. to participate in consultation will review whether past obstacles to implementation of TCMs which are behind the schedule established in the applicable implementation plan are being overcome and whether state and local agencies with influence over approval or funding for TCMs are giving maximum priority to approval or funding for TCMs. If necessary, consideration will be given as to whether delays in TCM implementation necessitate revisions to the applicable implementation plan to remove TCMs or substitute TCMs or other emission reduction measures.

(II) Where TCMs are to be included in an applicable implementation plan, a list of TCMs will be developed by the MPO or the state transportation agencies, or both.

H. Exempt projects which may be nonexempt. The MPO (or state transportation agencies where applicable) will commence

consultation regarding potentially exempt projects to (occasionally, alternate schedules may be used with concurrence by participants)—

(I) Identify exempt projects as defined by 40 CFR 93.126 Table 2 and 40 CFR 93.127 Table 3;

(II) Identify exempt projects and categories of exempt projects which should be treated as nonexempt because they may have adverse air quality impacts and determine appropriate air quality analysis methodologies for analyzing such projects;

(III) Identify transportation plan, TIP, and STIP revisions which add or delete exempt projects, as defined in 40 CFR 93.126 Table 2 and 40 CFR 93.127 Table 3; and

(IV) The MPO (or the state transportation agencies where applicable) will seek consensus from the consultation participants if the project is believed to be exempt. This can be accomplished through electronic transmittal, providing for a minimum of fourteen (14) days for review. If requested, an additional fourteen (14) days will be provided for review, as well as any additional information needed to make the determination.

I. Project disclosure—

(I) The sponsor of any potentially regionally-significant project, and any agency that is responsible for taking action(s) on any such project, will disclose such project to the state transportation agencies and the MPO in a timely manner. Such disclosure will be made not later than the first occasion on which any of the following actions is sought: any policy board action necessary for the project to proceed; the issuance of administrative permits for the facility or for construction of the facility; the execution of a contract to design or construct the facility; the execution of any indebtedness for the facility; any final action of a board, commission, or administrator authorizing or directing employees to proceed with design, permitting, or construction of the project; the execution of any contract to design or construct; or any approval needed for any facility that is dependent on the completion of the regionally-significant project. To help assure timely disclosure, the sponsor of any potentially regionally-significant project will disclose to the state transportation agencies and the MPO on a schedule prescribed by the state transportation agencies and the MPO, but no less than annually, each project for which alternatives have been identified through the National Environmental Policy Act (NEPA) process and any preferred alternative that may be a regionally-significant project. The consultation process will include assuming the location, design concept, and scope of the



project, where the sponsor has not yet decided these features, in sufficient detail to allow the MPO (or the state transportation agencies) to perform a regional emissions analysis. This consultation process pursuant to this rule will be initiated by the state transportation agencies and the MPO; and

(II) In the case of any such regionally-significant project that has not been disclosed to the MPO and the other interested agencies participating in the consultation process in a timely manner, such regionally-significant project will not be considered to be included in the regional emissions analysis supporting the current conformity determination and not to be consistent with the motor vehicle emissions budget in the applicable implementation plan or interim budget.

J. Transportation model development. An interagency consultation process in accordance with the interagency consultation procedures outlined in this rule will be undertaken for the design, schedule, and funding of research and data collection efforts related to regional transportation model development (such as household travel transportation surveys), to be initiated by MPO.

K. Responding to significant comments. If the written response to a significant comment does not adequately address the commenting agency's concerns, further consultation is to be conducted. If a regularly-scheduled meeting is to be held within a reasonable time frame of the receipt of the significant comment, it should be made a part of that meeting's agenda and information on the issue will be forwarded to all involved agencies. If necessary, discussion and resolution of the significant comment will be considered a reason to convene a special meeting with the commenting agency as the requester and the agenda consisting of the significant comment.

6. Resolving conflicts. Any conflict among state agencies or between state agencies and the MPO will be escalated to the governor if the conflict cannot be resolved by the heads of the involved agencies. All agencies involved will make every effort to resolve any differences, including personal meetings between the heads of such agencies or their policy-level representatives, to the extent possible. The appeal process described herein will apply only to the MPO (or the state transportation agencies) approved conformity determinations on the transportation plan, TIP, or projects (including project-level determinations), including any documents directly related to determinations of conformity and conflicts between state agencies or between one (1) or more state agencies and the MPO. Conflicts regarding SIPs should be

appealed to the respective state air commissions.

A. In the event that the MPO or the state transportation agencies determine that every effort has been made to address the state air agencies' concerns and no further progress is possible, the MPO or the state transportation agencies will notify the directors of the respective state air agencies in writing to this effect. The memorandum will delineate each unresolved issue to be appealed and will include, at a minimum:

(I) The legal basis of the issue/conflict and steps taken to resolve the conflict;

(II) Relevant reference material needed to facilitate review and mediation of the conflict, including all relevant portions of state and federal law and regulations, conformity requirements, and any other relevant documents;

(III) A description of all reasonable alternatives and supporting data and justification for each alternative. Quantify and document the need for the recommended alternative consistent with the Clean Air Act of 1990 et seq. and the applicable state and federal laws and regulations; and

(IV) An explanation of the consequences of not reaching a resolution.

B. If conflicts concerning conformity determinations cannot be resolved by the interagency consultation procedures, then the state air agencies will notify the agency or agencies involved in the conflict of its intent to escalate the conflict resolution to the office of the governor within fourteen (14) calendar days.

C. The fourteen (14)-calendar-day window will commence—

(I) On the date that the directors of the state air agencies and the head of the agency or agencies involved in the conflict officially agree that the conflict cannot be resolved; or

(II) One (1) or more agencies other than the state air agencies request the start of the fourteen (14)-day clock on a specified date, after notifying all other agencies involved of their intent, and the state air agencies agree.

D. If the state air agencies do not contact the office of the governor within the fourteen (14)-calendar-day window, then the issue in conflict is considered to be resolved in favor of the agency in conflict with the state air agencies.

E. The governor may delegate his or her role but not to the head or staff of the state air agencies, the state transportation agencies, a state transportation commission or board, or an MPO.

F. The state air agencies will notify involved parties of the final decision by the office of the governor.

7. Public participation.

A. Each agency subject to conformity will provide the general public a window of opportunity no less than thirty (30) days to review and comment on new conformity determinations before formal action (approval or endorsement by an executive committee of the MPO for submission to the FHWA and the FTA for their finding) is taken on all transportation plans, TIPs, and STIPs, consistent with these requirements and those of 23 CFR 450.316(a). A comment period of no less than fourteen (14) days will be made available to the public on amendments to conformity determinations and associated documents. The state and local air agencies will offer the public the same opportunity to comment before final action on SIPs which may have a direct or indirect effect upon the motor vehicle emissions budget for an area subject to conformity. The notification process will include, at a minimum, public notices and submittals to public depositories. In addition, all public comments that specifically address known plans for a regionally-significant project which is not receiving FHWA or FTA funding or approval and has not been properly reflected in the emissions analysis supporting a proposed conformity determination for a transportation plan or TIP, must be responded to in writing within thirty (30) days of the end of the comment period.

B. The public participation procedure defined in subparagraph A. of this paragraph will not be construed as superseding public involvement procedures already in effect for agencies subject to the conformity consultation process, such as the MPO's citizen involvement process, the Missouri Sunshine Law (Chapter 610, RSMo), or any other established process which already meets or exceeds the requirements of subparagraph (3)(B)7.A. of this rule. In addition, this subparagraph does not apply to project-level conformity determinations subject to NEPA where a NEPA public participation process exists.

C. The public or any interested party may also inspect any of the documents related to the conformity process upon request. Any charges imposed on the public for inspection or copying documents related to the conformity process will be consistent with (or no greater than) the fee schedule contained in 49 CFR 7.43.

(4) Reporting and Record Keeping. (*Not Applicable*)



(5) Test Methods. (Not Applicable)

AUTHORITY: section 643.050, RSMo 2000.* Original rule filed Oct. 4, 1994, effective May 28, 1995. Amended: Filed May 1, 1996, effective Dec. 30, 1996. Amended: Filed June 15, 1998, effective Jan. 30, 1999. Amended: Filed Feb. 14, 2003, effective Sept. 30, 2003. Amended: Filed April 1, 2005, effective Dec. 30, 2005. Amended: Filed Oct. 24, 2006, effective July 30, 2007. Amended: Filed July 1, 2010, effective Feb. 28, 2011.

*Original authority: 643.050, RSMo 1965, amended 1972, transferred from 203.050 in 1986, 1992, 1993, 1995.

10 CSR 10-5.490 Municipal Solid Waste Landfills

PURPOSE: This rule requires municipal solid waste landfills to monitor their non-methane organic compound (NMOC) emissions. Landfills having NMOC emission rates above the regulatory cutoff shall design and install a gas collection and control system.

PUBLISHER'S NOTE: The secretary of state has determined that the publication of the entire text of the material which is incorporated by reference as a portion of this rule would be unduly cumbersome or expensive. This material as incorporated by reference in this rule shall be maintained by the agency at its headquarters and shall be made available to the public for inspection and copying at no more than the actual cost of reproduction. This note applies only to the reference material. The entire text of the rule is printed here.

(1) Applicability.

(A) This rule applies to all municipal solid waste (MSW) landfills located in the St. Louis ozone nonattainment area (Jefferson, Franklin, St. Charles, St. Louis Counties, and St. Louis City) that have accepted waste any time since November 8, 1987, or have additional capacity available for future waste deposition.

(B) For purposes of obtaining an operating permit under Title V of the Clean Air Act, the owner or operator of an MSW landfill subject to this rule with a design capacity less than two and one-half (2.5) million megagrams or two and one-half (2.5) million cubic meters is not subject to the requirements to obtain an operating permit for the landfill under 40 Code of Federal Regulations (CFR) 70 or 71, unless the landfill is otherwise subject to either 40 CFR 70 or 71. For purposes

of submitting a timely application for an operating permit under 40 CFR 70 or 71, the owner or operator of an MSW landfill subject to the rule with a design capacity greater than or equal to two and one-half (2.5) million megagrams and two and one-half (2.5) million cubic meters on the effective date of EPA approval of the state's program under section 111(d) of the Clean Air Act (June 23, 1998), and not otherwise subject to either 40 CFR 70 or 71, becomes subject to the requirements of 40 CFR 70.5(a)(1)(i) or 71.5(a)(1)(i) ninety (90) days after the effective date of such 111(d) program approval, even if the design capacity report is submitted earlier.

(C) When an MSW landfill subject to this rule is closed, the owner or operator is no longer subject to the requirement to maintain an operating permit under 40 CFR 70 or 71 for the landfill if the landfill is not otherwise subject to the requirements of either 40 CFR 70 or 71 and if either of the following conditions is met:

1. The landfill was never subject to a requirement for a control system under section (3) of this rule; or

2. The owner or operator meets the conditions for control system removal specified in section 60.752(b)(2)(v) of 40 CFR 60, Subpart WWW.

(D) Physical or operational changes made to an existing MSW landfill solely to comply with this rule are not considered construction, reconstruction, or modification for the purposes of this rule.

(2) Definitions. Definitions of certain terms specified in this rule may be found in 10 CSR 10-6.020.

(3) Standards for Air Emissions from Municipal Solid Waste Landfills. Provisions of 40 CFR 51, 40 CFR 52, 40 CFR 60, and 40 CFR 258 are incorporated by reference in subsection (3)(C) of this rule. Also, the *Compilation of Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources*, AP-42, Fifth Edition, January 1995 (hereafter AP-42), as published by the Government Printing Office, 732 North Capitol Street NW, Washington, DC, 20401, shall apply and is hereby incorporated by reference, including Supplement E dated November 1998. This rule does not incorporate any subsequent amendments or additions.

(A) Each owner or operator of a municipal solid waste (MSW) landfill having a design capacity less than one (1.0) million mega-

grams (one and one-tenth (1.1) million tons) by mass or one (1.0) million cubic meters (one and three-tenths (1.3) million cubic yards) by volume shall submit within ninety (90) days of the rule effective date an initial design capacity report, as described in subsection (8)(A) of this rule, to the director. The landfill may calculate design capacity in either megagrams or cubic meters for comparison with the exemption values. Any density conversions shall be documented and submitted with the report. Submittal of the initial design capacity report shall fulfill the requirements of this rule, except as provided for in paragraphs (3)(A)1. and 2. of this rule.

1. The owner or operator shall submit an amended design capacity report, as provided for in paragraph (8)(A)3. of this rule.

2. When an increase in the design capacity of the landfill results in a revised maximum design capacity equal to or greater than one (1.0) million megagrams or one (1.0) million cubic meters, the owner or operator shall comply with the provisions of subsection (3)(B) of this rule.

(B) Each owner or operator of an MSW landfill having a design capacity equal to or greater than one (1.0) million megagrams or one (1.0) million cubic meters shall either comply with paragraph (3)(B)2. of this rule or calculate a nonmethane organic compounds (NMOC) emission rate for the landfill using the procedures specified in section (5) of this rule. The NMOC emission rate shall be recalculated annually except as provided for in subparagraph (8)(B)1.B. of this rule.

1. If the calculated NMOC emission rate is less than twenty-five (25) megagrams (twenty-seven and one-half (27.5) tons) per year, the owner or operator shall—

A. Submit an annual emission rate report to the director, except as provided for in subparagraph (8)(B)1.B. of this rule; and

B. Recalculate the NMOC emission rate annually using the procedures specified in paragraph (5)(A)1. of this rule until such time as the calculated NMOC emission rate is equal to or greater than twenty-five (25) megagrams, or the landfill closes.

(I) If the NMOC emission rate, upon recalculation, is equal to or greater than twenty-five (25) megagrams per year, the owner or operator shall install a collection and control system in compliance with paragraph (3)(B)2. of this rule.

(II) If the landfill is permanently closed, a closure notification shall be submitted to the director as provided for in subsection (8)(D) of this rule.



2. If the calculated NMOC emission rate is equal to or greater than twenty-five (25) megagrams per year, the owner or operator shall—

A. Submit a collection and control system design plan prepared by a professional engineer to the director within one (1) year of the NMOC emission rate report. Permit modification approval from the Missouri Department of Natural Resources' Solid Waste Management Program shall be required prior to construction of any gas collection system.

(I) The collection and control system as described in the plan shall meet the design requirements of subparagraph (3)(B)2.B. of this rule.

(II) The collection and control system design plan shall include any alternatives to the operation standards, test methods, procedures, compliance measures, monitoring, record keeping, or reporting provisions of sections (4) through (9) of this rule proposed by the owner or operator.

(III) The collection and control system design plan shall either conform with specifications for active collection systems in section (10) of this rule or include a demonstration to the director's satisfaction of the sufficiency of the alternative provisions to section (10) of this rule.

(IV) The director will review the collection and control system design plan and either approve it, disapprove it, or request that additional information be submitted. Because of the many site-specific factors involved with landfill gas system design, alternative systems may be necessary. A wide variety of system designs are possible, such as vertical wells, combination horizontal and vertical collection systems, horizontal trenches only, leachate collection components, and passive systems;

B. Install a collection and control system that captures the gas generated within the landfill as required by part (3)(B)2.B.(I) or (II) and subparagraph (3)(B)2.C. of this rule within thirty (30) months after the first annual report in which the emission rate equals or exceeds twenty-five (25) megagrams per year, unless Tier 2 or Tier 3 sampling under section (5) of this rule demonstrates that the emission rate is less than twenty-five (25) megagrams per year, as specified in paragraph (8)(C)1. or 2. of this rule.

(I) An active collection system shall—

(a) Be designed to handle the maximum expected gas flow rate from the entire area of the landfill that warrants control

over the intended use period of the gas control or treatment system equipment;

(b) Collect gas from each area, cell, or group of cells in the landfill in which the initial solid waste has been placed for a period of—

I. Five (5) years or more, if active; or

II. Two (2) years or more, if closed or at final grade;

(c) Collect gas at a sufficient extraction rate; and

(d) Be designed to minimize off-site migration of subsurface gas.

(II) A passive collection system shall—

(a) Comply with the provisions of subparts (3)(B)2.B.(I)(a), (b), and (d) of this rule; and

(b) Be installed with liners on the bottom and all sides in all areas in which gas is to be collected. The liners shall be installed as required under 40 CFR 258.40;

C. Route all the collected gas to one (1) or more of the following control systems:

(I) An open flare designed and operated in accordance with 40 CFR 60.18 except as noted in subsection (5)(E) of this rule;

(II) A control system designed and operated to reduce NMOC by ninety-eight (98) weight-percent, or, when an enclosed combustion device is used for control, to either reduce NMOC by ninety-eight (98) weight-percent, or reduce the outlet NMOC concentration to less than twenty (20) parts per million by volume, dry basis as hexane at three percent (3%) oxygen. The reduction efficiency or parts per million by volume shall be established by an initial performance test, to be completed no later than one hundred eighty (180) days after the initial startup of the approved control system using the test methods specified in subsection (5)(D) of this rule.

(a) If a boiler or process heater is used as the control device, the landfill gas stream shall be introduced into the flame zone.

(b) The control device shall be operated within the parameter ranges established during the initial or most recent performance test. The operating parameters to be monitored are specified in section (7) of this rule; or

(III) A system that routes the collected gas to a treatment system that processes the collected gas for subsequent sale or use. All emissions from any atmospheric vent from the gas treatment system shall be subject

to the requirements of part (3)(B)2.C.(I) or (II) of this rule;

D. Operate the collection and control device installed to comply with this rule in accordance with the provisions of sections (4), (6), and (7) of this rule;

E. The collection and control system may be capped or removed provided the following conditions are met:

(I) The landfill shall be no longer accepting solid waste and be permanently closed under the requirements of 40 CFR 258.60. A closure report shall be submitted to the director;

(II) The collection and control system has been in operation a minimum of fifteen (15) years; and

(III) The calculated NMOC gas produced by the landfill is less than twenty-five (25) megagrams per year on three (3) successive test dates. The test dates shall be no less than ninety (90) days apart and no more than one hundred eighty (180) days apart; and

F. The planning, awarding of contracts, and installation of MSW landfill air emission collection and control equipment capable of meeting the emission standards in subsection (3)(B) of this rule shall be accomplished within thirty (30) months after the date the initial NMOC emission rate report shows NMOC emissions equal or exceed twenty-five (25) megagrams per year.

(C) The specific citations of 40 CFR 51, 40 CFR 52, 40 CFR 60, and 40 CFR 258 referenced in this rule and published July 1, 2011, shall apply and are hereby incorporated by reference in this rule, as published by the Office of the Federal Register, U.S. National Archives and Records, 700 Pennsylvania Avenue NW, Washington, DC 20408. This rule does not incorporate any subsequent amendments or additions. Certain terms used in 40 CFR refer to federal officers and agencies. The following terms applicable to Missouri shall be substituted where appropriate for the delegable federal counterparts: Director shall be substituted for Administrator, and Missouri Department of Natural Resources shall be substituted for EPA, EPA Regional Office, or Environmental Protection Agency.

(4) Operational Standards for Collection and Control Systems. Each owner or operator of an MSW landfill gas collection and control system used to comply with the provisions of subparagraph (3)(B)2.B. of this rule shall—

(A) Operate the collection system such that gas is collected from each area, cell, or group



of cells in the MSW landfill in which solid waste has been in place for—

1. Five (5) years or more if active; or
2. Two (2) years or more if closed or at final grade;

(B) Operate the collection system with negative pressure at each wellhead except under the following conditions:

1. A fire or increased well temperature. The owner or operator shall record instances when positive pressure occurs in efforts to avoid a fire. These records shall be submitted with the annual reports as provided in paragraph (8)(F)1. of this rule;

2. Use of a geomembrane or synthetic cover. The owner or operator shall develop acceptable pressure limits in the design plan; and

3. A decommissioned well. A well may experience a static positive pressure after shutdown to accommodate for declining flows. All design changes shall be approved by the director and EPA;

(C) Operate each interior wellhead in the collection system with a landfill gas temperature less than fifty-five degrees Celsius (55 °C) and with either a nitrogen level less than twenty percent (20%) or an oxygen level less than five percent (5%). The owner or operator may establish a higher operating temperature, nitrogen, or oxygen value at a particular well. A higher operating value demonstration shall show supporting data that the elevated parameter does not cause fires or significantly inhibit anaerobic decomposition by killing methanogens.

1. The nitrogen level shall be determined using Method 3C of 40 CFR 60, Appendix A unless an alternative test method is established as allowed by subparagraph (3)(B)2.A. of this rule.

2. Unless an alternative test method is established as allowed by subparagraph (3)(B)2.A. of this rule, the oxygen shall be determined by an oxygen meter using Method 3A or 3C of 40 CFR 60, Appendix A except that—

- A. The span shall be set so that the regulatory limit is between twenty and fifty percent (20%–50%) of the span;

- B. A data recorder is not required;

- C. Only two (2) calibration gases are required, a zero (0) and span, and ambient air may be used as the span;

- D. A calibration error check is not required; and

- E. The allowable sample bias, zero (0) drift, and calibration drift are plus or minus ten percent (±10%);

(D) Operate the collection system so that the methane concentration is less than five hundred (500) parts per million above back-

ground at the surface of the landfill. To determine if this level is exceeded, the owner or operator shall conduct surface testing around the perimeter of the collection area along a pattern that traverses the landfill at thirty (30)-meter intervals and where visual observations indicate elevated concentrations of landfill gas, such as distressed vegetation and cracks or seeps in the cover. The owner or operator may establish an alternative traversing pattern that ensures equivalent coverage. A surface monitoring design plan shall be developed that includes a topographical map with the monitoring route and the rationale for any site-specific deviations from the thirty (30)-meter intervals. Areas with steep slopes or other dangerous areas may be excluded from the surface testing;

(E) Operate the system such that all collected gases are vented to a control system designed and operated in compliance with subparagraph (3)(B)2.C. of this rule. In the event the collection or control system is inoperable, the gas mover system shall be shut down and all valves in the collection and control system contributing to venting of the gas to the atmosphere shall be closed within one (1) hour;

(F) Operate the control or treatment system at all times when the collected gas is routed to the system; and

(G) If monitoring demonstrates that the operational requirements in subsection (4)(B), (C), or (D) of this rule are not met, corrective action shall be taken as specified in paragraphs (6)(A)3. through 5. or subsection (6)(C) of this rule. If corrective actions are taken as specified in section (6) of this rule, the monitored exceedance is not a violation of the operational requirements in this section.

(5) Test Methods and Procedures.

(A) NMOC Emission Rate Calculation.

1. The landfill owner or operator shall calculate the NMOC emission rate using either the equation provided in subparagraph (5)(A)1.A. of this rule or the equation provided in subparagraph (5)(A)1.B. of this rule. Both equations may be used if the actual year-to-year solid waste acceptance rate is known, as specified in subparagraph (5)(A)1.A. of this rule, for part of the life of the landfill and the actual year-to-year solid waste acceptance rate is unknown, as specified in subparagraph (5)(A)1.B., for part of the life of the landfill. The values to be used in both equations are 0.05 per year for k, 170 cubic meters per megagram for L_o, and 4,000 parts per million by volume as hexane for the C_{NMOC}. For landfills located in geographical areas with a thirty (30)-year annual average precipitation of less than twenty-five inches (25"), as measured at the nearest representa-

tive official meteorologic site, the k value to be used is 0.02 per year.

A. The following equation shall be used if the actual year-to-year solid waste acceptance rate is known. The mass of non-degradable solid waste may be subtracted from the total mass of solid waste in a particular section of the landfill when calculating the value for M_i if documentation of the nature and amount of such wastes is maintained.

$$M_{NMOC} = \sum_{i=1}^n 2kL_oM_i(e^{-kt}) (C_{NMOC}) (3.6 \times 10^{-9})$$

where,

M_{NMOC} = Total NMOC emission rate from the landfill, megagrams per year

k = methane generation rate constant, year⁻¹

L_o = methane generation potential, cubic meters per megagram solid waste

M_i = mass of solid waste in the ith section, megagrams

t_i = age of the ith section, years

C_{NMOC} = concentration of NMOC, parts per million by volume as hexane

3.6 × 10⁻⁹ = conversion factor

B. The following equation shall be used if the actual year-to-year solid waste acceptance rate is unknown. The mass of non-degradable solid waste may be subtracted from the average annual acceptance rate when calculating a value for R if documentation is provided.

$$M_{NMOC} = 2L_o R (e^{-kc} - e^{-kt}) (C_{NMOC}) (3.6 \times 10^{-9})$$

where,

M_{NMOC} = mass emission rate of NMOC, megagrams per year

L_o = methane generation potential, cubic meters per megagram solid waste

R = average annual acceptance rate, megagrams per year

k = methane generation rate constant, year⁻¹

c = time since closure, years (for active landfill c = 0 and e^{-kc} = 1)

t = age of landfill, years

C_{NMOC} = concentration of NMOC, parts per million by volume as hexane

3.6 × 10⁻⁹ = conversion factor



2. Tier 1. The owner or operator shall compare the calculated NMOC mass emission rate to the standard of twenty-five (25) megagrams per year.

A. If the NMOC emission rate calculated in paragraph (5)(A)1. of this rule is less than twenty-five (25) megagrams per year, then the landfill owner shall submit an emission rate report as provided in paragraph (8)(B)1. of this rule and shall recalculate the NMOC mass emission rate annually as required under paragraph (3)(B)1. of this rule.

B. If the calculated NMOC emission rate is equal to or greater than twenty-five (25) megagrams per year, then the landfill owner shall either comply with paragraph (3)(B)2. of this rule, or determine a site-specific NMOC concentration and recalculate the NMOC emission rate using the procedures provided in paragraph (5)(A)3. of this rule.

3. Tier 2. The landfill owner or operator shall determine the NMOC concentration using the following sampling procedure. The landfill owner or operator shall install at least two (2) sample probes per hectare of landfill surface that has retained solid waste for at least two (2) years. If the landfill is larger than twenty-five (25) hectares in area, only fifty (50) samples are required. The sample probes shall be located to avoid known areas of nondegradable solid waste. The owner or operator shall collect and analyze one (1) sample of landfill gas from each probe to determine the NMOC concentration using Method 25 or 25C of 40 CFR 60, Appendix A. Method 18 of 40 CFR 60, Appendix A may be used to analyze the samples collected by the Method 25 or 25C sampling procedure. Taking composite samples from different probes into a single cylinder is allowed; however, equal sample volumes must be taken from each probe. For each composite, the sampling rate, collection times, beginning and ending cylinder vacuums, or alternative volume measurements must be recorded to verify that composite volumes are equal. Composite sample volumes should not be less than one (1) liter unless evidence can be provided to substantiate the accuracy of smaller volumes. Terminate compositing before the cylinder approaches ambient pressure where measurement accuracy diminishes. If using Method 18 of 40 CFR 60, Appendix A, the minimum list of compounds to be tested shall be those published in AP-42, minus carbon monoxide, hydrogen sulfide, and mercury. As a minimum, the instrument must be calibrated for each of the compounds on the list. Convert the concentration of each Method 18 compound to C_{NMOC} as hexane by multiply-

ing by the ratio of its carbon atoms divided by six (6). If more than the required number of samples are taken, all samples shall be used in the analysis. The landfill owner or operator must divide the NMOC concentration from Method 25 or 25C of 40 CFR 60, Appendix A by six (6) to convert from C_{NMOC} as carbon to C_{NMOC} as hexane. If the landfill has an active or passive gas removal system in place, Method 25 or 25C samples may be collected from these systems instead of surface probes provided the removal system can be shown to provide sampling as representative as the two (2) sampling probe per hectare requirement. For active collection systems, samples may be collected from the common header pipe before the gas moving or condensate removal equipment. For these systems, a minimum of three (3) samples must be collected from the header pipe.

A. The landfill owner or operator shall recalculate the NMOC mass emission rate using the equations provided in subparagraph (5)(A)1.A. or B. of this rule and using the average NMOC concentration from the collected samples instead of the default value in the equation provided in paragraph (5)(A)1. of this rule.

B. If the resulting NMOC mass emission rate is less than twenty-five (25) megagrams per year, the owner or operator shall submit an emission rate report as required under paragraph (8)(B)1. of this rule and retest the site-specific NMOC concentration every five (5) years using the methods specified in this section.

C. If the resulting mass emission rate calculated using the site-specific NMOC concentration is equal to or greater than twenty-five (25) megagrams per year, then the landfill owner or operator shall either comply with paragraph (3)(B)2. of this rule, or determine the site-specific methane generation rate constant and recalculate the NMOC emission rate using the site-specific methane generation rate using the procedure specified in paragraph (5)(A)4. of this rule.

4. Tier 3. The site-specific methane generation rate constant shall be determined using the procedures provided in Method 2E of 40 CFR 60, Appendix A. The landfill owner or operator shall estimate the NMOC mass emission rate using the equations in subparagraph (5)(A)1.A. or B. of this rule using a site-specific methane generation rate constant k , and using the site-specific NMOC concentration as determined in paragraph (5)(A)3. of this rule instead of the default values provided in paragraph (5)(A)1. of this rule. The landfill owner or operator shall compare the resulting NMOC mass emission

rate to the standard of twenty-five (25) megagrams per year.

A. If the NMOC mass emission rate is less than twenty-five (25) megagrams per year, then the owner or operator shall submit a periodic emission rate report as provided in paragraph (8)(B)1. of this rule and shall recalculate the NMOC mass emission rate annually, as provided in paragraph (8)(B)1. of this rule using the equations in paragraph (5)(A)1. of this rule and using the site-specific methane generation rate constant and NMOC concentration obtained in paragraph (5)(A)3. of this rule. The calculation of the methane generation rate constant is performed only once, and the value obtained shall be used in all subsequent annual NMOC emission rate calculations.

B. If the NMOC mass emission rate as calculated using the site-specific methane generation rate and concentration of NMOC is equal to or greater than twenty-five (25) megagrams per year, the owner or operator shall comply with paragraph (3)(B)2. of this rule.

5. The owner or operator may use other methods to determine the NMOC concentration or a site-specific k as an alternative to the methods required in paragraphs (5)(A)3. and 4. of this rule if the method has been approved by the director and EPA.

(B) After the installation of a collection and control system in compliance with section (6) of this rule, the owner or operator shall calculate the NMOC emission rate for purposes of determining when the system can be removed as provided in subparagraph (3)(B)2.E. of this rule, using the following equation:

$$M_{\text{NMOC}} = (1.89 \times 10^{-3}) (Q_{\text{LFG}}) (C_{\text{NMOC}})$$

where,

M_{NMOC} = mass emission rate of NMOC, megagrams per year
 Q_{LFG} = flow rate of landfill gas, cubic meters per minute
 C_{NMOC} = NMOC concentration, parts per million by volume as hexane

1. The flow rate of landfill gas, Q_{LFG} , shall be determined by measuring the total landfill gas flow rate at the common header pipe that leads to the control device using a gas flow measuring device calibrated according to the provisions of section 4 of Method 2E of 40 CFR 60, Appendix A.

2. The average NMOC concentration, C_{NMOC} , shall be determined by collecting and analyzing landfill gas sampled from the common header pipe before the gas moving or



condensate removal equipment using the procedures in Method 25C or Method 18 of 40 CFR 60, Appendix A. If using Method 18, the minimum list of compounds to be tested shall be those published in AP-42. The sample location on the common header pipe shall be before any condensate removal or other gas refining units. The landfill owner or operator shall divide the NMOC concentration from Method 25C by six (6) to convert from C_{NMOC} as carbon to C_{NMOC} as hexane.

3. The owner or operator may use another method to determine landfill gas flow rate and NMOC concentration if the method has been approved by the director and EPA as provided in part (3)(B)2.A.(II) of this rule.

(C) When calculating emissions for prevention of significant deterioration (PSD) purposes, the owner or operator of each MSW landfill subject to the provisions of this rule shall estimate the NMOC emission rate for comparison to the PSD major source and significance levels in 40 CFR 51.166 or 52.21 using AP-42 or other approved measurement procedures.

(D) For the performance test required in part (3)(B)2.C.(II) of this rule, Method 25, 25C, or Method 18 of 40 CFR 60, Appendix A shall be used to determine compliance with ninety-eight (98) weight-percent efficiency or the twenty parts per million by volume (20 ppmv) outlet concentration level, unless another method to demonstrate compliance has been approved by the director and EPA as provided by part (3)(B)2.A.(II) of this rule. Method 3 or 3A of 40 CFR 60, Appendix A shall be used to determine oxygen for correcting the NMOC concentration as hexane to three percent (3%). In cases where the outlet concentration is less than fifty (50) ppm NMOC as carbon (eight (8) ppm NMOC as hexane), Method 25A of 40 CFR 60, Appendix A should be used in place of Method 25. If using Method 18, the minimum list of compounds to be tested shall be those published in AP-42. The following equation shall be used to calculate efficiency:

$$\text{Control Efficiency} = \frac{\text{NMOC}_{in} - \text{NMOC}_{out}}{\text{NMOC}_{in}}$$

where,

NMOC_{in} = mass of NMOC entering control device
 NMOC_{out} = mass of NMOC exiting control device

(E) For the performance test required in part (3)(B)2.C.(I) of this rule, the net heating value of the combusted landfill gas as determined in 40 CFR 60.18(f)(3) is calculated from the concentration of methane in the landfill gas as measured by Method 3C of 40 CFR 60, Appendix A. A minimum of three

(3) thirty (30)-minute Method 3C samples are determined. The measurement of other organic components, hydrogen, and carbon monoxide is not applicable. Method 3C may be used to determine the landfill gas molecular weight for calculating the flare gas exit velocity under 40 CFR 60.18(f)(4).

(6) Compliance Provisions.

(A) Except as provided for in part (3)(B)2.A.(II) of this rule, the following methods shall be used to determine whether the gas collection system is in compliance:

1. One of the following equations shall be used in calculating the maximum expected gas generation flow rate from the landfill as described in subpart (3)(B)2.B.(I)(a) of this rule. The k and L_o kinetic factors shall be those published in AP-42 or other site-specific values demonstrated to be appropriate and approved in writing by the director and EPA. If k has been determined as specified in paragraph (5)(A)4. of this rule, the value of k determined from the test shall be used. A value of no more than fifteen (15) years shall be used for the intended use period of the gas mover equipment. The active life of the landfill is the age of the landfill plus the estimated number of years until closure. After installation of a collection and control system, actual flow data shall be used to project the maximum flow rate.

A. For sites with unknown year-to-year solid waste acceptance rate—

$$Q_m = 2L_o R (e^{-kc} - e^{-kt})$$

where,

Q_m = maximum expected gas generation flow rate, cubic meters per year
 L_o = methane generation potential, cubic meters per megagram solid waste
 R = average annual acceptance rate, megagrams per year
 k = methane generation rate constant, year⁻¹
 c = time since closure, years (for an active landfill $c = 0$ and $e^{-kc} = 1$)
 t = age of the landfill at equipment installation plus the time the owner or operator intends to use the gas mover equipment or active life of the landfill, whichever is less. If the equipment is installed after closure, t is the age of the landfill at installation, years

B. For sites with known year-to-year solid waste acceptance rate—

$$Q_m = \sum_{i=1}^n 2 k L_o M_i (e^{-kt_i})$$

where,

Q_m = maximum expected gas generation flow rate, cubic meters per year
 k = methane generation rate constant, year⁻¹
 L_o = methane generation potential, cubic meters per megagram solid waste
 M_i = mass of solid waste in the i^{th} section, megagrams
 t_i = age of the i^{th} section, years

C. If a collection and control system has been installed, actual flow data may be used to project the maximum expected gas generation flow rate instead of, or in conjunction with, the equations in subparagraphs (6)(A)1.A. and B. of this rule. If the landfill is still accepting waste, the actual measured flow data will not equal the maximum expected gas generation rate, so calculations using the equations in subparagraphs (6)(A)1.A. or B. of this rule or other methods shall be used to predict the maximum expected gas generation rate over the intended period of use of the gas control system equipment;

2. For the purposes of determining sufficient density of gas collectors for compliance with subpart (3)(B)2.B.(I)(b) of this rule, the owner or operator shall design a system of vertical wells, horizontal collectors, or other collection devices, satisfactory to the director, capable of controlling and extracting gas from all portions of the landfill sufficient to meet all operational and performance standards;

3. For the purposes of demonstrating whether the gas collection system flow rate is sufficient to determine compliance with subpart (3)(B)2.B.(I)(c) of this rule, the owner or operator shall measure gauge pressure in the gas collection header at each individual well, monthly. If a positive pressure exists, action shall be initiated to correct the exceedance within five (5) calendar days, except for the three (3) conditions allowed under subsection (4)(B) of this rule. If negative pressure cannot be achieved without excess air infiltration within fifteen (15) calendar days of the first measurement, the gas collection system shall be expanded to correct the exceedance within one hundred twenty (120) days of the initial measurement of positive pressure. Any attempted corrective measure shall not cause exceedances of other operational or performance standards. An alternative timeline for



correcting the exceedance may be submitted to the director for approval;

4. Owners or operators are not required to expand the system as required in paragraph (6)(A)3. of this rule during the first one hundred eighty (180) days after gas collection system start-up;

5. For the purpose of identifying whether excess air infiltration into the landfill is occurring, the owner or operator shall monitor each well monthly for temperature and nitrogen or oxygen as provided in subsection (4)(C) of this rule. If a well exceeds one (1) of these operating parameters, action shall be initiated to correct the exceedance within five (5) calendar days. If correction of the exceedance cannot be achieved within fifteen (15) calendar days of the first measurement, the gas collection system shall be expanded to correct the exceedance within one hundred twenty (120) days of the initial exceedance. Any attempted corrective measure shall not cause exceedances of other operational or performance standards. An alternative timeline for correcting the exceedance may be submitted to the director for approval; and

6. An owner or operator seeking to demonstrate compliance with subpart (3)(B)2.B.(I)(d) of this rule through the use of a collection system not conforming to the specifications provided in section (10) of this rule shall provide information satisfactory to the director and EPA as specified in part (3)(B)2.A.(III) of this rule demonstrating that off-site migration is being controlled.

(B) For purposes of compliance with subsection (4)(A) of this rule, each owner or operator of a controlled landfill shall place each well or design component as specified in the approved design plan as provided in subparagraph (3)(B)2.A. of this rule. Each well shall be installed no later than sixty (60) days of the date in which the initial solid waste has been in place for a period of—

1. Five (5) years or more if active; or

2. Two (2) years or more if closed or at final grade.

(C) The following procedures shall be used for compliance with the surface methane operational standard as provided in subsection (4)(D) of this rule:

1. After installation of the collection system, the owner or operator shall monitor surface concentrations of methane along the entire perimeter of the collection area and along a pattern that traverses the landfill at thirty (30)-meter intervals (or a site-specific established spacing) for each collection area on a quarterly basis using an organic vapor analyzer, flame ionization detector, or other

portable monitor meeting the specification provided in subsection (6)(D) of this rule.

2. The background concentration shall be determined by moving the probe inlet upwind and downwind outside the boundary of the landfill at a distance of at least thirty (30) meters from the perimeter wells.

3. Surface emission monitoring shall be performed in accordance with section 4.3.1 of Method 21 of 40 CFR 60, Appendix A, except that the probe inlet shall be placed within five to ten centimeters (5–10 cm) of the ground. Monitoring shall be performed during typical meteorological conditions.

4. Any reading of five hundred parts per million (500 ppm) or more above background at any location shall be recorded as an exceedance and the actions specified in subparagraphs (6)(C)4.A. through E. of this rule shall be taken. As long as the specified actions are taken, the exceedance is not a violation of the operational requirements of subsection (4)(D) of this rule.

A. The location of each monitored exceedance shall be marked, and the location recorded.

B. Cover maintenance or adjustments to the vacuum of the adjacent wells to increase the gas collection in the vicinity of each exceedance shall be made, and the location shall be remonitored within ten (10) calendar days of detecting the exceedance.

C. If the remonitoring of the location shows a second exceedance, additional corrective action shall be taken, and the location shall be monitored again within ten (10) days of the second exceedance. If the remonitoring shows a third exceedance for the same location, the action specified in subparagraph (6)(C)4.E. of this rule shall be taken, and no further monitoring of that location is required until the action specified in subparagraph (6)(C)4.E. of this rule has been taken.

D. Any location that initially showed an exceedance but has a methane concentration less than five hundred parts per million (500 ppm) methane above background at the ten (10)-day remonitoring specified in subparagraph (6)(C)4.B. or C. of this rule shall be remonitored one (1) month from the initial exceedance. If the one (1)-month remonitoring shows a concentration less than five hundred parts per million (500 ppm) above background, no further monitoring of that location is required until the next quarterly monitoring period. If the one (1)-month remonitoring shows an exceedance, the actions specified in subparagraph (6)(C)4.C. or E. of this rule shall be taken.

E. When any location equals or exceeds five hundred parts per million (500 ppm) methane above background three (3)

times within a quarterly period, a new well or other collection device shall be installed within one hundred twenty (120) calendar days of the initial exceedance. An alternative remedy to the exceedance, such as upgrading the blower, header pipes, or control device, and a corresponding time line for installation may be submitted to the director for written approval.

5. The owner or operator shall implement a program to monitor for cover integrity and implement cover repairs as necessary on a monthly basis.

(D) Each owner or operator seeking to comply with the provisions in subsection (6)(C) of this rule shall comply with the following instrumentation specifications and procedures for surface emission monitoring devices:

1. The portable analyzer shall meet the instrument specifications provided in section 3 of Method 21 of 40 CFR 60, Appendix A, except that “methane” shall replace all references to VOC;

2. The calibration gas shall be methane, diluted to a nominal concentration of five hundred parts per million (500 ppm) in air;

3. To meet the performance evaluation requirements in section 3.1.3 of Method 21 of 40 CFR 60, Appendix A, the instrument evaluation procedures of section 4.4 of Method 21 shall be used; and

4. The calibration procedures provided in section 4.2 of Method 21 of 40 CFR 60, Appendix A shall be followed immediately before commencing a surface monitoring survey.

(E) The provisions of this rule apply at all times, except during periods of start-up, shutdown, or malfunction, provided that the duration of start-up, shutdown, or malfunction shall not exceed five (5) days for collection systems and shall not exceed one (1) hour for treatment or control devices.

(7) Monitoring of Operations. Except as provided in part (3)(B)2.A.(II) of this rule—

(A) Each owner or operator seeking to comply with part (3)(B)2.B.(I) of this rule for an active gas collection system shall install a sampling port and a thermometer or other temperature measuring device, or an access port for temperature measurements at each wellhead and—

1. Measure the gauge pressure in the gas collection header on a monthly basis as provided in paragraph (6)(A)3. of this rule;

2. Monitor the nitrogen or oxygen concentration in the landfill gas on a monthly basis as provided in paragraph (6)(A)5. of this rule; and



3. Monitor the temperature of the landfill gas on a monthly basis as provided in paragraph (6)(A)5. of this rule.

(B) Each owner or operator seeking to comply with subparagraph (3)(B)2.C. of this rule using an enclosed combustion device shall calibrate, maintain, and operate according to the manufacturer's specifications, the following equipment:

1. A temperature monitoring device equipped with a continuous recorder and having a minimum accuracy of plus or minus one percent ($\pm 1\%$) of the temperature being measured expressed in degrees Celsius or plus or minus one-half degree Celsius ($\pm 0.5^\circ\text{C}$), whichever is greater. A temperature monitoring device is not required for boilers or process heaters with maximum design heat input capacity equal to or greater than forty-four (44) megawatts; and

2. A device that records flow to or bypass of the control device. The owner or operator shall either—

A. Install, calibrate, and maintain a gas flow rate measuring device that shall record the flow to the control device at least every fifteen (15) minutes; or

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

(C) Each owner or operator seeking to comply with subparagraph (3)(B)2.C. of this rule using an open flare shall install, calibrate, maintain, and operate according to the manufacturer's specifications the following equipment:

1. A heat sensing device, such as an ultraviolet beam sensor or thermocouple, at the pilot light or the flame itself to indicate the continuous presence of a flame; and

2. A device that records flow to or bypass of the flare. The owner or operator shall either—

A. Install, calibrate, and maintain a gas flow rate measuring device that shall record the flow to the control device at least every fifteen (15) minutes; or

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

(D) Each owner or operator seeking to comply with subparagraph (3)(B)2.C. of this

rule using a device other than an open flare or an enclosed combustion device shall provide information satisfactory to the director as provided in part (3)(B)2.A.(II) of this rule describing the operation of the control device, the operating parameters that would indicate proper performance, and appropriate monitoring procedures. The director shall review the information and either approve it or request that additional information be submitted. The director may specify additional appropriate monitoring procedures.

(E) Each owner or operator seeking to install a collection system that does not meet the specifications in section (10) of this rule or seeking to monitor alternative parameters to those required by sections (4) through (7) of this rule shall provide information satisfactory to the director as provided in parts (3)(B)2.A.(II) and (III) of this rule describing the design and operation of the collection system, the operating parameters that would indicate proper performance, and appropriate monitoring procedures. The director may specify additional appropriate monitoring procedures.

(F) Each owner or operator seeking to comply with subsection (6)(C) of this rule shall monitor surface concentrations of methane according to the instrument specifications and procedures provided in subsection (6)(D) of this rule. Any closed landfill that has no monitored exceedances of the operational standard in three (3) consecutive quarterly monitoring periods may skip to annual monitoring. Any methane reading of five hundred parts per million (500 ppm) or more above the background detected during the annual monitoring returns the monitoring frequency to quarterly monitoring.

(8) Reporting Requirements. Except as provided in part (3)(B)2.A.(II) of this rule—

(A) Each owner or operator subject to the requirements of this rule shall submit an initial design capacity report to the director.

1. The initial design capacity report shall be submitted ninety (90) days from the rule effective date.

2. The initial design capacity report shall contain the following information:

A. A map or plot of the landfill, providing the size and location of the landfill, and identifying all areas where solid waste may be landfilled according to the provision of the state, local, tribal, or Resource Conservation and Recovery Act (RCRA) construction or operating permit; and

B. The maximum design capacity of the landfill. Where the maximum design capacity is specified in the state or local construction or RCRA permit, a copy of the per-

mit specifying the maximum design capacity may be submitted as part of the report. If the maximum design capacity of the landfill is not specified in the permit, the maximum design capacity shall be calculated using good engineering practices. The calculations shall be provided, along with relevant parameters as part of the report. The director may request other information as may be necessary to verify the maximum design capacity of the landfill.

3. An amended design capacity report shall be submitted to the director providing notification of any increase in the design capacity of the landfill, whether the increase results from an increase in the permitted area or depth of the landfill, a change in the operating procedures, or any other means which results in an increase in the maximum design capacity of the landfill above one (1.0) million megagrams and one (1.0) million cubic meters. The amended design capacity report shall be submitted within ninety (90) days of the issuance of an amended construction or operating permit, or the placement of waste in additional land, or the change in operating procedures which will result in an increase in maximum design capacity, whichever occurs first.

(B) Each owner or operator subject to the requirements of this rule shall submit an NMOC emission rate report to the director initially and annually thereafter, except as provided for in subparagraph (8)(B)1.B. or paragraph (8)(B)3. of this rule. The director may request such additional information as may be necessary to verify the reported NMOC emission rate.

1. The NMOC emission rate report shall contain an annual or five (5)-year estimate of the NMOC emission rate calculated using the formula and procedures provided in subsection (5)(A) or (B) of this rule, as applicable.

A. The initial NMOC emission rate report shall be submitted within ninety (90) days of the rule effective date and may be combined with the initial design capacity report required in subsection (8)(A) of this rule. Subsequent NMOC emission rate reports shall be submitted annually thereafter, except as provided for in subparagraph (8)(B)1.B. and paragraph (8)(B)3. of this rule.

B. If the estimated NMOC emission rate as reported in the annual report to the director is less than twenty-five (25) megagrams per year in each of the next five (5) consecutive years, the owner or operator may elect to submit an estimate of the NMOC emission rate for the next five (5)-year period in lieu of the annual report. This estimate shall include the current amount of solid



waste-in-place and the estimated waste acceptance rate for each year of the five (5) years for which an NMOC emission rate is estimated. All data and calculations upon which this estimate is based shall be provided to the director. This estimate shall be revised at least once every five (5) years. If the actual waste acceptance rate exceeds the estimated waste acceptance rate in any year reported in the five (5)-year estimate, a revised five (5)-year estimate shall be submitted to the director. The revised estimate shall cover the five (5)-year period beginning with the year in which the actual waste acceptance rate exceeded the estimated waste acceptance rate.

2. The NMOC emission rate report shall include all the data, calculations, sample reports, and measurements used to estimate the annual or five (5)-year emissions.

3. Each owner or operator subject to the requirements of this rule is exempted from the requirements of paragraphs (8)(B)1. and 2. of this rule after the installation of a collection and control system in compliance with paragraph (3)(B)2. of this rule, during such time as the collection and control system is in operation and in compliance with sections (4) and (6) of this rule.

(C) Each owner or operator subject to subparagraph (3)(B)2.A. of this rule shall submit a collection and control system design plan to the director within one (1) year of the NMOC emission rate report, required under subsection (8)(B) of this rule, in which the emission rate equals or exceeds twenty-five (25) megagrams per year, except as follows:

1. If the owner or operator elects to recalculate the NMOC emission rate after Tier 2 NMOC sampling and analysis as provided under paragraph (5)(A)3. of this rule and the resulting rate is less than twenty-five (25) megagrams per year, annual periodic reporting shall be resumed, using the Tier 2 determined site-specific NMOC concentration, until the calculated emission rate is equal to or greater than twenty-five (25) megagrams per year or the landfill is closed. The revised NMOC emission rate report, with the recalculated emission rate based on NMOC sampling and analysis, shall be submitted within one hundred eighty (180) days of the first calculated exceedance of twenty-five (25) megagrams per year; and

2. If the owner or operator elects to recalculate the NMOC emission rate after determining a site-specific methane generation rate constant (k), as provided in Tier 3 in paragraph (5)(A)4. of this rule and the resulting NMOC emission rate is less than twenty-five (25) megagrams per year, annual periodic reporting shall be resumed. The resulting site-specific methane generation rate constant

(k) shall be used in the emission rate calculation until such time as the emission rate calculation results in an exceedance. The revised NMOC emission rate report, with the site-specific methane generation rate constant (k) shall be submitted to the director within one (1) year of the first calculated emission rate exceeding twenty-five (25) megagrams per year.

(D) Each owner or operator of a controlled landfill shall submit a closure report to the director within thirty (30) days of the date the landfill ceases accepting solid waste. The director may request additional information as may be necessary to verify that permanent closure has taken place in accordance with the requirements of 40 CFR 258.60. If a closure report has been submitted to the director, no additional wastes may be placed into the landfill without filing a notification of modification as described under 40 CFR 60.7(a)(4).

(E) Each owner or operator of a controlled landfill shall submit an equipment removal report to the director thirty (30) days prior to removal or cessation of operation of the control equipment. The report shall contain all of the following items:

1. A copy of the closure report;
 2. A copy of the initial performance test report demonstrating that the fifteen (15)-year minimum control period has expired; and
 3. Dated copies of three (3) successive NMOC emission rate reports demonstrating that the landfill is no longer producing twenty-five (25) megagrams or greater of NMOC per year.
4. The director may request such additional information as may be necessary to verify that all of the conditions for removal have been met.

(F) Each owner or operator of a landfill seeking to comply with paragraph (3)(B)2. of this rule using an active collection system designed in accordance with subparagraph (3)(B)2.B. of this rule shall submit to the director annual reports of the recorded information in paragraphs (8)(F)1. through 6. of this rule. The initial annual report shall be submitted within one hundred eighty (180) days of installation and start-up of the collection and control system and shall include an initial performance test report required under 40 CFR 60.8. For enclosed combustion devices and flares, reportable exceedances are defined under subsection (9)(C) of this rule.

1. Value and length of time for exceedance of applicable parameters monitored under subsections (7)(A), (B), (C), and (D) of this rule.

2. Description and duration of all periods when the gas stream is diverted from the control device through a bypass line or the indication of bypass flow.

3. Description and duration of all periods when the control device was not operating for a period exceeding one (1) hour and length of time the control device was not operating.

4. All periods when the collection system was not operating in excess of five (5) days.

5. The location of each exceedance of the five hundred parts per million (500 ppm) methane concentration as provided in subsection (4)(D) of this rule and the concentration recorded at each location for which an exceedance was recorded in the previous month.

6. The date of installation and the location of each well or collection system expansion added.

(G) Each owner or operator seeking to comply with subparagraph (3)(B)2.A. of this rule shall include the following information with the initial performance test report required under 40 CFR 60.8:

1. A diagram of the collection system showing collection system positioning including all wells, horizontal collectors, surface collectors, or other gas extraction devices, including the locations of any areas excluded from collection and the proposed sites for the future collection system expansion;

2. The data upon which the sufficient density of wells, horizontal collectors, surface collectors, or other gas extraction devices and the gas mover equipment sizing are based;

3. The documentation of the presence of asbestos or nondegradable material for each area from which collection wells have been excluded based on the presence of asbestos or nondegradable material;

4. The sum of the gas generation flow rates for all areas from which collection wells have been excluded based on nonproductivity and the calculations of gas generation flow rate for each excluded area;

5. The provisions for increasing gas mover equipment capacity with increased gas generation flow rate, if the present gas mover equipment is inadequate to move the maximum flow rate expected over the life of the landfill; and

6. The provisions for the control of off-site migration.

(9) Record-Keeping Requirements. Except as provided in part (3)(B)2.A.(II) of this rule—

(A) Each owner or operator of an MSW landfill subject to the provisions of subsection



(3)(B) of this rule shall keep for at least five (5) years up-to-date, readily accessible, on-site records of the design capacity report which triggered subsection (3)(B) of this rule, the current amount of solid waste-in-place, and the year-by-year waste acceptance rate. A longer period is acceptable if records are needed for an unresolved enforcement action. Records may be maintained off-site if they are retrievable within four (4) hours. Either paper copy or electronic formats are acceptable;

(B) Each owner or operator of a controlled landfill shall keep up-to-date, readily accessible records for the life of the control equipment of the data listed in paragraphs (9)(B)1. through 4. of this rule as measured during the initial performance test or compliance determination. Records of subsequent tests or monitoring shall be maintained for a minimum of five (5) years. Records of the control device vendor specifications shall be maintained until removal.

1. Where an owner or operator subject to the provisions of this rule seeks to demonstrate compliance with subparagraph (3)(B)2.B. of this rule—

A. The maximum expected gas generation flow rate as calculated in paragraph (6)(A)1. of this rule. The owner or operator may use another method to determine the maximum gas generation flow rate, if the method has been approved by the director and EPA; and

B. The density of wells, horizontal collectors, surface collectors, or other gas extraction devices determined using the procedures specified in paragraph (10)(A)1. of this rule.

2. Where an owner or operator subject to the provisions of this rule seeks to demonstrate compliance with subparagraph (3)(B)2.C. of this rule through use of an enclosed combustion device other than a boiler or process heater with a design heat input capacity equal to or greater than forty-four (44) megawatts—

A. The average combustion temperature measured at least every fifteen (15) minutes and averaged over the same time period of the performance test; and

B. The percent reduction of NMOC determined as specified in part (3)(B)2.C.(II) of this rule achieved by the control device.

3. Where an owner or operator subject to the provisions of this rule seeks to demonstrate compliance with subpart (3)(B)2.C.(II)(a) of this rule through use of a boiler or process heater of any size—a description of the location at which the collected gas vent stream is introduced into the boiler or process heater over the same time period of the performance testing.

4. Where an owner or operator subject

to the provisions of this rule seeks to demonstrate compliance with part (3)(B)2.C.(I) of this rule through use of an open flare, the flare type (that is, steam-assisted, air-assisted, or nonassisted), all visible emission readings, heat content determination, flow rate or bypass flow rate measurements, and exit velocity determinations made during the performance test as specified in 40 CFR 60.18; continuous records of the flare pilot flame or flare flame monitoring and records of all periods of operations during which the pilot flame of the flare flame is absent;

(C) Each owner or operator of a controlled landfill subject to the provisions of this rule shall keep for five (5) years up-to-date, readily accessible continuous records of the equipment operating parameters specified to be monitored in section (7) of this rule as well as up-to-date, readily accessible records for periods of operation during which the parameter boundaries established during the most recent performance test are exceeded.

1. The following constitute exceedances that shall be recorded and reported under subsection (8)(F) of this rule:

A. For enclosed combustors except for boilers and process heaters with design heat input capacity of forty-four (44) megawatts (150 million British thermal units per hour) or greater, all three (3)-hour periods of operation during which the average combustion temperature was more than twenty-eight degrees Celsius (28 °C) below the average combustion temperature during the most recent performance test at which compliance with subparagraph (3)(B)2.C. of this rule was determined; and

B. For boilers or process heaters, whenever there is a change in the location at which the vent stream is introduced into the flame zone as required under paragraph (9)(B)3. of this rule.

2. Each owner or operator subject to the provisions of this rule shall keep up-to-date, readily accessible continuous records of the indication of flow to the control device or the indication of bypass flow or records of monthly inspections of car-seals or lock-and-key configurations used to seal bypass lines, specified under section (7) of this rule.

3. Each owner or operator subject to the provisions of this rule who uses a boiler or process heater with a design heat input capacity of forty-four (44) megawatts or greater to comply with subparagraph (3)(B)2.C. of this rule shall keep an up-to-date, readily accessible record of all periods of operation of the boiler or process heater. (Examples of such records could include records of steam use, fuel use, or monitoring data collected pursuant to other state or local regulatory requirements.)

4. Each owner or operator seeking to

comply with the provisions of this rule by use of an open flare shall keep up-to-date, readily accessible continuous records of the flame or flare pilot flame monitoring specified under subsection (7)(C) of this rule and up-to-date, readily accessible records of all periods of operation in which the flame or flare pilot flame is absent;

(D) Each owner or operator subject to the provisions of this rule shall keep for the life of the collection system an up-to-date, readily accessible plot map showing each existing and planned collector in the system and providing a unique identification location label for each collector.

1. Each owner or operator subject to the provisions of this rule shall keep up-to-date, readily accessible records of the installation date and location of all newly installed collectors as specified under subsection (6)(B) of this rule.

2. Each owner or operator subject to the provisions of this rule shall keep readily accessible documentation of the nature, date of deposition, amount, and location of asbestos-containing or nondegradable waste excluded from collection as provided in subparagraph (10)(A)3.A. of this rule as well as any non-productive areas excluded from collection as provided in subparagraph (10)(A)3.B. of this rule;

(E) Each owner or operator subject to the provisions of this rule shall keep for at least five (5) years up-to-date, readily accessible records of all collection and control system exceedances of the operational standards in section (4) of this rule, the reading in the subsequent month whether or not the second reading is an exceedance, and the location of each exceedance; and

(F) Landfill owners or operators who convert design capacity from volume to mass or mass to volume to demonstrate that landfill design capacity is less than one (1.0) million megagrams or one (1.0) million cubic meters, as provided in the definition of design capacity, shall keep readily accessible, on-site records of the annual recalculation of site-specific density, design capacity, and the supporting documentation. Off-site records may be maintained if they are retrievable within four (4) hours of request. Either paper copy or electronic formats are acceptable.

(10) Specifications for Active Collection Systems.

(A) Each owner or operator seeking to comply with subparagraph (3)(B)2.A. of this rule shall site active collection wells, horizontal collectors, surface collectors, or other extraction devices at a sufficient density throughout all gas producing areas using the following procedures unless alternative procedures have been approved by the director and EPA as



provided in parts (3)(B)2.A.(III) and (IV) of this rule:

1. The collection devices within the interior and along the perimeter areas shall be certified to achieve comprehensive control of surface gas emissions by a professional engineer. The following issues shall be addressed in the design: depths of refuse, refuse gas generation rates and flow characteristics, cover properties, gas system expandability, leachate and condensate management, accessibility, compatibility with filling operations, integration with closure end use, air intrusion control, corrosion resistance, fill settlement, and resistance to the refuse decomposition heat;

2. The sufficient density of gas collection devices determined in paragraph (10)(A)1. of this rule shall address landfill gas migration issues and augmentation of the collection system through the use of active or passive systems at the landfill perimeter or exterior; and

3. The placement of gas collection devices determined in paragraph (10)(A)1. of this rule shall control all gas producing areas, except as provided by subparagraphs (10)(A)3.A. and B. of this rule.

A. Any segregated area of asbestos or nondegradable material may be excluded from collection if documentation is provided as specified under subsection (9)(D) of this rule. The documentation shall provide the nature, date of deposition, location, and amount of asbestos or nondegradable material deposited in the area and shall be provided to the director upon request.

B. Any nonproductive area of the landfill may be excluded from control, provided that the total of all excluded areas can be shown to contribute less than one percent (1%) of the total amount of NMOC emissions from the landfill. The amount, location, and age of the material shall be documented and provided to the director upon request. A separate NMOC emissions estimate shall be made for each section proposed for exclusion, and the sum of all such sections shall be compared to the NMOC emissions estimate for the entire landfill. Emissions from each section shall be computed using the following equation:

$$Q_i = 2k L_o M_i (e^{-kt_i}) (C_{NMOC}) (3.6 \times 10^{-9})$$

where,

- Q_i = NMOC emission rate from the i^{th} section, megagrams per year
- k = methane generation rate constant, year⁻¹

- L_o = methane generation potential, cubic meters per megagram solid waste
- M_i = mass of the degradable solid waste in the i^{th} section, megagrams
- t_i = age of the solid waste in the i^{th} section, years
- C_{NMOC} = concentration of nonmethane organic compounds, parts per million by volume
- 3.6×10^{-9} = conversion factor

C. The values for k and C_{NMOC} determined in field testing shall be used, if field testing has been performed in determining the NMOC emission rate or the radii of influence (the distance from the well center to a point in the landfill where the pressure gradient applied by the blower or compressor approaches zero). If field testing has not been performed, the default values for k , L_o , and C_{NMOC} provided in paragraph (5)(A)1. of this rule or the alternative values from paragraph (5)(A)5. of this rule shall be used. The mass of nondegradable solid waste contained within the given section may be subtracted from the total mass of the section when estimating emissions provided the nature, location, age, and amount of the nondegradable material is documented as provided in subparagraph (10)(A)3.A. of this rule.

(B) Each owner or operator seeking to comply with part (3)(B)2.A.(I) of this rule shall construct the gas collection devices using the following equipment or procedures:

1. The landfill gas extraction components shall be constructed of polyvinyl chloride (PVC), high density polyethylene (HDPE) pipe, fiberglass, stainless steel, or other nonporous corrosion resistant material of suitable dimensions to—convey projected amounts of gases; withstand installation, static, and settlement forces; and withstand planned overburden or traffic loads. The collection system shall extend as necessary to comply with emission and migration standards established in this rule. Collection devices such as wells and horizontal collectors shall be perforated to allow gas entry without head loss sufficient to impair performance across the intended extent of control. Perforations shall be situated with regard to the need to prevent excessive air infiltration;

2. Vertical wells shall be placed so as not to endanger underlying liners and shall address the occurrence of water within the landfill. Holes and trenches constructed for piped wells and horizontal collectors shall be of sufficient cross-section so as to allow for their proper construction and completion including, for example, centering of pipes and placement of gravel backfill. Collection devices shall be designed so as not to allow

indirect short circuiting of air into the cover or refuse into the collection system or gas into the air. Any gravel used around pipe perforations should be of a dimension so as not to penetrate or block perforations; and

3. Collection devices may be connected to the collection header pipes below or above the landfill surface. The connector assembly shall include a positive closing throttle valve, any necessary seals and couplings, access couplings, and at least one (1) sampling port. The collection devices shall be constructed of PVC, HDPE, fiberglass, stainless steel, or other nonporous material of suitable thickness.

(C) Each owner or operator seeking to comply with part (3)(B)2.A.(I) of this rule shall convey the landfill gas to a control system in compliance with subparagraph (3)(B)2.C. of this rule through the collection header pipe(s). The gas mover equipment shall be sized to handle the maximum gas generation flow rate expected over the intended use period of the gas moving equipment using the following procedures:

1. For existing collection systems, the flow data shall be used to project the maximum flow rate. If no flow data exists, the procedures in paragraph (10)(C)2. of this rule shall be used; and

2. For new collection systems, the maximum flow rate shall be in accordance with paragraph (6)(A)1. of this rule.

AUTHORITY: section 643.050, RSMo Supp. 2011. Original rule filed May 15, 1996, effective Dec. 30, 1996. Amended: Filed Oct. 7, 1999, effective July 30, 2000. Amended: Filed Sept. 26, 2011, effective May 30, 2012.*

**Original authority: 643.050, RSMo 1965, amended 1972, transferred from 203.050 in 1986, 1992, 1993, 1995, 2011.*

10 CSR 10-5.500 Control of Emissions From Volatile Organic Liquid Storage

PURPOSE: This rule limits the volatile organic compound (VOC) emissions from installations with volatile organic liquid storage vessels by incorporating reasonably available control technology (RACT) as required by the Clean Air Act Amendments (CAAA) of 1990.

PUBLISHER'S NOTE: The secretary of state has determined that the publication of the entire text of the material which is incorporated by reference as a portion of this rule would be unduly cumbersome or expensive. Therefore, the material which is so incorporated is on file with the agency who filed this rule, and with the Office of the Secretary of State. Any interested person may view this

material at either agency's headquarters or the same will be made available at the Office of the Secretary of State at a cost not to exceed actual cost of copy reproduction. The entire text of the rule is printed here. This note refers only to the incorporated by reference material.

(1) Applicability.

(A) This rule shall apply throughout the City of St. Louis and St. Charles, St. Louis, Jefferson and Franklin Counties.

(B) The provisions of this rule shall apply to all storage containers of volatile organic liquid (VOL) with a maximum true vapor pressure of one-half pound per square inch (0.5 psia) or greater in any stationary tank, reservoir or other container of forty thousand (40,000) gallon capacity or greater, except to vessels as follows:

1. Vessels with a capacity greater than or equal to forty thousand (40,000) gallons storing a liquid with a maximum true vapor pressure of less than one-half (0.5) psia;
2. Vessels permanently attached to mobile vehicles such as trucks, railcars, barges or ships;
3. Vessels used to store beverage alcohol;
4. Pressure vessels designed to operate in excess of twenty-nine and four-tenths (29.4) psia and without emissions to the atmosphere;
5. Vessels of coke oven by-product plants;
6. Vessels used only to store or transfer petroleum liquids and that are subject to the requirements of 10 CSR 10-5.220; or
7. Vessels used to store volatile organic liquids that are subject to or exempt from the requirements of 40 CFR parts 60, 61 or 63.

(2) Definitions.

(A) Beverage alcohol—Consumable products and their process intermediates and by-products, consisting of ethanol or mixtures of ethanol and non-volatile organic liquids.

(B) Liquid-mounted seal—A foam- or liquid-filled seal mounted in contact with the liquid between the wall of the storage vessel and the floating roof continuously around the circumference of the tank.

(C) Mechanical shoe seal—A metal sheet held vertically against the wall of the storage vessel by springs or weighted levers and is connected by braces to the floating roof. A flexible coated fabric (envelope) spans the annular space between the metal sheet and the floating roof.

(D) Volatile organic liquid—Any substance which is a liquid at storage conditions and which contains one or more volatile organic

compounds as defined in 10 CSR 10-6.020.

(E) Definitions of certain terms specified in this rule, other than those specified in this rule section, may be found in 10 CSR 10-6.020.

(3) General Provisions.

(A) Every owner or operator storing VOL in a vessel of forty thousand (40,000) gallons or greater with a maximum true vapor pressure greater than or equal to one-half (0.5) psia but less than three-quarters (0.75) psia shall be subject to the record-keeping requirements of subsection (4)(G) and the monitoring requirements of subsection (4)(H). Furthermore, every owner or operator storing VOL in a vessel of forty thousand (40,000) gallons or greater with a maximum true vapor pressure equal to three-quarters (0.75) psia but less than eleven and one-tenth (11.1) psia shall reduce VOC emissions from storage tanks, reservoirs or other containers as follows:

1. Each fixed roof tank shall be equipped with an internal floating roof that meets the following specifications or shall be equipped with a vapor control system that meets the specifications contained in paragraph (3)(A)4. of this rule:

A. The internal floating roof shall rest or float on the liquid surface but not necessarily in complete contact with it inside a storage vessel that has a fixed roof. The internal floating roof shall be floating on the liquid surface at all times, except during initial fill and during those intervals when the storage vessel is completely emptied and subsequently refilled. When the roof is resting on the leg supports, the process of filling, emptying or refilling shall be continuous and shall be accomplished as rapidly as possible;

B. Each internal floating roof shall be equipped with one of the following closure devices between the wall of the storage vessel and the edge of the internal floating roof:

- (I) A liquid-mounted seal;
- (II) Two (2) seals mounted one above the other so that each forms a continuous closure that completely covers the space between the wall of the storage vessel and the edge of the internal floating roof. The lower seal may be vapor-mounted, but both must be continuous; or
- (III) A mechanical shoe seal;

C. Each opening in a non-contact internal floating roof except for automatic bleeder vents such as vacuum breaker vents and the rim space vents shall provide a projection below the liquid surface;

D. Each opening in the internal floating roof except for leg sleeves, automatic bleeder vents, rim space vents, column wells,

ladder wells, sample wells, and stub drains shall be equipped with a cover or lid which is to be maintained in a closed position at all times with no visible gap except when the device is in actual use. The cover or lid shall be equipped with a gasket. Covers on each access hatch and automatic gauge float well shall be bolted except when they are in use;

E. Automatic bleeder vents shall be equipped with a gasket and shall be closed at all times when the roof is floating except when the roof is being floated off or is being landed on the roof leg supports;

F. Rim space vents shall be equipped with a gasket and shall be set to open only when the internal floating roof is not floating or at the manufacturer's recommended setting;

G. Each penetration of the internal floating roof for the purpose of sampling shall be a sample well. The sample well shall have a slit fabric cover that covers at least ninety percent (90%) of the opening; and

H. Each penetration of the internal floating roof that allows for passage of a ladder shall have a gasketed sliding cover;

2. During the next scheduled tank cleaning or before March 15, 2004, whichever comes first, each internal floating roof tank shall meet the specifications set forth in subparagraphs (3)(A)1.A. through (3)(A)1.H. of this rule;

3. Each external floating roof tank shall meet the following specifications:

A. Each external floating roof shall be equipped with a closure device between the wall of the storage vessel and the roof edge. The closure device shall consist of two (2) seals, one above the other. The lower seal is referred to as the primary seal, and the upper seal is referred to as the secondary seal.

(I) Except as provided in subparagraph (3)(C)2.D. of this rule, the primary seal shall completely cover the annular space between the edge of the floating roof and tank wall and shall be either a liquid-mounted seal or a mechanical shoe seal.

(II) The secondary seal shall completely cover the annular space between the external floating roof and the wall of the storage vessel in a continuous fashion except as allowed in subparagraph (3)(C)2.D. of this rule.

(III) The tank shall be equipped with the closure device after the next scheduled tank cleaning, but no later than March 15, 2004;

B. Except for automatic bleeder vents and rim space vents, each opening in a non-contact external floating roof shall provide a projection below the liquid surface. Except for automatic bleeder vents, rim space vents,



roof drains, and leg sleeves, each opening in the roof shall be equipped with a gasketed cover, seal or lid that is to be maintained in a closed position at all times with no visible gap except when the device is in actual use. Automatic bleeder vents shall be closed at all times when the roof is floating except when the roof is being floated off or is being landed on the roof leg supports. Rim vents shall be set open when the roof is being floated off the roof leg supports or at the manufacturer's recommended setting. Automatic bleeder vents and rim space vents shall be gasketed. Each emergency roof drain shall include a slotted membrane fabric cover that covers at least ninety percent (90%) of the area of the opening; and

C. The roof shall be floating off the roof leg supports on the liquid at all times except when the tank is completely emptied and subsequently refilled. The process of filling, emptying or refilling when the roof is resting on the leg supports shall be continuous and shall be accomplished as rapidly as possible;

4. After the next tank cleaning but no later than March 15, 2004, a closed vent system and control device respectively shall meet the following specifications:

A. The closed vent system shall be designed to collect all VOC vapors and gases discharged from the storage vessel and operated with no detectable emissions as indicated by an instrument reading of less than five hundred parts per million (500 ppm) above background and visual inspections, as determined by the methods specified in 40 CFR 60.485(c), which is hereby incorporated by reference; and

B. The control device shall be designed and operated to reduce inlet VOC emissions by ninety percent (90%) or greater. If a flare is used as the control device, it shall meet the specifications described in the general control device requirements of 40 CFR 60.18, which is hereby incorporated by reference; or

5. An alternative emission control plan equivalent to the requirements of paragraphs (3)(A)1., (3)(A)2., (3)(A)3. or (3)(A)4. of this rule that has been approved by the department and the United States Environmental Protection Agency in a federally enforceable permit.

(B) After the next tank cleaning but no later than March 15, 2004, the owner or operator of each storage vessel with a design capacity equal to or greater than forty thousand (40,000) gallons which contains VOL that, as stored, has a maximum true vapor pressure greater than or equal to eleven and one-tenth (11.1) psia shall equip each storage

vessel with a closed vent system and control device as specified in paragraph (3)(A)4. of this rule.

(C) Testing Requirements. The owner or operator of each storage vessel specified in section (1) of this rule shall comply with the requirements of paragraph (3)(C)1., (3)(C)2. or (3)(C)3. of this rule. The applicable requirements for a particular storage vessel depends on the control equipment installed to meet the requirements of this rule.

1. After installing the control equipment necessary for the source to comply with the requirements of paragraphs (3)(A)1. and (3)(A)2. of this rule for permanently affixed roofs and internal floating roofs, each owner or operator shall—

A. Visually inspect the internal floating roof, the primary seal, and the secondary seal (if one is in service) prior to filling the storage vessel with VOL. If there are holes, tears or other openings in the primary seal, the secondary seal or the seal fabric or defects in the internal floating roof, or both, the owner or operator shall repair the items before filling the storage vessel;

B. For vessels equipped with a liquid-mounted or mechanical shoe primary seal, visually inspect the internal floating roof and the primary seal or the secondary seal (if one is in service) through manholes and roof hatches on the fixed roof at least once every twelve (12) months after initial fill. If the internal floating roof is not resting on the surface of the VOL inside the storage vessel, or if there is liquid accumulated on the roof, or if the seal is detached, or if there are holes or tears in the seal fabric, the owner or operator shall repair the items or empty and remove the storage vessel from service within forty-five (45) days. If a failure that is detected during inspections required in this rule subsection cannot be repaired within forty-five (45) days and if the vessel cannot be emptied within forty-five (45) days, the owner or operator may request a thirty (30)-day extension from the department in the inspection report required in paragraph (4)(A)2. of this rule. Such a request for an extension must document that alternate storage capacity is unavailable and specify a schedule of actions the owner or operator will take that will assure that the control equipment will be repaired or the vessel will be emptied within thirty (30) days;

C. For vessels equipped with both primary and secondary seals—

(I) Visually inspect the vessel as specified in subparagraph (3)(C)1.D. of this rule at least every five (5) years; or

(II) Visually inspect the vessel as specified in subparagraph (3)(C)1.B. of this rule;

D. Visually inspect the internal floating roof, the primary seal, the secondary seal if one is in service, gaskets, slotted membranes, and sleeve seals if any each time the storage vessel is emptied and degassed. If the internal floating roof has defects, the primary seal has holes, tears or other openings in the seal, or if the seal fabric or the secondary seal has holes, tears or other openings in the seal, or if the seal fabric or the gaskets no longer close off the liquid surfaces from the atmosphere, or if the slotted membrane has more than ten percent (10%) open area, the owner or operator shall repair the items as necessary so that none of the conditions specified in this rule subsection exist before refilling the storage vessel with VOL. In no event shall inspections conducted in accordance with this provision occur at intervals greater than ten (10) years in the case of vessels subject to the annual visual inspection as specified in subparagraph (3)(C)1.B. and part (3)(C)1.C.(II) of this rule and at intervals no greater than five (5) years in the case of vessels specified in part (3)(C)1.C.(I) of this rule; and

E. Notify the department in writing at least thirty (30) days prior to the filling or refilling of each storage vessel for which an inspection is required by subparagraphs (3)(C)1.A. and (3)(C)1.D. of this rule to afford the department the opportunity to have an observer present. If the inspection required by subparagraph (3)(C)1.D. of this rule is not planned and the owner or operator could not have known about the inspection thirty (30) days in advance of refilling the tank, the owner or operator shall notify the department at least seven (7) days prior to the refilling of the storage vessel. Notification shall be made by telephone immediately followed by written documentation demonstrating why the inspection was unplanned. Alternatively, this notification including the written documentation may be made in writing and sent by express mail so that it is received by the department at least seven (7) days prior to the refilling.

2. The owner or operator of external floating roof tanks shall—

A. Determine the gap areas and maximum gap widths between the primary seal and the wall of the storage vessel and between the secondary seal and the wall of the storage vessel.

(I) Measurements of gaps between the tank wall and the primary seal (seal gaps) shall be performed during the hydrostatic testing of the vessel or within sixty (60) days



after the initial fill with VOL and at least once every five (5) years thereafter.

(II) Measurements of gaps between the tank wall and the secondary seal shall be performed within sixty (60) days after the initial fill with VOL and at least once per year thereafter.

(III) If any source ceases to store VOL for a period of one (1) year or more, subsequent introduction of VOL into the vessel shall be considered an initial fill for the purposes of parts (3)(C)2.A.(I) and (3)(C)2.A.(II) of this rule;

B. Determine gap widths and areas in the primary and secondary seals individually according to the following procedures:

(I) Measure seal gaps, if any, at one or more floating roof levels when the roof is floating off the roof leg supports;

(II) Measure seal gaps around the entire circumference of the tank in each place where a one-eighth inch (1/8") in diameter uniform probe passes freely without forcing or binding against seal between the seal and the wall of the storage vessel and measure the circumferential distance of each such location; and

(III) Determine the total surface area of each gap described in part (3)(C)2.B.(II) of this rule by using probes of various widths to measure accurately the actual distance from the tank wall to the seal and multiplying each such width by its respective circumferential distance;

C. Add the gap surface area of each gap location for the primary seal and the secondary seal individually and divide the sum for each by the nominal diameter of the tank and compare each ratio to the respective standards in subparagraph (3)(C)2.D. of this rule;

D. Make necessary repairs or empty the storage vessel within forty-five (45) days after identification in any inspection for seals not meeting the requirements listed in parts (3)(C)2.D.(I) and (3)(C)2.D.(II).

(I) The accumulated area of gaps between the tank wall and the mechanical shoe or liquid-mounted primary seal shall not exceed one inch (1.0") per foot of tank diameter, and the width of any portion of any gap shall not exceed one and one-half inches (1.5"). There shall be no holes, tears or other openings in the shoe, seal fabric or seal envelope.

(II) The secondary seal shall meet the following requirements:

(a) Be installed above the primary seal so that it completely covers the space between the roof edge and the tank wall except as provided in part (3)(C)2.B.(III) of this rule;

(b) The accumulated area of gaps between the tank wall and the secondary seal used in combination with a metallic shoe or liquid-mounted primary seal shall not exceed one inch (1.0") per foot of tank diameter, and the width of any portion of any gap shall not exceed one-half inch (0.5"). There shall be no gaps between the tank wall and the secondary seal when used in combination with vapor mounted primary seal; and

(c) There shall be no holes, tears or other openings in the seal or seal fabric.

(III) If a failure that is detected during inspections required in subparagraph (3)(C)2.A. of this rule cannot be repaired within forty-five (45) days and if the vessel cannot be emptied within forty-five (45) days, the owner or operator may request a thirty (30)-day extension from the department in the inspection report required in subparagraph (3)(C)2.D. of this rule. Such extension request must include a demonstration of unavailability of alternate storage capacity and a specification of a schedule that will assure that the control equipment will be repaired or the vessel will be emptied as soon as possible;

E. Notify the department thirty (30) days in advance of any gap measurements required by subparagraph (3)(C)2.A. of this rule to afford the department the opportunity to have an observer present; and

F. Visually inspect the external floating roof, the primary seal, secondary seal, and fittings each time the vessel is emptied and degassed.

(I) If the external floating roof has defects, if the primary seal has holes, tears or other openings in the seal or the seal fabric, or if the secondary seal has holes, tears or other openings in the seal or the seal fabric, the owner or operator shall repair the items as necessary so that none of the conditions specified in this rule subsection exist before filling or refilling the storage vessel with VOL.

(II) For all the inspections required by subparagraph (3)(C)2.F. of this rule, the owner or operator shall notify the department in writing at least thirty (30) days prior to the filling or refilling of each storage vessel to afford the department the opportunity to inspect the storage vessel prior to refilling. If the inspection required by subparagraph (3)(C)2.F. of this rule is not planned and the owner or operator could not have known about the inspection thirty (30) days in advance of refilling the tank, the owner or operator shall notify the department at least seven (7) days prior to the refilling of the storage vessel. Notification shall be made by telephone immediately followed by written

documentation demonstrating why the inspection was unplanned. Alternatively, this notification including the written documentation may be sent by express mail so that it is received by the department at least seven (7) days prior to the refilling.

3. The owner or operator of each source that is equipped with a closed vent system and a flare to meet the requirements of paragraph (3)(A)4. of this rule shall meet the requirements specified in the general control device requirements of 40 CFR 60.18(e) and (f), which are hereby incorporated by reference.

(4) Reporting and Record Keeping. The owner or operator shall maintain all records required by this rule section, except for the records required by subsection (4)(F) of this rule, on-site for at least five (5) years. The records required by subsection (4)(F) of this rule shall be kept on-site for the life of the source. The records required by this rule shall be made available to the department immediately upon request.

(A) After installing control equipment in accordance with paragraph (3)(A)1. or (3)(A)2. of this rule for fixed roofs and internal floating roofs, the owner or operator shall—

1. Keep a record of each inspection performed as required by subparagraphs (3)(C)1.A., (3)(C)1.B., (3)(C)1.C., and (3)(C)1.D. of this rule. Each record shall identify the storage vessel on which the inspection was performed and shall contain the date the vessel was inspected and the observed condition of each component of the control equipment including seals, internal floating, and fittings;

2. If any of the conditions described in subparagraph (3)(C)1.B. of this rule are detected during the annual visual inspection required by subparagraph (3)(C)1.B. of this rule, report to the department within twenty (20) days after the inspection the identity of the storage vessel, the nature of the defects, and the date the storage vessel was emptied or the nature of and date the repair was made; and

3. After each inspection required by subparagraph (3)(C)1.C. of this rule where tears or holes in the seal or seal fabric, or defects in the internal floating roof, or other control equipment defects listed in part (3)(C)1.C.(II) of this rule are discovered, report to the department within twenty (20) days after the inspection the identity of the storage vessel and the reason it did not meet the specifications of paragraph (3)(A)1., (3)(A)2. or (3)(C)1. of this rule, and list each repair made.



(B) After installing control equipment in accordance with paragraph (3)(A)3. of this rule for external floating roofs, the owner or operator shall—

1. Within sixty (60) days after performing the seal gap measurements required by subparagraph (3)(C)2.A. of this rule, furnish the department with a report that contains the date of measurement, the raw data obtained in the measurement and the calculations of this rule described in subparagraphs (3)(C)2.B. and (3)(C)2.C. of this rule;

2. Maintain records of each gap measurement performed as required by subparagraph (3)(C)2.B. of this rule. Such records shall identify the storage vessel in which the measurement was performed and shall contain the date of measurement, the raw data obtained in the measurement and the calculations of this rule described in subparagraphs (3)(C)2.B. and (3)(C)2.C. of this rule; and

3. After each seal gap measurement that detects gaps exceeding the limitations specified by subparagraph (3)(C)2.D. of this rule, submit a report to the department within twenty (20) days after the inspection identifying the vessel and containing the information specified in paragraph (4)(B)1. of this rule and the date the vessel was emptied or the repairs were made and the date of the repair.

(C) After installing control equipment to comply with subsection (3)(C) of this rule for closed vent systems and control device other than a flare, the owner or operator shall maintain a record of the measured values of the parameters monitored in accordance with the requirements of this rule.

(D) After installing a closed vent system and flare to comply with subsection (3)(C) of this rule, the owner or operator shall—

1. Provide the department with a report containing the measurements required by 40 CFR 60.18(f)(1), (2), (3), (4), (5), and (6) within six (6) months after the initial start-up date;

2. Maintain records of all periods of operation during which the flare pilot flame is absent; and

3. Report semiannually all periods recorded under 40 CFR 60.115b(d)(2), which is hereby incorporated by reference, in which the pilot flame was absent.

(E) The owner or operator shall maintain records of tank cleaning operations to document the date when control devices are required.

(F) The owner or operator of each storage vessel specified in section (1) of this rule shall maintain readily accessible records of the dimensions of the storage vessel and an analysis of the capacity of the storage vessel. Each storage vessel with a design capacity

less than forty thousand (40,000) gallons is subject to no provision of this rule other than those required by maintaining readily accessible records of the dimensions of the storage vessel and analysis of the capacity of the storage vessel.

(G) Except as provided in paragraphs (4)(H)3. and (4)(H)4. of this rule, the owner or operator of each storage vessel subject to the requirements in subsection (3)(A) or (3)(B) of this rule with a design capacity greater than or equal to forty thousand (40,000) gallons storing a liquid with a maximum true vapor pressure greater than or equal to one-half (0.5) psia but less than three-quarters (0.75) psia shall maintain a record of the VOL storage, the period of storage, and the maximum true vapor pressure of the VOL during the respective storage period.

(H) Monitoring Requirements.

1. Except as provided in paragraph (4)(H)4. of this rule, the owner or operator of each storage vessel with a design capacity greater than or equal to forty thousand (40,000) gallons storing a liquid with a maximum true vapor pressure that is normally less than three-quarters (0.75) psia shall notify the department within thirty (30) days when the maximum true vapor pressure of the liquid exceeds three-quarters (0.75) psia.

2. Available data on the storage temperature may be used to determine the maximum true vapor pressure.

A. For vessels operated above or below ambient temperatures, the maximum true vapor pressure is calculated based upon the highest expected calendar-month average of the storage temperature. For vessels operated at ambient temperatures, the maximum true vapor pressure is calculated based upon the maximum local monthly average ambient temperature as reported by the National Weather Service.

B. For other liquids, the vapor pressure shall be determined by an appropriate test method in section (5) of this rule or calculated by an appropriate method approved by the department.

3. The owner or operator of each vessel storing a mixture of indeterminate or variable composition shall be subject to the following:

A. Prior to the initial filling of the vessel, the maximum true vapor pressure for the range of anticipated liquid compositions to be stored will be determined using the methods described in paragraph (4)(H)2. of this rule; and

B. For vessels in which the vapor pressure of the anticipated liquid composition is one-half (0.5) psia or greater but less than three-quarters (0.75) psia, an initial physical test of the vapor pressure is required; a phys-

ical test at least once every six (6) months thereafter is required as determined by an appropriate test method in section (5) of this rule.

4. The owner or operator of each vessel equipped with a closed vent system and control device meeting the specifications of subsection (3)(A) or (3)(B) of this rule is exempt from the requirements of paragraphs (4)(H)1. and (4)(H)2. of this rule.

(5) Test Methods.

(A) Compliance with the requirements of this rule shall be determined by applying the following test methods, as appropriate:

1. Test Methods 1 and 2 (40 CFR 60, Appendix A) for determining flow rates, as necessary;

2. Test Method 18 (40 CFR 60, Appendix A) for determining gaseous organic compound emissions by gas chromatography;

3. Test Method 21 (40 CFR 60, Appendix A) for determination of volatile organic compound leaks;

4. Test Method 22 (40 CFR 60, Appendix A) for visual determination of fugitive emissions from material sources and smoke emissions from flares;

5. Test Method 25 (40 CFR 60, Appendix A) for determining total gaseous nonmethane organic emissions as carbon;

6. Test Methods 25A or 25B (40 CFR 60, Appendix A) for determining total gaseous organic concentrations using flame ionization or nondispersive infrared analysis;

7. Test method described in 40 CFR 60.113(a)(ii) for measurement of storage tank seal gap;

8. Determination of true vapor pressure using American Society for Testing and Materials (ASTM) Test Methods D323-94, D4953, D5190 or D5191 for the measurement of Reid vapor pressure; and

9. Other test methods for determining compliance may be used if found to be equivalent after review by the department.

AUTHORITY: section 643.050, RSMo Supp. 1998. Original rule filed July 15, 1999, effective Feb. 29, 2000.*

**Original authority: 643.050, RSMo 1965, amended 1972, 1992, 1993, 1995.*

10 CSR 10-5.510 Control of Emissions of Nitrogen Oxides

PURPOSE: The purpose of this regulation is to reduce the emissions of nitrogen oxides in the St. Louis ozone nonattainment area. This



regulation requires major sources of Nitrogen Oxides (NO_x) to install or comply with reasonably available control technology (RACT) as required under the Clean Air Act.

(1) Applicability.

(A) This rule shall apply to all installations located in the counties of Franklin, Jefferson, St. Charles and St. Louis and the City of St. Louis with the potential to emit one hundred (100) tons or greater per year of nitrogen oxides.

(B) Installations affected by this rule shall be in compliance no later than May 1, 2002. The director may grant an extension of the compliance deadline if the affected installation submits an alternative compliance plan no later than January 1, 2001. The alternative compliance plan shall include the following items:

1. For each affected unit, a detailed analysis of the air quality benefit that will occur if the compliance date is extended;

2. For each affected unit, a detailed explanation of the reasons why the owner or operator believes that compliance with the applicable NO_x emissions limit by May 1, 2002 is impractical;

3. Information sufficient to identify each affected unit;

4. A proposed schedule setting dates by which the owner or operator will complete the following milestones for each affected unit:

A. Applications for all necessary permits;

B. Contracts for the implementation of new units or control equipment;

C. Construction and installation of new units or control equipment; and

D. Compliance with the applicable NO_x emissions limitation established in this rule; and

5. Any other information the director requests.

(C) Exemptions. The requirements of this rule shall not apply to the following emission units:

1. Any boiler having a maximum heat input of less than fifty (50) million British thermal units (mmBtu) per hour;

2. Any stationary internal combustion engine having a rated energy output capacity of less than five hundred (500) horsepower or a maximum heat input capacity of twenty (20) mmBtu per hour or less;

3. Any stationary combustion turbine having a rated maximum heat input capacity of less than twenty (20) mmBtu per hour;

4. Any emergency standby boiler, stationary internal combustion engine, stationary combustion turbine, start up unit, or

black start unit which operates less than seven hundred and fifty (750) hours annually and less than four hundred (400) hours during ozone season;

5. Any research and development emissions unit;

6. Any jet engine test cell;

7. Any air pollution control device;

8. Any emission unit which is required to meet a more stringent state or federal NO_x emissions limitation;

9. Any unit that would otherwise be required to comply with this rule with actual annual NO_x emissions of thirty (30) tons per year or less. This exemption shall cease to apply to a unit if the unit ever exceeds thirty (30) tons per year of actual NO_x emissions for any calendar year. Any unit that becomes affected by this rule due to failure to maintain this exemption after January 1, 2000 shall immediately notify the department in writing that the rule applies. The unit shall be in compliance with the applicable provisions of this rule within twenty-four (24) months after notifying the department or May 1, 2002, whichever is later;

10. Any unit subject to and in compliance with Phase II acid rain requirements; and

11. Any incinerator having a maximum rated heat input capacity of less than fifty (50) mmBtu per hour.

(2) Definitions.

(A) Black start unit—Any electric generating unit operated only in the event of a complete loss of power.

(B) Cyclone boiler—A boiler with a horizontal, cylindrical furnace that burns crushed rather than pulverized coal.

(C) Emergency standby boiler—A boiler operated during times of loss of primary power at the installation that is beyond the control of the owner or operator, during routine maintenance, to provide steam for building heat; or to protect essential equipment.

(D) Emergency stationary internal combustion engine—A stationary internal combustion engine used to drive pumps, aerators or other equipment only during times of loss of primary power at the facility that is beyond the control of the owner or operator of the facility or during routine maintenance.

(E) Emergency stationary combustion turbine—A stationary combustion turbine operated only during times of loss of primary power at the facility that is beyond the control of the owner or operator of the facility or during routine maintenance.

(F) Internal combustion engine—Any engine in which power, produced by heat

and/or pressure developed in the engine cylinder(s) by burning a mixture of fuel and air, is subsequently converted to mechanical work by means of one or more pistons.

(G) Jet engine test cell—A stationary jet engine used for the purpose of research and testing.

(H) Predictive emissions monitoring system (PEMS)—A system that uses process and other parameters as inputs to a computer program or other data reduction system to predict values in terms of the applicable emission limitation or standard.

(I) Research and development emissions unit—Any combustion unit operated only for the purpose of research and development work.

(J) Start-up unit—A unit operated only to start up larger electric generating units.

(K) Stationary internal combustion engine—Any internal combustion engine that is not self-propelled, but which may be mounted on a vehicle for portability.

(L) Stoker boiler—A boiler design that employs a grate assembly to combust coal.

(M) Tangentially fired boiler—A boiler that has coal and air nozzles mounted in each corner of the furnace where the vertical furnace walls meet. Both pulverized coal and air are directed from the furnace corners along a line tangential to a circle lying in a horizontal plane of the furnace.

(N) Wall fired boiler—A boiler that has pulverized coal burners arranged on the wall of the furnace. The burners have discrete, individual flames that extend perpendicularly into the furnace area.

(O) Definitions of certain terms specified in this rule, other than those specified in this rule section, may be found in 10 CSR 10-6.020.

(3) General Provisions.

(A) No owner or operator of a boiler with a maximum rated heat input capacity of one hundred (100) mmBtu per hour or greater shall allow the unit to emit NO_x in excess of the emission rates specified in Table 1 as measured pursuant to section (5) of this rule.

Table 1 Maximum Allowable NO_x Emission Rates for Boilers (Pounds of NO_x per mmBtu)

Table with 5 columns: Fuel/Boiler Type, Tangential, Wall, Cyclone, Stoker. Rows include Gaseous Fuels Only, Distillate Oil, Residual Oil, Coal - Wet Bottom, and Coal - Dry Bottom.



(B) An owner or operator of a boiler or incinerator with a maximum rated heat input capacity equal to or greater than fifty (50) mmBtu per hour but less than one hundred (100) mmBtu per hour shall complete an annual adjustment or tune up on the combustion process. This adjustment or tune up shall include at a minimum the following items:

1. Inspection, adjustment, cleaning or replacement of fuel burning equipment, including the burners and moving parts necessary for proper operation as specified by the manufacturer;

2. Inspection of the flame pattern or characteristics and adjustments necessary to minimize total emissions of NO_x and, to the extent practicable, minimize emissions of carbon monoxide; and

3. Inspection of the air to fuel ratio control system and adjustments necessary to ensure proper calibration and operation as specified by the manufacturer.

(C) No owner or operator of a stationary combustion turbine shall allow or permit the discharge of any NO_x emissions in excess of the following limits:

1. Seventy-five (75) parts per million (ppm), corrected to fifteen percent (15%) oxygen, for combustion turbines firing gaseous fuel only; and

2. One hundred ten (110) ppm, corrected to fifteen percent (15%) oxygen, for combustion turbines firing distillate oil or diesel fuel.

(D) No owner or operator of a stationary internal combustion engine with a rated maximum heat input capacity greater than twenty (20) mmBtu per hour shall allow or permit the discharge of NO_x emissions in excess of the following limits:

1. For rich burn engines which burn only gaseous fuels—

A. Nine and one-half (9.5) grams per horsepower-hour for engines which are rated equal to or greater than five hundred (500) horsepower and less than one thousand (1,000) horsepower; or

B. Two and one-half (2.5) grams per horsepower-hour for engines which are rated equal to or greater than one thousand (1,000) horsepower;

2. For lean burn engines which burn only gaseous fuels—

A. Ten (10.0) grams per horsepower-hour for engines which are rated equal to or greater than five hundred (500) horsepower and less than one thousand (1,000) horsepower; or

B. Three (3.0) grams per horsepower-hour for engines which are rated equal to or greater than one thousand (1,000) horsepower;

er;

3. For engines which burn only diesel fuel or distillate oil—

A. Eight and one-half (8.5) grams per horsepower-hour for engines which are rated equal to or greater than five hundred (500) horsepower and less than one thousand eight hundred (1,800) horsepower; or

B. Two and one-half (2.5) grams per horsepower-hour for engines which are rated equal to or greater than one thousand eight hundred (1,800) horsepower; or

4. For engines which burn dual fuels—

A. Six (6.0) grams per horsepower-hour for engines which are rated equal to or greater than five hundred (500) horsepower and less than two thousand (2,000) horsepower; or

B. Two and one-half (2.5) grams per horsepower-hour for engines which are rated equal to or greater than two thousand (2,000) horsepower.

(E) No owner or operator of a regenerative container glass melting furnace shall allow the unit to emit NO_x in excess of 5.5 pounds of NO_x per ton of glass pulled.

(F) No owner or operator of a portland cement kiln shall allow the unit to operate unless good combustion practices are implemented. Each portland cement kiln shall develop a good combustion practice plan that identifies appropriate kiln operating parameters necessary to ensure minimum NO_x formation. Each kiln operator shall be trained to operate the kiln in accordance with the plan. The parameters included in the plan shall include at a minimum the following:

1. Kiln exit oxygen operating range or a surrogate parameter;

2. Clinker burning zone temperature operating range or a surrogate parameter; and

3. Monitoring and record keeping procedures for each parameter.

(G) Emissions Averaging. An owner or operator may comply with the requirements of subsections (3)(A), (3)(C), (3)(D), (3)(E) and (3)(H) of this rule by averaging between two (2) or more similar emission units provided they are located in the St. Louis ozone nonattainment area and provided that both units are required to comply with the subsections (3)(A), (3)(C), (3)(D), (3)(E) or (3)(H) of this rule.

1. Compliance shall be based on the weighted average of actual NO_x emissions from the units on a monthly basis. The averaged emissions rate for the units must be equal to or less than the allowable emissions rate for the units as defined in this rule. An owner or operator who elects to comply with an average NO_x emission limit shall use the

following equation to determine compliance:

$$\frac{\sum(\text{actual NO}_x \text{ emission rate from each unit} * \text{actual monthly heat input from each unit})}{\sum(\text{allowable NO}_x \text{ emission rate from each unit} * \text{actual monthly heat input from each unit})} \leq 1$$

2. NO_x emission rates shall be calculated from actual data from continuous emissions monitoring system (CEMS), PEMS or established through stack testing at several loads.

3. NO_x emissions averaging may only occur between emission units operated under same owner unless a binding legal agreement between two (2) owners is filed with the director and provided the emission units are located in the St. Louis ozone nonattainment area. The binding legal agreement must specify the following:

A. A commitment between the two (2) owners or operators to comply with the averaging provisions;

B. Identification of the emission units which will be used for averaging;

C. An outline of how the emission units will comply with the averaging provisions;

D. A schedule for submitting the monthly data used to determine compliance with the averaging provisions; and

E. Contacts from each owner or operator who will be responsible for the monthly compliance reports.

(H) Case-By-Case RACT Studies.

1. The owner or operator of an emissions unit subject to this rule but not specifically identified in subsection (3)(A), (3)(B), (3)(C), (3)(D), (3)(E) or (3)(F) of this rule shall conduct and submit by July 1, 2000 a detailed engineering and RACT study for those emission units subject to this rule.

2. Each RACT proposal shall, at a minimum, include the following information:

A. A list of emission units subject to the RACT requirements;

B. The size or capacity of each affected emission unit and the types of fuel combusted or the types and quantities of materials processed or produced by each emission unit;

C. A physical description of each emission unit and its operating characteristics;

D. Estimates of the potential and actual NO_x emissions from each affected emission unit and associated supporting documentation;

E. A RACT analysis which meets the requirements of subsection (3)(H) of this



rule, including technical and economic support documentation identified in subsection (3)(G) of this rule for each affected emission unit;

F. A schedule for completing implementation of the RACT proposal as expeditiously as practicable but not later than April 1, 2001, including interim dates for the issuance of purchase orders, start and completion of process technology and control technology changes and the completion of compliance testing;

G. Testing, monitoring, record keeping and reporting procedures proposed to demonstrate compliance with RACT;

H. An application for an operating permit amendment or application to incorporate the provisions of the RACT proposal; and

I. Additional information requested by the department that is necessary for the evaluation of the RACT proposal.

3. In addition, the RACT analysis shall include:

A. A ranking of the available control options for the affected emission unit in descending order of control effectiveness. Available control options are air pollution control technologies or techniques with a reasonable potential for application to the emission unit. Air pollution control technologies and techniques include the application of production process or methods and control systems for NO_x. The control technologies and techniques shall include existing controls for the source category and technology transfer controls applied to similar source categories;

B. An evaluation of the technical feasibility of the available control options as required by paragraph (3)(G)1. of this rule. The evaluation of technical feasibility shall be based on physical, chemical and engineering principles. If an analysis is determined to be technically infeasible, the technical difficulties which would preclude the successful use of the control options on the affected emission unit shall be identified;

C. A ranking of the technically feasible control options in order of overall control effectiveness for NO_x emissions. The list shall present the array of control options and shall include, at a minimum, the following information:

(I) The baseline emissions of NO_x before implementation of each control option;

(II) The estimated emission reduction potential or the estimated control efficiency of each control option;

(III) The estimated emissions after the application of each control option; and

(IV) The economic impacts of each control option, including both overall cost effectiveness and incremental cost effectiveness; and

D. An evaluation of cost effectiveness of each control option consistent with *OAQPS Control Cost Manual* (Fourth Edition), EPA 450/3-90-006 January 1990 and subsequent revisions. The evaluation shall be conducted in accordance with the following requirements:

(I) The cost effectiveness shall be evaluated in terms of dollars per ton of NO_x emission reduction;

(II) The cost effectiveness shall be calculated on average and incremental bases for each option. Average cost effectiveness is calculated as the annualized cost of the control option divided by the baseline emissions rate minus the control option emission rate, as shown by the following formula:

Cost Effectiveness Equation

$$\text{Average Cost Effectiveness (\$/ton NO}_x \text{ removed)} = \frac{\text{Total annualized cost of the control option (\$/yr)}}{\text{Baseline emission rate (tons/yr)} - \text{Control option emission rate (tons/yr)}}$$

(III) For purposes of this paragraph, baseline emission rate represents the maximum emissions before the implementation of the control option. The baseline emissions rate shall be established using either test results or approved emission factors and historical operating data; and

(IV) For purposes of this paragraph, the incremental cost effectiveness calculation compares the costs and emission level of a control option to those of the next most stringent option, as shown by the following formula:

Incremental Cost Equation

$$\text{Incremental Cost per incremental ton removed (\$/ton)} = \frac{\text{Total annualized cost for a control option (\$/yr)} - \text{Total annualized cost for the next most stringent control option (\$/yr)}}{\text{The emission rate for the more stringent control option (tons/yr)} - \text{The emission rate for the control option (tons/yr)}}$$

4. Based upon this study, the director shall provide a case-specific RACT determi-

nation which shall be implemented by the owner or operator of the unit as expeditiously as practicable but in no case later than May 1, 2002. This case-specific RACT determination shall be submitted to the administrator of the U.S. Environmental Protection Agency.

(I) Any unit during periods of start up, shutdown, or malfunction shall comply with the requirements of 10 CSR 10-6.050.

(4) Reporting and Record Keeping.

(A) Reporting. Reporting shall be based on the test methods identified in section (5) of this rule.

1. The owner or operator of an emissions unit subject to subsections (3)(A), (3)(C), (3)(D), (3)(E), (3)(F) and (3)(G) of this rule shall comply with the following requirements:

A. Submit for each NO_x emissions unit that uses a CEMS to demonstrate compliance, an annual report containing the date, time and emissions rate in pounds NO_x per mmBtu of all thirty (30)-day rolling averages greater than the emission rates allowed under section (3) of this rule;

B. Submit for each NO_x emissions unit which uses stack tests to demonstrate compliance, an annual report identifying monthly fuel usage and monthly total heat input; and

C. Submit a written report of all stack tests completed after controls are effective to the director within sixty (60) days after completion of sample and data collection.

2. The owner or operator of an emissions unit subject to subsection (3)(H) of this rule shall comply with the reporting requirements established in the case-by-case RACT determination approved by the director. The owners or operators of emissions units complying with the averaging provisions of subsection (3)(H) shall submit to the director within thirty (30) days after the end of each calendar month a compliance report stating the averaged emission rate. The compliance report shall also include the data used to determine the averaged emission rate. If the average emission rate exceeds the allowable emission rate, the owners and operators shall determine which owner or operator is responsible for the violation. The owners and operators in the compliance report shall submit the identity of the responsible owner or operator. The department will take enforcement action against only the owner or operator responsible for the violation. However, if the owners or operators do not submit within thirty (30) days the identity of the violator, both owners or operators shall be responsible for the violation.

(B) Record Keeping.



1. Each owner or operator of an emissions unit subject to subsections (3)(A), (3)(C), (3)(D), (3)(E), (3)(F) and (3)(G) of this rule shall maintain records of the following:

A. Total fuel consumed on a monthly basis unless the unit is operating a CEMS or predictive emissions monitoring system (PEMS);

B. The total heat input for each emissions unit on a monthly basis unless the unit is operating a CEMS or a PEMS;

C. Reports of all stack testing conducted to meet the requirements of this rule;

D. All other data collected by a CEMS or a PEMS necessary to convert the monitoring data to the units of the applicable emission limitation;

E. If a CEMS is used, all performance evaluations conducted in the past year;

F. All CEMS or monitoring device calibration checks;

G. All monitoring system, monitoring device and performance testing measurements;

H. Records of adjustments and maintenance performed on monitoring systems and devices; and

I. A log identifying each period during which the CEMS was inoperative, except for zero and span checks, and the nature of the repairs and adjustments performed to make the system operative.

2. The owner or operator of an emissions unit subject to subsection (3)(H) of this rule shall comply with the record keeping requirements established in the case-by-case RACT determination approved by the director.

3. All records must be kept on-site for a period of five (5) years and made available to the department upon request.

(5) Test Methods.

(A) Compliance Testing. Initial compliance for all units subject to subsections (3)(A), (3)(C), (3)(D), (3)(E) or (3)(G) of this rule shall be determined through a stack test performed prior to the implementation date under section (1) of this rule except those units complying with the provisions of subsection (5)(B) of this rule. After the initial stack test, stack tests shall be required every three (3) years to determine compliance except for units complying with the provisions of subsection (5)(B) of this rule. The following test methods shall be used for all stack tests:

1. 40 CFR Part 60 Appendix A, Method 7, 7A, 7C, 7D or 7E shall be used to determine NO_x concentrations in stack gases;

2. 40 CFR Part 60 Appendix A, Method 1A, 2, 2A, 2B, 2C, 2D, 2F, 2G, or 2H shall be used to determine the exit velocity of stack gases;

3. 40 CFR Part 60 Appendix A, Method 3 or 3A shall be used to determine carbon dioxide, oxygen, excess air and molecular weight of stack gases;

4. 40 CFR Part 60 Appendix A, Method 4 shall be used to determine moisture content of stack gases from applicable stationary sources;

5. 40 CFR Part 60 Appendix A, Method 19 shall be used to determine (calculate or compute) NO_x (heat input specific) emission rates (pound per mmBtu); and

6. For stationary combustion turbines, 40 CFR Part 60 Appendix A, Method 20 may be used to determine NO_x concentrations.

(B) Monitoring. As an alternative to the compliance testing required under subsection (5)(A) for units subject to subsections (3)(A), (3)(C), (3)(D), (3)(E) and (3)(G) of this rule, an owner or operator of an emission unit may install, calibrate, maintain and operate a CEMS or a PEMS approved by the director and the U.S. Environmental Protection Agency (EPA), or use an equivalent procedure for measuring or estimating NO_x emissions approved by the director and the EPA. For units operating CEMS, PEMS or an equivalent procedure for estimating NO_x emissions, the following requirements shall apply:

1. Compliance shall be measured on a thirty (30)-day rolling average;

2. All valid data shall be used for calculating NO_x emissions rates;

3. The procedures under 40 CFR 60.13(d), (e) and (f) and 40 CFR Part 60 Appendix B, Performance Specification 2 shall be followed, or other procedures approved by the director; for the installation, evaluation and operation of CEMS or PEMS;

4. Quarterly accuracy and daily calibration drift tests shall be performed in accordance with 40 CFR Part 60 Appendix F, or other tests approved by the director; and

5. CEMS installed, certified and operated in accordance with 40 CFR Part 75 are deemed to be approved by the director to meet the monitoring and quality assurance requirements of this subsection.

*AUTHORITY: section 643.050, RSMo 2000. *Original rule filed July 15, 1999, effective Feb. 29, 2000. Amended: Filed Aug. 26, 2005, effective May 30, 2006.*

**Original authority: 643.050, RSMo 1965, amended 1972, 1992, 1993, 1995.*

10 CSR 10-5.520 Control of Volatile Organic Compound Emissions From Existing Major Sources

PURPOSE: This rulemaking will reduce volatile organic compound (VOC) emissions from major sources located in the St. Louis nonattainment area that have not been affected by other rulemakings. This rulemaking is required to comply with the Clean Air Act Amendments of 1990.

(1) Applicability. This rule applies to any installation in the counties of St. Charles, St. Louis, Franklin, or Jefferson or the City of St. Louis that have the potential to emit greater than one hundred (100) tons per year of volatile organic compounds. This rule does not apply to any installation that meets one or more of the following:

(A) One or more rules under Title 10, Division 10, Chapter 5 of the *Code of State Regulations* (CSR) apply to volatile organic compound (VOC) emissions from a product process, or a raw material, intermediate or product tank;

(B) Is exempted from one or more rules under Title 10, Division 10, Chapter 5 of the CSR as they apply to VOC emissions from a product process, or a raw material, intermediate or product tank; or

(C) Is affected by any federal rulemaking promulgated under 40 CFR part 60, 40 CFR part 61, or 40 CFR part 63 applies to VOC emissions from a product process, or a raw material, intermediate or product tank.

(2) Definitions. Definitions of certain terms specified in this rule may be found in 10 CSR 10-6.020.

(3) General Provisions.

(A) An owner or operator, to which this rule applies, shall provide the department with the following information on or before June 1, 2000:

1. An identification of each installation including individual emission units to which this rule applies; and

2. A determination of the total potential to emit and the actual emission of VOCs for the 1998 and 1999 calendar years from each emission unit at the facility. An owner or operator shall use the following hierarchy as a guide in determining the most desirable emission data to report to the department. If data is not available for an emission estimation method or an emission estimation method is impractical for a source, then the subsequent emission estimation method should be used in its place—

A. Continuous Emission Monitoring System (CEMS);



- B. Stack tests;
- C. Material/mass balance;
- D. AP-42 (Environmental Protection Agency (EPA) *Compilation of Air Pollution Emission Factors*) or FIRE (Factor Information and Retrieval System);
- E. Other EPA documents;
- F. Sound engineering calculations; or
- G. Facilities shall obtain department preapproval of emission estimation methods other than those listed in paragraphs (3)(A)2.A.–F. of this rule before using any such method to estimate emissions in the submission of the RACT study.

(B) The owner or operator of a major VOC emitting facility shall on or before June 1, 2000, provide to the department a written proposal for RACT for each VOC emission unit at the facility. The RACT proposal shall include, at a minimum, the information contained in subsection (3)(F) of this rule.

(C) The department will make a finding of completeness within thirty (30) calendar days of receiving a RACT proposal. The department will make a determination of approvability within sixty (60) calendar days of the finding of completeness.

(D) Upon receipt of notice of the department's approval of the RACT proposal, the facility shall begin implementation of the measures necessary to comply with the approved or modified RACT proposal. Implementation of the RACT proposal shall be completed according to the schedule established in the approved RACT proposal and shall be as expeditious as practicable but no later than September 1, 2002.

(E) Where the installation of a new emission unit, modification or change in operation of an existing emission unit will result in the emission unit or facility meeting the definition of a major VOC emitting facility, the owner and the operator shall jointly submit a RACT proposal to the department that meets the requirements of this section and complete implementation of the RACT proposal as approved or modified by the department prior to the installation, modification or change in operation of the existing emission unit.

(F) Each RACT proposal shall, at a minimum, include the following information:

1. A list of emission units subject to the RACT requirements;
2. The size or capacity of each affected emission unit and the types of fuel combusted or the types and quantities of materials processed or produced by each emission unit;
3. A physical description of each emission unit and its operating characteristics;
4. Estimates of the potential and actual VOC emissions from each affected emission unit and associated supporting documenta-

tion;

5. A RACT analysis which meets the requirements of subsection (3)(A) of this rule, including technical and economic support documentation identified in subsection (3)(G) of this rule for each affected emission unit;

6. A schedule for completing implementation of the RACT proposal as expeditiously as practicable but not later than September 1, 2002, including interim dates for the issuance of purchase orders, start and completion of process technology and control technology changes and the completion of compliance testing;

7. Testing, monitoring, record keeping and reporting procedures proposed to demonstrate compliance with RACT; and

8. An application for an operating permit amendment or application to incorporate the provisions of the RACT proposal.

(G) In addition, the RACT analysis required under subsection (3)(F) of this rule shall include:

1. A ranking of the available control options for the affected emission unit in descending order of control effectiveness. Available control options are air pollution control technologies or techniques with a reasonable potential for application to the emission unit. Air pollution control technologies and techniques include the application of production process or methods and control systems for VOCs. The control technologies and techniques shall include existing controls for the source category and technology transfer controls applied to similar source categories;

2. An evaluation of the technical feasibility of the available control options as required by paragraph (3)(G)1. of this rule. The evaluation of technical feasibility shall be based on physical, chemical and engineering principles. If an analysis is determined to be technically infeasible, the technical difficulties which would preclude the successful use of the control options on the affected emission unit shall be identified;

3. A ranking of the technically feasible control options in order of overall control effectiveness for VOC emissions. The list shall present the array of control options and shall include, at a minimum, the following information:

- A. The baseline emissions of VOCs before implementation of each control option;
- B. The estimated emission reduction potential or the estimated control efficiency of each control option;
- C. The estimated emissions after the application of each control option; and
- D. The economic impacts of each control option, including both overall cost

effectiveness and incremental cost effectiveness; and

4. An evaluation of cost effectiveness of each control option consistent with "OAQPS Control Cost Manual" (Fourth Edition), EPA 450/3-90-006, January 1990, and subsequent revisions. The evaluation shall be conducted in accordance with the following requirements:

A. The cost effectiveness shall be evaluated in terms of dollars per ton of VOC emission reduction;

B. The cost effectiveness shall be calculated on average and incremental bases for each option. Average cost effectiveness is calculated as the annualized cost of the control option divided by the baseline emissions rate minus the control option emission rate, as shown by the following formula:

Cost Effectiveness Equation

Average Cost Effectiveness (\$/ton VOC removed) =

$$\frac{\text{Total annualized cost of the control option (\$/yr)}}{\text{Baseline emission rate (tons/yr) - Control option emission rate (tons/yr)}}$$

C. For purposes of this paragraph, baseline emission rate represents the maximum emissions before the implementation of the control option. The baseline emissions rate shall be established using either test results or approved emission factors and historical operating data; and

D. For purposes of this paragraph, the incremental cost effectiveness calculation compares the costs and emission level of a control option to those of the next most stringent option, as shown by the following formula:

Incremental Cost Equation

$$\frac{\text{Incremental Cost per incremental ton removed (\$/ton) = Total annualized cost for a control option (\$/yr) - Total annualized cost for the next most stringent control option (\$/yr)}}{\text{The emission rate for the more stringent control option (tons/yr) - The emission rate for the control option (tons/yr)}}$$

(H) The following emission units are exempted and do not require evaluation in the RACT study:

1. Any emission unit that is used to combust fuel; and



2. Any emission unit with actual VOC emissions less than four (4) tons per year during each calendar year from 1995 through present unless such emission unit can be aggregated with like, same three (3)-digit source classification code, emission units with the total having greater than eight (8) tons of VOC per year in any one calendar year from 1995 through present.

(I) The owner or operator shall submit additional information requested by the department that is necessary for the evaluation of the RACT proposal. Such information shall be submitted within thirty (30) days after the submitter's receipt of the department's request, or such later date as is mutually agreed.

(4) Reporting and Record Keeping.

(A) An owner and/or operator must follow the RACT plan requirements outlined in paragraph (3)(F)7. of this rule.

(B) The department may make additional monitoring, reporting, or record keeping requirements as deemed necessary.

(C) Documentation supporting RACT proposals and documentation of implementation of an approved or modified RACT proposal must be kept on-site for a period of five (5) years and must be made available to the department upon request.

(5) Test Methods. *(Not Applicable)*

AUTHORITY: section 643.050, RSMo 2000. Original rule filed July 15, 1999, effective Feb. 29, 2000.*

**Original authority: 643.050, RSMo 1965, amended 1972, 1992, 1993, 1995.*

10 CSR 10-5.530 Control of Volatile Organic Compound Emissions From Wood Furniture Manufacturing Operations

PURPOSE: This rule limits the volatile organic compound (VOC) emissions from wood furniture manufacturing operations by incorporating reasonably available control technology (RACT) as required by the Clean Air Act Amendments (CAAA) of 1990.

(1) Applicability.

(A) This rule shall apply throughout the City of St. Louis and St. Charles, St. Louis, Jefferson and Franklin Counties.

(B) This rule is applicable to all wood furniture manufacturing installations that have the potential to emit equal to or greater than twenty-five (25) tons per year of volatile organic compounds (VOC).

(C) Adhesives shall not be considered coatings or finishing materials for the purposes of this rule.

(D) In the event that other rules in Title 10 Division 10 of the *Code of State Regulations* are also applicable to wood furniture manufacturing installations, the more stringent rule requirement shall apply.

(2) Definitions.

(A) Adhesive—Any chemical substance that is applied for the purpose of bonding two (2) surfaces together other than by mechanical means.

(B) Affected source—A wood furniture manufacturing facility that meets the criteria listed in subsections (1)(A) and (1)(B) of this rule.

(C) Alternative method—Any method of sampling and analyzing for an air pollutant that is not a reference or equivalent method but that has been demonstrated to the director's satisfaction to, in specific cases, produce results adequate for a determination of compliance.

(D) As applied—The VOC and solids content of the finishing material that is actually used for coating the substrate. It includes the contribution of materials used for in-house dilution of the finishing material.

(E) Basecoat—A coat of colored material, usually opaque, that is applied before graining inks, glazing coats, or other opaque finishing materials and is usually topcoated for protection.

(F) Capture device—A hood, enclosed room, floor sweep, or other means of collecting solvent emissions or other pollutants into a duct so that the pollutant can be directed to a pollution control device such as an incinerator or carbon adsorber.

(G) Capture efficiency—The fraction of all organic vapors generated by a process that is directed to a control device.

(H) Certified product data sheet—Documentation furnished by a coating supplier or an outside laboratory that provides the VOC content by percent weight, the solids content by percent weight, and density of a finishing material, strippable booth coating, or solvent, measured using the EPA Method 24, or an equivalent or alternative method (or formulation data if approved by the director). The purpose of the certified product data sheet is to assist the affected source in demonstrating compliance with the emission limitations presented in subsection (3)(A) of this rule. Therefore, the VOC content should represent the maximum VOC emission potential of the finishing material, strippable booth coating, or solvent.

(I) Cleaning operations—Operations in which organic solvent is used to remove coating materials from equipment used in wood furniture manufacturing operations.

(J) Coating—A protective, decorative, or functional material applied in a thin layer to a surface. Such materials include, but are not limited to, paints, topcoats, varnishes, sealers, stains, washcoats, basecoats, inks, and temporary protective coatings.

(K) Coating solids (or "solids")—The part of the coating that remains after the coating is dried or cured; solids content is determined using data from EPA Method 24, or an alternative or equivalent method.

(L) Compliant coating—A finishing material or strippable booth coating that meets the emission limits specified in paragraph (3)(A)1. of this rule.

(M) Continuous coater—A finishing system that continuously applies finishing materials onto furniture parts moving along a conveyor system. Finishing materials that are not transferred to the part are recycled to the finishing material reservoir. Several types of application methods can be used with a continuous coater including spraying, curtain coating, roll coating, dip coating, and flow coating.

(N) Control device—Any equipment that reduces the quantity of a pollutant that is emitted to the air. The device may destroy or secure the pollutant for subsequent recovery. Includes, but is not limited to, incinerators, carbon adsorbers, and condensers.

(O) Control device efficiency—The ratio of the pollution released by a control device and the pollution introduced to the control device, expressed as a fraction.

(P) Control system—The combination of capture and control devices used to reduce emissions to the atmosphere.

(Q) Conventional air spray—A spray coating method in which the coating is atomized by mixing it with compressed air at an air pressure greater than ten (10) pounds per square inch (gauge) at the point of atomization. Airless and air assisted airless spray technologies are not conventional air spray because the coating is not atomized by mixing it with compressed air. Electrostatic spray technology is also not considered conventional air spray because an electrostatic charge is employed to attract the coating to the work-piece.

(R) Day—A period of twenty-four (24) consecutive hours beginning at midnight local time, or beginning at a time consistent with a facility's operating schedule.

(S) Disposed off-site—Sending used organic solvents or coatings outside of the facility boundaries for disposal.



(T) Emission—The release or discharge, whether directly or indirectly, of VOC into the ambient air.

(U) Equipment leak—Emissions of volatile organic compounds from pumps, valves, flanges, or other equipment used to transfer or apply finishing materials or organic solvents.

(V) Equivalent method—Any method of sampling and analyzing for an air pollutant that has been demonstrated to the director's satisfaction to have a consistent and quantitatively known relationship to the reference method under specific conditions.

(W) Finishing application station—The part of a finishing operation where the finishing material is applied, e.g., a spray booth.

(X) Finishing material—A coating used in the wood furniture industry. For the wood furniture manufacturing industry, such materials include, but are not limited to, basecoats, stains, washcoats, sealers, and topcoats.

(Y) Finishing operation—Those activities in which a finishing material is applied to a substrate and is subsequently air-dried, cured in an oven, or cured by radiation.

(Z) Incinerator—An enclosed combustion device that thermally oxidizes volatile organic compounds to carbon monoxide (CO) and carbon dioxide (CO₂). This term does not include devices that burn municipal or hazardous waste material.

(AA) Nonpermanent final finish—A material such as a wax, polish, nonoxidizing oil, or similar substance that must be periodically reapplied to a surface over its lifetime to maintain or restore the reapplied material's intended effect.

(BB) Normally closed container—A storage container that is closed unless an operator is actively engaged in activities such as emptying or filling the container.

(CC) Operating parameter value—A minimum or maximum value established for a control device or process parameter that, if achieved by itself or in combination with one or more other operating parameter values, determines that an owner or operator has complied with an applicable emission limit.

(DD) Organic solvent—A liquid containing volatile organic compounds that is used for dissolving or dispersing constituents in a coating, adjusting the viscosity of a coating, cleaning, or washoff. When used in a coating, the organic solvent evaporates during drying and does not become a part of the dried film.

(EE) Overall control efficiency—The efficiency of a control system, calculated as the product of the capture and control device efficiencies, expressed as a percentage.

(FF) Recycled on-site—The reuse of an organic solvent in a process other than cleaning or washoff.

(GG) Reference method—Any method of sampling and analyzing for an air pollutant that is published in Appendix A of 40 CFR 60.

(HH) Sealer—A finishing material used to seal the pores of a wood substrate before additional coats of finishing material are applied. Washcoats, which are used in some finishing systems to optimize aesthetics, are not sealers.

(II) Stain—Any color coat having a solids content by weight of no more than 8.0 percent that is applied in single or multiple coats directly to the substrate. Includes, but is not limited to, nongrain raising stains, equalizer stains, sap stains, body stains, no-wipe stains, penetrating stains, and toners.

(JJ) Storage container—Vessel or tank, including mix equipment, used to hold finishing, cleaning or washoff materials.

(KK) Strippable booth coating—A coating that: 1) is applied to a booth wall to provide a protective film to receive overspray during finishing operations; 2) that is subsequently peeled off and disposed; and 3) by achieving 1) and 2), reduces or eliminates the need to use organic solvents to clean booth walls.

(LL) Substrate—The surface onto which coatings are applied (or into which coatings are impregnated).

(MM) Topcoat—The last film-building finishing material applied in a finishing system. Nonpermanent final finishes are not topcoats.

(NN) Touch-up and repair—The application of finishing materials to cover minor finishing imperfections.

(OO) Washcoat—A transparent special purpose coating having a solids content by weight of 12.0 percent or less. Washcoats are applied over initial stains to protect and control color and to stiffen the wood fibers in order to aid sanding.

(PP) Washoff operations—Those operations in which organic solvent is used to remove coating from a substrate.

(QQ) Wood furniture—Any product made of wood, a wood product such as rattan or wicker, or an engineered wood product such as particleboard that is manufactured under any of the following standard industrial classification codes: 2434, 2511, 2512, 2517, 2519, 2521, 2531, 2541, 2599 or 5712.

(RR) Wood furniture component—Any part that is used in the manufacture of wood furniture. Examples include, but are not limited to, drawer sides, cabinet doors, seat cushions, and laminated tops.

(SS) Wood furniture manufacturing operations—The finishing, cleaning, and washoff

operations associated with the production of wood furniture or wood furniture components.

(TT) Working day—A day, or any part of a day, in which a facility is engaged in manufacturing.

(UU) Definitions of certain terms specified in this rule, other than those specified in this rule section, may be found in 10 CSR 10-6.020.

(3) General Provisions.

(A) Restriction of Emissions.

1. The owner or operator of an affected source shall limit VOC emissions from finishing operations by complying with one of the following requirements:

A. Where only topcoat is applied without sealers, the topcoat shall have a VOC content no greater than Table 1; or

Table 1

	kg VOC/kg solids (as applied)	lb VOC/lb solids (as applied)
Topcoat	0.8	0.8

B. Where topcoat and sealers are applied and—

(I) Where sealer is not acid-cured alkyd amino vinyl or topcoat is not acid-cured alkyd amino conversion varnish, the VOC contents shall be no more than shown in Table 2;

Table 2

	kg VOC/kg solids (as applied)	lb VOC/lb solids (as applied)
Sealer	1.9	1.9
Topcoat	1.8	1.8

(II) Where sealer is acid-cured alkyd amino vinyl and topcoat is acid-cured alkyd amino conversion varnish, the VOC contents shall be no more than shown in Table 3;

Table 3

	kg VOC/kg solids (as applied)	lb VOC/lb solids (as applied)
Sealer	2.3	2.3
Topcoat	2.0	2.0

(III) Where sealer is not acid-cured alkyd amino vinyl and topcoat is acid-cured alkyd amino conversion varnish, the VOC contents shall be no more than shown in Table 4; or

Table 4

	kg VOC/kg solids (as applied)	lb VOC/lb solids (as applied)
Sealer	1.9	1.9
Topcoat	2.0	2.0

(IV) Where sealer is acid-cured alkyd amino vinyl and topcoat is not acid-cured alkyd amino conversion varnish, the VOC contents shall be no more than shown in Table 5.

Table 5

	kg VOC/kg solids (as applied)	lb VOC/lb solids (as applied)
Sealer	2.3	2.3
Topcoat	1.8	1.8

2. As an alternate to the finish operation requirements of paragraph (3)(A)1. of this rule, the owner or operator of an affected source may use an averaging approach to verify compliance by using this paragraph. Compliance is demonstrated when actual emissions from the affected source are less than or equal to allowable emissions using one of the following inequalities:

$$0.9(0.8(TC_1 + TC_2 + \dots)) \geq [(ER_{TC1})(TC_1) + (ER_{TC2})(TC_2) + \dots] \quad (1)$$

$$0.9\{[1.8(TC_1 + TC_2 + \dots)] + [1.9(SE_1 + SE_2 + \dots)] + [9.0(WC_1 + WC_2 + \dots)] + [1.2(BC_1 + BC_2 + \dots)] + [0.791(ST_1 + ST_2 + \dots)]\} \geq [ER_{TC1}(TC_1) + ER_{TC2}(TC_2) + \dots] + [ER_{SE1}(SE_1) + ER_{SE2}(SE_2) + \dots] + [ER_{WC1}(WC_1) + ER_{WC2}(WC_2) + \dots] + [ER_{BC1}(BC_1) + ER_{BC2}(BC_2) + \dots] + [ER_{ST1}(ST_1) + ER_{ST2}(ST_2) + \dots] \quad (2)$$

where:

- TC_i = kilograms of solids of topcoat “i” used;
- SE_i = kilograms of solids of sealer “i” used;
- WC_i = kilograms of solids of washcoat “i” used;
- BC_i = kilograms of solids of basecoat “i” used;
- ST_i = liters of stain “i” used;
- ER_{TCi} = VOC content of topcoat “i” in kg VOC/kg solids, as applied;
- ER_{SEi} = VOC content of sealer “i” in kg VOC/kg solids, as applied;
- ER_{WCi} = VOC content of washcoat “i” in kg VOC/kg solids, as applied;
- ER_{BCi} = VOC content of basecoat “i” in kg VOC/kg solids, as applied; and
- ER_{STi} = VOC content of stain “i” in kg VOC/liter (kg/l), as applied.

Note 1: Various numeric values used in inequalities (0.8, 1.8, 1.9, etc.) are maximum allowable VOC contents for various coatings.

Note 2: The 0.9 multiplying factor on the allowable emissions side of the inequality is used to assure that sources using the averaging approach demonstrate that their emissions are no greater than ninety percent (90%) of what they would be if they were using compliant coatings.

For Inequalities (1) and (2), the facility must use the actual VOC content of the finishing materials used prior to the effective date of this rule if the VOC content is less than the allowable VOC content. For example, if the affected source was using topcoats with a VOC content of 1.7 kilograms of VOC per kilogram of solids (1.7 pounds of VOC per pound of solids) before being subject to this rule, the affected source must use that value in Inequality (2) rather than 1.8.

3. As an alternate to the finish operation requirements of subparagraph (3)(A)1.A. or part (3)(A)1.B.(II) of this rule, the owner or operator of an affected source may use a control system that will achieve an equivalent reduction in emissions as demonstrated using the compliance requirements of subparagraph (3)(C)1.B. of this rule.

4. As an alternate to the finish operation requirements of paragraphs (3)(A)1. and (3)(A)2. of this rule, the owner or operator of an affected source may use a combination of the methods presented in paragraphs (3)(A)1., (3)(A)2. and (3)(A)3. of this rule as demonstrated using the compliance requirements of subparagraph (3)(C)1.C. of this rule.

5. The owner or operator of an affected source shall limit VOC emissions from cleaning operations when using a strippable booth coating. The VOC contents shall be no more than shown in Table 6.

Table 6

	kg VOC/kg solids (as applied)	lb VOC/lb solids (as applied)
Strippable booth coating	0.8	0.8

(B) Work Practice Standards. The owner or operator of an affected source shall develop and maintain work practice standards that include, at a minimum:

1. A written work practice implementation plan that defines work practices for each wood furniture manufacturing operation and addresses each of the topics specified in paragraphs (3)(B)2. through (3)(B)10. of this subsection. The plan shall be developed no more than sixty (60) days after the compliance date of this rule. The owner or operator of the affected source shall comply with each provision of the work practice implementation plan. The written work practice implementation plan shall be available for inspection by the department, upon request. If the department determines that the work practice implementation plan does not adequately address each of the topics specified in paragraphs (3)(B)2. through (3)(B)10. of this subsection, the department may require the affected source to modify the plan;

2. Operator training for all new and existing personnel, including contract personnel, who are involved in finishing, cleaning, or washoff operations or implementation of the requirements of this rule. All new personnel, those hired after the effective date of the rule, shall be trained upon hiring. All existing personnel, those hired before the effective date of the rule, shall be trained within six (6) months of the effective date of the rule. All personnel shall be given refresher training annually. The affected source shall maintain a copy of the training program with the work practice implementation plan. The training program shall include, at a minimum, the following:

- A. A list of all current personnel by name and job description that are required to be trained;
- B. An outline of the subjects to be covered in the initial and refresher training for each position, or group of personnel;
- C. Lesson plans for courses to be given at the initial and the annual refresher training that include, at a minimum, appropriate application techniques, appropriate cleaning and washoff procedures, appropriate equipment setup and adjustment to minimize finishing material usage and overspray, and appropriate management of cleanup wastes; and
- D. A description of the methods to be used at the completion of initial or refresher training to demonstrate and document successful completion and a record of the date each employee is trained;

3. A leak inspection and maintenance plan that shall be prepared and maintained with the work practice implementation plan and specify, at a minimum—

- A. A minimum visual inspection frequency of once per month for all equipment used to transfer or apply finishing materials or organic solvents;
- B. An inspection schedule;



C. Methods for documenting the date and results of each inspection and any repairs that were made;

D. The time frame between identifying a leak and making the repair, which adheres to the following schedule:

(I) A first attempt at repair (e.g., tightening of packing glands) shall be made no later than five (5) working days after the leak is detected; and

(II) Final repairs shall be made within fifteen (15) working days, unless the leaking equipment is to be replaced by a new purchase, in which case repairs shall be completed within three (3) months;

4. A cleaning and washoff solvent accounting system that includes an organic solvent accounting form to record—

A. The quantity and type of organic solvent used each month for washoff and cleaning;

B. The number of pieces washed off with the reason for washoff; and

C. The net quantity of spent organic solvent generated from each activity. The net quantity of spent solvent is equivalent to the total amount of organic solvent that is generated from the activity minus any organic solvent that is recycled on-site for operations other than cleaning or washoff and any organic solvent that was sent disposed off-site;

5. Spray booth cleaning that shall not use compounds containing more than 8.0 percent by weight of VOC for cleaning spray booth components other than conveyors, 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 shall use no more than 1.0 gallon of organic solvent to prepare the booth prior to applying the booth coating;

6. Storage requirements to ensure that owners or operators of affected sources use normally closed containers for storing finishing, cleaning and washoff materials;

7. Application equipment requirements to ensure owners or operators of affected sources do not use conventional air spray guns for applying finishing materials except for the following conditions:

A. When applying finishing materials that have a VOC content no greater than 1.0 kg VOC/kg solids (1.0 lb VOC/lb solids), as applied;

B. To touch-up and repair when—

(I) The finishing materials are applied after completion of the finishing operation; or

(II) The finishing materials are

applied after the stain and before any other type of finishing material is applied, and the finishing materials are applied from a container that has a volume of no more than 2.0 gallons;

C. When spray is automated (that is, the spray gun is aimed and triggered automatically, not manually);

D. When emissions from the finishing application station are directed to a control device;

E. When the conventional air gun is used to apply finishing materials and the cumulative total usage of that finishing material is no more than 5.0 percent of the total gallons of finishing material used during that semiannual reporting period; or

F. When the conventional air gun is used to apply stain on a part for which it is technically or economically infeasible to use any other spray application technology. For this condition, the owner or operator of the affected source shall demonstrate why it is technically or economically infeasible by submitting to the department a videotape, a technical report or other documentation to support the affected source's claim. The support documentation shall include the following criteria, either independently or in combination:

(I) The production speed is too high or the part shape is too complex for one operator to coat the part and the application station is not large enough to accommodate an additional operator; or

(II) The excessively large vertical spray area of the part makes it difficult to avoid sagging or runs in the stain;

8. Line cleaning that pumps or drains all organic solvent used for line cleaning into a normally closed container;

9. Gun cleaning that collects all organic solvent used to clean spray guns into a normally closed container; and

10. Washoff operations that 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.

(C) Compliance Procedures and Monitoring Requirements.

1. The owner or operator of an affected source subject to the emission standards in subsection (3)(A) of this rule shall demonstrate compliance with those requirements by using one of the following methods:

A. To demonstrate that each sealer, topcoat and strippable booth coating meets the applicable requirements of paragraphs (3)(A)1. and (3)(A)5. of this rule, the owner

or operator shall maintain certified product data sheets for each of these finishing materials. If solvent or other VOC is added to the finishing material before application, the owner or operator shall maintain documentation showing the VOC content of the finishing material as applied, in kg VOC/kg solids (lb VOC/lb solids); or

B. To demonstrate compliance through the use of a control system per paragraph (3)(A)3. of this rule, the owner or operator shall—

(I) Determine the overall control efficiency needed to demonstrate compliance using Equation (3) as follows:

$$R = [(C - E)/C] \times 100 \tag{3}$$

where:

R = the overall efficiency of the control system, expressed as a percentage;

C = the VOC content of a coating (C), in kilograms of VOC per kilogram of coating solids (kg VOC/kg solids), as applied. Also given in pounds of VOC per pound of coating solids (lb VOC/lb solids), as applied; and

E = the emission limit achieved by the affected emission point(s), in kg VOC/kg solids;

(II) Document that the value of C in Equation (3) is obtained from the VOC and solids content of the as-applied finishing material; and

(III) Calculate the overall efficiency of the control device, using the procedure in subsection (5)(D) of this rule, and demonstrate that the value of the overall efficiency of the control system, expressed as a percentage, is equal to or greater than the value of R calculated by Equation (3).

C. To demonstrate compliance through the use of a combination of the methods per paragraph (3)(A)4. of this rule, the owner or operator shall meet all individual compliance requirements for the applicable methods being combined.

2. Initial compliance.

A. The owner or operator of an affected source subject to a requirement of paragraph (3)(A)1. or (3)(A)5. of this rule that is complying through the method established in subparagraph (3)(C)1.A. of this rule, shall submit an initial compliance status report, as required by paragraph (4)(A)2. of this rule, stating that compliant sealers and/or topcoats and strippable booth coatings are being used by the affected source.



B. The owner or operator of an affected source subject to a requirement of paragraph (3)(A)1. of this rule that is complying through the method established in subparagraph (3)(C)1.A. of this rule and is applying sealers and/or topcoats using continuous coaters shall demonstrate initial compliance by—

(I) Submitting an initial compliance status report stating that compliant sealers and/or topcoats, as determined by the VOC content of the finishing material in the reservoir and the VOC content as calculated from records, are being used; or

(II) Submitting an initial compliance status report stating that compliant sealers and/or topcoats, as determined by the VOC content of the finishing material in the reservoir, are being used and the viscosity of the finishing material in the reservoir is being monitored. The affected source shall also provide data that demonstrates the correlation between the viscosity of the finishing material and the VOC content of the finishing material in the reservoir.

C. The owner or operator of an affected source demonstrating compliance with this rule through the use of a control system (capture device/control device) per paragraph (3)(A)3. and subparagraph (3)(C)1.B. of this rule, shall demonstrate initial compliance by—

(I) Submitting a monitoring plan that identifies the operating parameter to be monitored for the capture device and discusses why the parameter is appropriate for demonstrating ongoing compliance;

(II) Conducting an initial performance test using the procedures and test methods listed in subsections (5)(C) and (5)(D) of this rule (test methods in paragraphs (5)(C)3., (5)(C)4. and (5)(C)5. of this rule shall be performed, as applicable, at least twice during each test period);

(III) Calculating the overall control efficiency using the procedure in subsection (5)(D) of this rule;

(IV) Determining those operating conditions critical to determining compliance and establishing operating parameters that will ensure compliance with the standard as follows:

(a) For compliance with a thermal incinerator, minimum combustion temperature shall be the operating parameter;

(b) For compliance with a catalytic incinerator equipped with a fixed catalyst bed, the minimum gas temperature both upstream and downstream of the catalyst bed shall be the operating parameter;

(c) For compliance with a catalytic incinerator equipped with a fluidized

catalyst bed, the minimum gas temperature upstream of the catalyst bed and the pressure drop across the catalyst bed shall be the operating parameters; and

(d) For compliance with a carbon adsorber, the operating parameters shall be either the total regeneration mass stream flow for each regeneration cycle and the carbon bed temperature after each regeneration, or the concentration level of organic compounds exiting the adsorber, unless the owner or operator requests and receives approval from the director to establish other operating parameters; and

(V) The owner or operator of an affected source demonstrating compliance with this rule per subparagraph (3)(C)2.C. of this rule shall calculate the site-specific operating parameter value as the arithmetic average of the maximum or minimum operating parameter values, as appropriate, that demonstrate compliance with the standards, during the three (3) test runs required by paragraph (5)(C)1. of this rule.

D. The owner or operator of an affected source subject to the work practice standards in subsection (3)(B) of this rule shall submit an initial compliance status report, as required by paragraph (4)(A)3. of this rule, stating that the work practice implementation plan has been developed and procedures have been established for implementing the provisions of the plan.

(D) Special Requirements for Sources Using An Averaging Approach. The owner or operator of an affected source complying with the emission limitations in subsection (3)(A) of this rule through the procedures established in paragraph (3)(A)2. of this rule shall also meet the following requirements:

1. Program goals and rationale. The owner or operator of the affected source shall provide a summary of the reasons why the affected source would like to comply with the emission limitations through the procedures established in paragraph (3)(A)2. of this rule and a summary of how averaging can be used to meet the emission limitations. The affected source shall also document that the additional environmental benefit requirement is being met through the use of the inequalities in paragraph (3)(A)2. of this rule. These inequalities ensure that the affected source is achieving an additional ten percent (10%) reduction in emissions when compared to affected sources using a compliant coatings approach to meet the requirements of the rule.

2. Program scope. The owner or operator of the affected source shall describe the types of finishing materials that will be included in the affected source's averaging

program. Stains, basecoats, washcoats, sealers and topcoats may all be used in the averaging program. Finishing materials that are applied using continuous coaters may only be used in an averaging program if the affected source can determine the amount of finishing material used each day.

3. Program baseline. The baseline for each finishing material included in the averaging program shall be the lower of the actual or allowable emission rate as of the effective date of this rule.

4. Quantification procedures. The owner or operator of the affected source shall specify methods and procedures for quantifying emissions. Quantification procedures for VOC content are included in section (5) of this rule. The owner or operator shall specify methods to be used for determining the usage of each finishing material. The quantification methods used shall be accurate enough to ensure that the affected source's actual emissions are less than the allowable emissions, as calculated using Inequality (1) or (2) in paragraph (3)(A)2. of this rule, on a daily basis to a level of certainty comparable to that for traditional control strategies applicable to surface coating sources.

5. Monitoring, record keeping and reporting. The owner or operator of an affected source shall provide a summary of the monitoring, record keeping and reporting procedures that will be used to demonstrate daily compliance with the inequalities presented in paragraph (3)(A)2. of the rule. The monitoring, record keeping and reporting procedures shall be structured in such a way that inspectors and facility owners can determine an affected source's compliance status for any day. Furthermore, the procedures must include methods for determining required data when monitoring, record keeping and reporting violations result in missing, inadequate or erroneous monitoring and record keeping. These procedures must ensure that sources have sufficiently strong incentive to properly perform monitoring and record keeping.

6. Implementation schedule. The owner or operator of an affected source shall submit an averaging proposal for state and EPA approval by July 31, 2001.

7. Administrative procedures. Any affected source may submit an averaging approach proposal to the director for consideration in meeting the compliance requirements of this rule. The director shall take the following actions:



A. Determine whether or not the proposal submittal is complete and notify the submitter of the completeness status within thirty (30) calendar days of receipt of the proposal; and

B. Approve or disapprove the proposal within thirty (30) calendar days of determining that a proposal submittal is complete.

(4) Reporting and Record Keeping.

(A) Reporting Requirements.

1. The owner or operator of an affected source using a control system to fulfill the requirements of this rule are required to submit a written report of the performance test results for the performance test, required by part (3)(C)2.C.(II) of this rule, to the director within sixty (60) calendar days of completion of the performance test.

2. The owner or operator of an affected source subject to this rule shall submit an initial compliance report no later than sixty (60) calendar days after the compliance date. The report shall include the items required by paragraph (3)(C)2. of this rule.

3. The owner or operator of an affected source subject to this rule and demonstrating compliance in accordance with subparagraph (3)(C)1.A. or (3)(C)1.B. of this rule shall submit a semiannual report covering the previous six (6) months of wood furniture manufacturing operations according to the following schedule:

A. The first report shall be submitted thirty (30) calendar days after the end of the first six (6)-month period following the compliance date;

B. Subsequent reports shall be submitted within thirty (30) calendar days after the end of each six (6)-month period following the first report; and

C. Each semiannual report shall include a statement of whether the affected source was in compliance or noncompliance, and, if the affected source was in noncompliance, the measures taken to bring the affected source into compliance.

(B) Record Keeping Requirements.

1. The owner or operator of an affected source subject to the emission standards in subsection (3)(A) of this rule shall maintain records of the following:

A. A certified product data sheet for each finishing material and strippable booth coating subject to the emission limits in subsection (3)(A) of this rule; and

B. The VOC content, kg VOC/kg solids (lb VOC/lb solids), as applied, of each finishing material and strippable booth coating subject to the emission limits in subsection (3)(A) of this rule, and copies of data

sheets documenting how the as-applied values were determined.

2. The owner or operator of an affected source following the compliance method of subparagraph (3)(C)1.B. of this rule shall maintain the following records:

A. Copies of the calculations to support the equivalency of using a control system, as well as the data that are necessary to support the calculation of E in Equation (3) and the calculation of overall efficiency for a control system for subsection (5)(D) of this rule;

B. Records of the daily average value of each continuously monitored parameter for each operating day. If all recorded values for a monitored parameter are within the range established during the initial performance test, the owner or operator may record that all values were within the range rather than calculating and recording an average for that day; and

C. Records of the pressure drop across the catalyst bed for facilities complying with the emission limitations using a catalytic incinerator with a fluidized catalyst bed.

3. The owner or operator of an affected source subject to the work practice standards in subsection (3)(B) of this rule shall maintain, on-site, the work practice implementation plan and all records associated with fulfilling the requirements of that plan, including, but not limited to:

A. Records demonstrating that the operator training program is in place;

B. Records maintained in accordance with the inspection and maintenance plan;

C. Records associated with the cleaning solvent accounting system;

D. Records associated with the limitation on the use of conventional air spray guns showing total finishing material usage and the percentage of finishing materials applied with conventional air spray guns for each semiannual reporting period;

E. Records showing the VOC content of compounds used for cleaning booth components, except for solvent used to clean conveyors, continuous coaters and their enclosures, and/or metal filters; and

F. Copies of logs and other documentation developed to demonstrate that the other provisions of the work practice implementation plan are followed.

4. In addition to the records required by paragraph (4)(B)1. of this rule, the owner or operator of an affected source that complies through the method established in subparagraph (3)(C)1.A. or by demonstrating compliance with subsection (3)(A) of this rule shall maintain a copy of the compliance cer-

tifications submitted in accordance with paragraph (4)(A)3. of this rule for each semiannual period following the compliance date.

5. The owner or operator of an affected source shall maintain a copy of all other information submitted with the initial status report required by paragraph (4)(A)2. of this rule and the semiannual reports required by paragraph (4)(A)3. of this rule.

6. The owner or operator of an affected source shall maintain all records for a minimum of five (5) years.

7. Failure to maintain the records required by paragraphs (4)(B)1. through (4)(B)6. of this rule shall constitute a violation of the rule for each day records are not maintained.

(5) Test Methods.

(A) The VOC content and the solids content by weight of the as-supplied finishing materials shall be determined by 10 CSR 10-6.030(14)(C), Reference Method 24—Determination of Volatile Matter Content, Water Content, Density, Volume, Solids and Weight Solids of Surface Coatings. The owner or operator of the affected source may request approval from the director to use an alternative or equivalent method for determining the VOC content of the finishing material.

(B) Owners or operators demonstrating compliance with the provisions of this rule via a control system shall determine the overall control efficiency of the control system (R) as the product of the capture and control device efficiencies, using the test methods cited in subsection (5)(C) of this rule and the procedure in subsection (5)(D) of this rule.

(C) Owners or operators using a control system shall demonstrate initial compliance using the procedures in paragraphs (5)(C)1. through (5)(C)5. of this rule.

1. The VOC concentration of gaseous air streams shall be determined with a test consisting of three (3) separate runs, each lasting a minimum of thirty (30) minutes using one (1) of the following methods as specified by 40 CFR 60, Appendix A—Reference Methods:

A. *Method 18—Measurement of Gaseous Organic Compound Emissions by Gas Chromatography;*

B. 10 CSR 10-6.030(14)(A), Reference Method 25—Determination of Total Gaseous Nonmethane Organic Emissions as Carbon; or

C. *Method 25A—Determination of Total Gaseous Organic Concentration Using Flame Ionization Analyzer.*



2. Sample and velocity traverses shall be determined by using one (1) of the following methods as specified by 40 CFR 60, Appendix A—Reference Methods:

A. 10 CSR 10-6.030(1), Reference Method 1—Sample and Velocity Traverses for Stationary Sources; or

B. *Method 1A—Sample and Velocity Traverses for Stationary Sources with Small Stacks or Ducts.*

3. Velocity and volumetric flow rates shall be determined by using one (1) of the following methods as specified by 40 CFR 60, Appendix A—Reference Methods:

A. 10 CSR 10-6.030(2), Reference Method 2—Determination of Stack Gas Velocity and Volumetric Flow Rate (Type S Pitot Tube); or

B. *Method 2A—Direct Measurement of Gas Volume Through Pipes and Small Ducts;*

C. *Method 2C—Determination of Stack Gas Velocity and Volumetric Flow Rate in Small Stacks or Ducts (Standard Pitot Tube);*

D. *Method 2D—Measurement of Gas Volumetric Flow Rates in Small Pipes and Ducts;*

E. *Method 2F—Determination of Stack Gas Velocity and Volumetric Flow Rate With Three-Dimensional Probes;*

F. *Method 2G—Determination of Stack Gas Velocity and Volumetric Flow Rate With Two-Dimensional Probes;* or

G. *Method 2H—Determination of Stack Gas Velocity Taking Into Account Velocity Decay Near the Stack Wall.*

4. To analyze the exhaust gases, use 10 CSR 10-6.030(3), Reference Method 3—Gas Analysis for Carbon Dioxide, Oxygen, Excess Air and Dry Molecular Weight.

5. To measure the moisture in the stack gas, use 10 CSR 10-6.030(4), Reference Method 4—Determination of Moisture Content in Stack Gases.

(D) Owners or operators using a control system to demonstrate compliance with this rule shall determine capture efficiencies by using test methods stated in 10 CSR 10-6.030(20).

AUTHORITY: section 643.050, RSMo Supp. 1998. Original rule filed July 15, 1999, effective Feb. 29, 2000.*

**Original authority: 643.050, RSMo 1965, amended 1972, 1992, 1993, 1995.*

10 CSR 10-5.540 Control of Emissions From Batch Process Operations

PURPOSE: This rule limits the volatile

organic compound (VOC) emissions from batch process operations by incorporating reasonably available control technology (RACT) as required by the Clean Air Act Amendments (CAAA) of 1990.

PUBLISHER'S NOTE: The secretary of state has determined that the publication of the entire text of the material which is incorporated by reference as a portion of this rule would be unduly cumbersome or expensive. Therefore, the material which is so incorporated is on file with the agency who filed this rule, and with the Office of the Secretary of State. Any interested person may view this material at either agency's headquarters or the same will be made available at the Office of the Secretary of State at a cost not to exceed actual cost of copy reproduction. The entire text of the rule is printed here. This note refers only to the incorporated by reference material.

(1) Applicability.

(A) This rule shall apply throughout the City of St. Louis and St. Charles, St. Louis, Jefferson and Franklin Counties.

(B) This rule is applicable to all batch process operations that have the potential to emit equal to or greater than one hundred (100) tons per year of volatile organic compounds (VOC) at sources identified by any of the following four (4)-digit standard industrial classification (SIC) codes, as defined in the 1987 edition of the *Federal Standard Industrial Classification Manual: SIC 2821, 2833, 2834, 2861, 2865, 2869, and 2879.*

(C) The following single unit operations and batch process trains are subject to this rule but are considered to be *de minimis* and are, therefore, exempt from the control requirements of section (3) of this rule. However, the record keeping and reporting requirements in section (4) of this rule shall apply to such *de minimis* single unit operations and batch process trains:

1. Within a batch process operation, any single unit operation with uncontrolled total annual mass emissions of less than or equal to five hundred (500) pounds per year (lb/yr) of VOC. Such single unit operations are also excluded from the calculation of the total annual mass emissions for a batch process train. If the uncontrolled total annual mass emissions from such exempt single unit operation exceed five hundred (500) lb/yr of VOC in any subsequent year, the source shall calculate applicability in accordance with subsection (1)(E) of this rule for both the individual single unit operation and the batch process train containing the single unit operation; and

2. Any batch process train containing process vents that have, in the aggregate, uncontrolled total annual mass emissions, as determined in accordance with paragraph (3)(E)1. of this rule, of less than thirty thousand (30,000) lb/yr of VOC for all products manufactured in such batch process train.

(D) The applicability equations in subsection (1)(E) of this rule, which require the calculation of uncontrolled total annual mass emissions and flow rate value, shall be used to determine whether a single unit operation or a batch process train is subject to the control requirements in section (3) of this rule. The applicability equation shall be applied to the following:

1. Any single unit operation with uncontrolled total annual mass emissions that exceed five hundred (500) lb/yr and with a VOC concentration greater than five hundred (500) parts per million by volume (ppmv). In this individual determination, no applicability analysis shall be performed for any single unit operation with a VOC concentration of less than or equal to five hundred (500) ppmv; and

2. Any batch process train containing process vents which, in the aggregate, have uncontrolled total annual mass emissions of thirty thousand (30,000) lb/yr or more of VOC from all products manufactured in the batch process train. Any single unit operation with uncontrolled total annual mass emissions exceeding five hundred (500) lb/yr, regardless of VOC concentration, shall be included in the aggregate applicability analysis.

(E) Applicability Equations. The applicability equations in this rule subsection are specific to volatility.

1. Weighted average volatility (WAV) shall be calculated as follows:

$$WAV = \frac{\sum_{i=1}^n \frac{[(VP_i) \times (MVOC_i)]}{[(MWVOC_i)]}}{\sum_{i=1}^n \frac{[(MVOC_i)]}{[(MWVOC_i)]}}$$

where:
WAV = weighted average volatility;
MVOC_i = mass of VOC component i;
MWVOC_i = molecular weight of VOC component i; and
VP_i = vapor pressure of VOC component i.

2. For purposes of determining applicability, flow rate values shall be calculated as follows:

A. Low WAV has a vapor pressure less than or equal to seventy-five (75) millimeters of Mercury (mmHg) at twenty degrees Celsius (20 °C), and shall use the following equation:

$$FR = [0.07 (UTAME)] - 1,821$$

Where:

FR = Vent stream flow rate, expressed as standard cubic feet per minute (scfm);

UTAME = Uncontrolled total annual mass emissions of VOC, expressed as lb/yr;

B. Moderate WAV has a vapor pressure greater than seventy-five (75) mmHg but less than or equal to one hundred fifty (150) mmHg at twenty degrees Celsius (20 °C), and shall use the following equation:

$$FR = [0.031 (UTAME)] - 494$$

C. High WAV has a vapor pressure greater than one hundred fifty (150) mmHg at twenty degrees Celsius (20 °C), and shall use the following equation:

$$FR = [0.013 (UTAME)] - 301$$

3. To determine the vapor pressure of VOC, the applicable methods and procedures in section (5) of this rule shall apply.

(F) In the event that other rules in Title 10 Division 10 of the *Code of State Regulations* are also applicable to batch process operations, the more stringent rule shall apply.

(2) Definitions.

(A) Batch—A discontinuous process involving the bulk movement of material through sequential manufacturing steps, typically characterized as non-steady-state.

(B) Batch cycle—A manufacturing event of an intermediate or product from start to finish in a batch process.

(C) Batch process operation—A discontinuous operation in which a discrete quantity or batch of feed is charged into a chemical manufacturing process unit and distilled or reacted, or otherwise used at one time, and may include, but is not limited to, reactors, filters, dryers, distillation columns, extractors, crystallizers, blend tanks, neutralizer tanks, digesters, surge tanks and product separators. After each batch process operation, the equipment is generally emptied before a fresh batch is started.

(D) Batch process train—The collection of equipment (e.g., reactors, filters, dryers, distillation columns, extractors, crystallizers, blend tanks, neutralizer tanks, digesters, surge tanks and product separators) configured to produce a product or intermediate by a batch process operation. A batch process train terminates at the point of storage of the product or intermediate being produced in the batch process train. Irrespective of the product being produced, a batch process train which is independent of other processes shall be considered a single batch process train for purposes of this rule.

(E) Control devices—Air pollution abatement devices. For purposes of this rule, condensers operating under reflux conditions are not considered control devices.

(F) Emission events—Discrete venting episodes that may be associated with a single unit of operation.

(G) Processes—Any equipment within a contiguous area that are connected together during the course of a year where connected is defined as a link between equipment, whether it is physical, such as a pipe, or whether it is next in a series of steps from which material is transferred from one unit operation to another.

(H) Unit operations—Discrete processing steps that occur within distinct equipment that are used to prepare reactants, facilitate reactions, separate and purify products, and recycle materials.

(I) Vent—A point of emission from a unit operation. Typical process vents from batch processes include condenser vents, vacuum pumps, steam ejectors, and atmospheric vents from reactors and other process vessels. Vents also include relief valve discharges. Equipment exhaust systems that discharge from unit operations also would be considered process vents.

(J) Volatility—For purposes of this rule, low volatility materials are defined as those which have a vapor pressure less than or equal to seventy-five (75) mmHg at twenty degrees Celsius (20 °C), moderate volatility materials have a vapor pressure greater than seventy-five (75) and less than or equal to one hundred fifty (150) mmHg at twenty degrees Celsius (20 °C), and high volatility materials have a vapor pressure greater than one hundred fifty (150) mmHg at twenty degrees Celsius (20 °C). To evaluate VOC volatility for single unit operations that service numerous VOCs or for processes handling multiple VOCs, the weighted average volatility can be calculated from knowing the total amount of each VOC used in a year, and the individual component vapor pressure, per the equation in paragraph (1)(E)1. of this rule.

(K) Definitions of certain terms, other than those specified in this rule, may be found in 10 CSR 10-6.020.

(3) General Provisions.

(A) Every owner or operator of a single unit operation with an average flow rate, as determined in accordance with paragraph (3)(E)2. of this rule, below the flow rate value calculated by the applicability equations contained in subsection (1)(E) of this rule, shall reduce uncontrolled VOC emissions from such single unit operation by an overall efficiency, on an annual average, of at least ninety percent (90%), or twenty (20) ppmv, per batch cycle.

(B) Every owner or operator of a batch process train with an average flow rate, as determined in accordance with subparagraph (3)(E)2.B. of this rule, below the flow rate value calculated by the applicability equations contained in subsection (1)(E) of this rule, shall reduce uncontrolled VOC emissions from such batch process train by an overall efficiency, on an annual average, of at least ninety percent (90%), or twenty (20) ppmv, per batch cycle. For purposes of demonstrating compliance with the emission limitations in this rule section, any control device meeting the criteria in subsection (3)(D) of this rule shall be deemed to achieve a control efficiency of ninety percent (90%), or twenty (20) ppmv, per batch cycle, as applicable.

(C) Notwithstanding subsection (3)(A) or (3)(B) of this rule, any source that has installed on or before December 15, 1999, any control device which is demonstrated to the department's satisfaction to be unable to meet the applicable control requirements of this rule section, a scrubber, or shell and tube condenser using a non-refrigerated cooling media, and such device achieves at least eighty-one percent (81%) control efficiency of VOC emissions, is required to meet the ninety percent (90%) emission limitation or twenty (20) ppmv VOC concentration in subsection (3)(A) or (3)(B) of this rule, as applicable, upon the earlier to occur of the date the device is replaced for any reason, including, but not limited to, normal maintenance, malfunction, accident, and obsolescence, or May 1, 2002. Control devices installed on or before December 15, 1999, that do not achieve at least eighty-one percent (81%) control efficiency of VOC emissions shall comply with the control requirements of subsection (3)(A) or (3)(B) on or before May 1, 2001. A scrubber, shell and tube condenser using a non-refrigerated cooling media, or other control device meeting the criteria of this rule subsection, is considered replaced when—



1. The entire device is replaced; or
2. When either the cost to repair the device or the cost to replace part of the device exceeds fifty percent (50%) of the cost of replacing the entire device with a control device that complies with the ninety percent (90%) emission limitation or twenty (20) ppmv VOC concentration level in subsection (3)(A) of this rule, as applicable.

(D) Control Equipment Specifications.

1. If a boiler or process heater is used to comply with this rule section, the vent stream shall be introduced into the flame zone of the boiler or process heater. The boiler or process heater shall meet the control device requirements for boilers and process heaters included in 40 CFR 60.703, 60.704, and 60.705.

2. If a flare is used to comply with this rule section, it shall comply with the requirements of 40 CFR 60.18, which are hereby incorporated by reference. The flare operation requirements of 40 CFR 60.18 do not apply if a process, not subject to this rule, vents an emergency relief discharge into a common flare header and causes the flare servicing the process subject to this rule to not comply with one or more of the provisions of 40 CFR 60.18. This exemption from flare specification requirements is a temporary exemption lasting only for the period of time during the emergency relief venting discharge.

3. If an afterburner, scrubber, absorber, condenser or adsorber is used to comply with this rule section, such equipment shall meet the control device requirements for this equipment included in 40 CFR 60.703, 60.704, and 60.705.

4. If an incinerator is used to comply with this rule section, the incinerator shall meet the control device requirements for incinerators included in 40 CFR 60.703, 60.704, and 60.705.

(E) Determination of uncontrolled total annual mass emissions and actual weighted average flow rate values for batch process operations.

1. Uncontrolled total annual mass emissions shall be determined by the following methods:

A. Direct process vent emissions measurements taken prior to any release to the atmosphere, following any recovery device and prior to any control device, provided such measurements conform with the requirements of measuring the mass flow rate of VOC incoming to the control device as in paragraph (5)(F)2. and subparagraphs (5)(F)3.A. and (5)(F)3.B. of this rule; or

B. Engineering estimates of the uncontrolled VOC emissions from a process

vent or process vents, in the aggregate, within a batch process train, using either the potential or permitted number of batch cycles per year or total production as represented in the source's operating permit.

(I) Engineering estimates of the uncontrolled VOC emissions shall be based upon accepted chemical engineering principles, measurable process parameters, or physical or chemical laws and their properties. Examples of methods include, but are not limited to, the following:

(a) Use of material balances based on process stoichiometry to estimate maximum VOC concentrations;

(b) Estimation of maximum flow rate based on physical equipment design such as pump or blower capacities; and

(c) Estimation of VOC concentrations based on saturation conditions.

(II) All data, assumptions and procedures used in any engineering estimate shall be documented.

2. Average flow rate shall be determined by any of the following methods:

A. Direct process vent flow rate measurements taken prior to any release to the atmosphere, following any recovery device and prior to any control device, provided such measurements conform with the requirements of measuring incoming volumetric flow rate in paragraph (5)(F)2. of this rule;

B. Average flow rate for a single unit operation having multiple emission events or batch process trains shall be the weighted average flow rate, calculated as follows:

$$WAF = \frac{\sum_{i=1}^n (AFR_i \times ADE_i)}{\sum_{i=1}^n (ADE_i)}$$

where:

WAF = Actual weighted average flow rate for a single unit operation or batch process train;

AFR_i = Average flow rate per emission event;

ADE_i = Annual duration of emission event; and

n = Number of emission events.

For purposes of this formula, the term "emission event" shall be defined as a discrete period of venting that is associated with a single unit operation. For example, a displacement of vapor resulting from the charging of a single unit operation with VOC will result in a discrete emission event that will last

through the duration of the charge and will have an average flow rate equal to the rate of the charge. The expulsion of expanded vapor space when the single unit operation is heated is also an emission event. Both of these examples of emission events and others may occur in the same single unit operation during the course of the batch cycle. If the flow rate measurement for any emission event is zero, according to paragraph (5)(F)2. of this rule, then such event is not an emission event for purposes of this rule section; or

C. Engineering estimates calculated in accordance with the requirements in subparagraph (3)(E)1.B. of this rule.

3. For purposes of determining the average flow rate for steam vacuuming systems, the steam flow shall be included in the average flow rate calculation.

4. In cases where two (2) or more single unit operations share a process vent and where flow measurement for such single unit operations is difficult, alternate methods of flow measurement may be used only when approved by the department.

(4) Reporting and Record Keeping.

(A) Every owner or operator of a *de minimis* single unit operation or batch process train exempt under paragraph (1)(C)1. or (1)(C)2. of this rule shall keep records of the uncontrolled total annual mass emissions for any *de minimis* single unit operation or batch process train, as applicable, and documentation verifying these values or measurements. The documentation shall include the engineering calculations, any measurements made in accordance with section (5) of this rule, and the potential or permitted number of batch cycles per year, or, in the alternative, total production as represented in the source's operating permit.

(B) Every owner or operator of a single unit operation exempt under subsection (1)(D) of this rule shall keep the following records:

1. The uncontrolled total annual mass emissions and documentation verifying these values or measurements. The documentation shall include any engineering calculations, any measurements made in accordance with section (5) of this rule, and the potential or permitted number of batch cycles per year or, in the alternative, total production as represented in the source's operating permit; and

2. The average flow rate in standard cubic feet per minute (scfm) and documentation verifying this value.



(C) Every owner or operator of a batch process operation subject to the control requirements of section (3) of this rule shall keep records of the following parameters required to be monitored under subsection (4)(I) of this rule:

1. If using a thermal or catalytic afterburner to comply with section (3) of this rule, records indicating the average combustion chamber temperature of the afterburner or the average temperature upstream and downstream of the catalyst bed for a catalytic afterburner, measured continuously and averaged over the same time period as the performance test;

2. If using a flare to comply with section (3) of this rule, continuous records of the flare pilot flame monitoring and records of all periods of operations during which the pilot flame is absent; or

3. If using any of the following as a control device, the following records:

A. Where a scrubber is used, the exit specific gravity or alternative parameter which is a measure of the degree of absorbing liquid saturation, if approved by the department, and the average exit temperature of the absorbing liquid, measured continuously and averaged over the same time period as the performance test both measured while the vent stream is routed normally;

B. Where a condenser is used, the average exit or product side temperature measured continuously and averaged over the same time period as the performance test while the vent stream is routed normally;

C. Where a carbon adsorber is used, the total steam mass flow measured continuously and averaged over the same time period as the performance test full carbon bed cycle, temperature of the carbon bed after regeneration and within fifteen (15) minutes after completion of any cooling cycle(s), and duration of the carbon bed steaming cycle all measured while the vent stream is routed normally; or

D. As an alternative to subparagraphs (4)(C)3.A., (4)(C)3.B. or (4)(C)3.C. of this rule, at a minimum, records indicating the concentration level or reading indicated by the VOC monitoring device at the outlet of the scrubber, condenser or carbon adsorber, measured continuously and averaged over the same time period as the performance test while the vent stream is routed normally.

(D) Every owner or operator of a single unit operation claiming a vent stream concentration exemption level shall maintain records to indicate the vent stream concentration is less than or equal to five hundred (500) ppmv, and shall notify the department in writing if the vent stream concentration at

any time equals or exceeds five hundred (500) ppmv, within sixty (60) days after such event. Such notification shall include a copy of all records of such event.

(E) An owner or operator of a batch process operation subject to the control requirements of section (3) of this rule may maintain alternative records other than those listed in subsection (4)(C) of this rule. Any alternative record keeping shall be approved by the department and shall be contained in the source's operating permit as federally enforceable permit conditions.

(F) Notwithstanding subsections (4)(A) through (4)(E) of this rule, any owner or operator of a batch process operation which uses either a scrubber, shell and tube condenser using nonrefrigerated cooling media, or other control device meeting the criteria of subsection (3)(D) of this rule, is required to monitor compliance with the requirements on and after the earlier to occur of the date such device is replaced for any reason or May 1, 2002.

(G) The owner or operator of a *de minimis* single unit operation or batch process train exempt from the control requirements of section (3) of this rule shall notify the department in writing if the uncontrolled total annual mass emissions from such *de minimis* single unit operation or batch process train exceed the threshold in paragraph (1)(C)1. or (1)(C)2. of this rule, respectively, within sixty (60) days after the event occurs. Such notification shall include a copy of all records of such event.

(H) Every owner or operator of a batch process operation required to keep records under this rule section shall maintain such records on-site for at least five (5) years and shall make all such records available to the department immediately upon request.

(I) Monitoring Requirements.

1. Every owner or operator using an afterburner to comply with section (3) of this rule shall install, calibrate, maintain and operate, according to manufacturer's specifications, temperature monitoring devices with an accuracy of plus or minus one percent ($\pm 1\%$) of the temperature being measured expressed in degrees Celsius, equipped with continuous recorders.

A. Where a catalytic afterburner is used, temperature monitoring devices shall be installed in the gas stream immediately before and after the catalyst bed.

B. Where an afterburner other than a catalytic afterburner is used, a temperature monitoring device shall be installed in the combustion chamber.

2. Every owner or operator using a flare to comply with section (3) of this rule, shall install, calibrate, maintain and operate, according to manufacturer's specifications, a heat sensing device, such as an ultraviolet beam sensor or thermocouple, at the pilot light to indicate continuous presence of a flame.

3. Every owner or operator using a scrubber to comply with section (3) of this rule shall install, calibrate, maintain, and operate, according to manufacturer's specifications, the following:

A. A temperature monitoring device for scrubbant liquid having an accuracy of plus or minus one percent ($\pm 1\%$) of the temperature being monitored expressed in degrees Celsius and a specific gravity device for scrubbant liquid, each equipped with a continuous recorder; or

B. A VOC monitoring device used to indicate the concentration of VOC exiting the control device based on a detection principle such as infrared, photoionization or thermal conductivity, each equipped with a continuous recorder.

4. Every owner or operator using a condenser to comply with section (3) of this rule shall install, calibrate, maintain, and operate, according to manufacturer's specifications, the following:

A. A condenser exit temperature monitoring device equipped with a continuous recorder and having an accuracy of plus or minus one percent ($\pm 1\%$) of the temperature being monitored expressed in degrees Celsius; or

B. A VOC monitoring device used to indicate the concentration of VOC such as infrared, photoionization or thermal conductivity, each equipped with a continuous recorder.

5. Every owner or operator using a carbon adsorber to comply with this rule shall install, calibrate, maintain, and operate, according to the manufacturer's specifications, the following equipment:

A. An integrating regeneration stream flow monitoring device having an accuracy of plus or minus ten percent ($\pm 10\%$), and a carbon bed temperature monitoring device having an accuracy of plus or minus one percent ($\pm 1\%$) of the temperature being monitored expressed in degrees Celsius, both equipped with a continuous recorder; or

B. A VOC monitoring device used to indicate the concentration level of VOC exiting such device based on a detection principle such as infrared, photoionization or thermal conductivity, each equipped with a continuous recorder.



6. Every owner or operator using a boiler or process heater with a design heat input capacity less than forty-four (44) megawatts to comply with section (3) of this rule shall install, calibrate, maintain, and operate, according to the manufacturer's specifications, a temperature monitoring device in the firebox with an accuracy of plus or minus one percent ($\pm 1\%$) of the temperature being measured expressed in degrees Celsius, equipped with a continuous recorder. Any boiler or process heater in which all process vent streams are introduced with primary fuel is exempt from this requirement.

7. The owner or operator of a process vent shall be permitted to monitor by an alternative method or may monitor parameters other than those listed in paragraphs (4)(I)1. through (4)(I)6. of this rule, if approved by the department. Such alternative method or parameters shall be contained in the source's operating permit as federally enforceable permit conditions.

8. Notwithstanding paragraphs (4)(I)1. through (4)(I)7. of this rule, sources using a scrubber, shell and tube condenser using a nonrefrigerated cooling media, or other control device meeting the criteria of subsection (3)(D) of this rule, are required to monitor compliance with the requirements of this rule on and after the earlier to occur of the date such device is replaced for any reason or May 1, 2002.

(5) Test Methods.

(A) Upon the department's request, the owner or operator of a batch process operation shall conduct testing to demonstrate compliance with section (3) of this rule. The owner or operator shall, at its own expense, conduct such tests in accordance with the applicable test methods and procedures specified in subsections (5)(D), (5)(E), and (5)(F) of this rule.

(B) Notwithstanding subsection (5)(A) of this rule, flares and process boilers used to comply with control requirements of section (3) of this rule shall be exempt from performance testing requirements.

(C) When a flare is used to comply with the control requirements of section (3) of this rule, the flare shall comply with the requirements of 40 CFR 60.18.

(D) The owner or operator of a batch process operation that is exempt from the control requirements of section (3) of this rule shall demonstrate, upon the department's request, the absence of oversized gas moving equipment in any manifold. Gas moving equipment shall be considered oversized if it exceeds the maximum requirements of the

exhaust flow rate by more than thirty percent (30%).

(E) For the purpose of demonstrating compliance with the control requirements in section (3) of this rule, the batch process operation shall be run at representative operating conditions and flow rates during any performance test.

(F) The following methods in 40 CFR 60, Appendix A, which are hereby incorporated by reference, shall be used to demonstrate compliance with the reduction efficiency requirement in section (3) of this rule:

1. Method 1 or 1A, as appropriate, for selection of the sampling sites if the flow measuring device is not a rotameter. The control device inlet sampling site for determination of vent stream VOC composition reduction efficiency shall be prior to the control device and after the control device;

2. Method 2, 2A, 2C, 2D, 2F, 2G or 2H as appropriate, for determination of gas stream volumetric flow rate flow measurements, which shall be taken continuously. No traverse is necessary when the flow measuring device is an ultrasonic probe; and

3. Method 25A or Method 18, if applicable, to determine the concentration of VOC in the control device inlet and outlet, where—

A. The sampling time for each run shall be as follows:

(I) For batch cycles less than eight (8) hours in length, appropriate operating parameters shall be recorded at a minimum of fifteen (15)-minute intervals during the batched period;

(II) For batch cycles of eight (8) hours and greater in length, the owner or operator may either test in accordance with the test procedures defined in part (5)(F)3.A.(I) of this rule or the owner or operator may elect to perform tests, pursuant to either Method 25A or Method 18, only during those portions of each emission event which profiles a representative sample occurring within the batch cycle. For each emission event of less than four (4) hours in duration, the owner or operator shall test continuously over the entire emission event as in part (5)(F)3.A.(I) of this rule. For each emission event of greater than four (4) hours in duration, the owner or operator shall elect either to perform a minimum of three (3) one-hour test runs during the emission event or shall test continuously over the entire emission event within each single unit operation in the batch process train. The owner or operator shall define the total batch process by all its intrinsic emission events. To demonstrate that the portion of the emission event to be tested profiles a representative sample occurring within the batch cycle, the owner or operator

electing to rely on this option shall develop an emission profile for each entire emission event. Such emission profile shall be based upon either process knowledge or test data collected. Examples of information that could constitute process knowledge include, but are not limited to, calculations based on material balances, duration, emission levels, constituents, reactants, byproducts and process stoichiometry. Previous test results may be used provided such results are still relevant to the current process vent stream conditions; or

(III) For purposes of paragraph (5)(F)3. of this rule, the term "emission event" shall be defined as a discrete period of venting that is associated with a single unit operation. For example, a displacement of vapor resulting from the charging of a single unit operation with VOC will result in a discrete emission event that will last through the duration of the charge and will have an average flow rate equal to the rate of the charge. The expulsion of expanded single unit operation vapor space when the vessel is heated is also an emission event. Both of these examples of emission events and others may occur in the same single unit operation during the course of the batch cycle. If the flow rate measurement for any emission event is zero (0), in accordance with paragraph (5)(F)2. of this rule, then such event is not an emission event for purposes of this rule section;

B. Calculate the mass emission rate (MER_i) into the control device as follows:

$$MER_i = C_i Q_i$$

where:

C_i = concentration into the control device; and
 Q_i = flow rate into the control device;

C. Calculate the mass emission rate (MER_o) out of the control device as follows:

$$MER_o = C_o Q_o$$

where:

C_o = concentration out of the control device; and
 Q_o = flow rate out of the control device; and

D. Calculate the total overall control device efficiency (η) as follows:

$$\eta = (MER_i - MER_o) / MER_i$$

(G) Upon request by the department to conduct testing, an owner or operator of a batch process operation which has installed a scrubber, a shell and tube condenser using a nonrefrigerated cooling media, or any other control device which meets the criteria of subsection (3)(D) of this rule, shall demonstrate that such



device achieves the control efficiency applicable within section (3) of this rule upon the earlier to occur of the date the device is replaced or May 1, 2002.

(H) The owner or operator of a batch process operation may propose an alternative test method or procedures to demonstrate compliance with the control requirements in section (3) of this rule. Such method or procedures shall be approved by the department.

(I) In the absence of a request by the department to conduct performance testing in accordance with the provisions of this rule section, a source may demonstrate compliance by the use of engineering estimates or process stoichiometry.

AUTHORITY: section 643.050, RSMo Supp. 1998. Original rule filed July 15, 1999, effective Feb. 29, 2000.*

**Original authority: 643.050, RSMo 1965, amended 1972, 1992, 1993, 1995.*

10 CSR 10-5.550 Control of Volatile Organic Compound Emissions From Reactor Processes and Distillation Operations Processes in the Synthetic Organic Chemical Manufacturing Industry

PURPOSE: This rule limits volatile organic compound emissions from reactor processes and distillation operations.

PUBLISHER'S NOTE: The secretary of state has determined that the publication of the entire text of the material which is incorporated by reference as a portion of this rule would be unduly cumbersome or expensive. Therefore, the material which is so incorporated is on file with the agency who filed this rule, and with the Office of the Secretary of State. Any interested person may view this material at either agency's headquarters or the same will be made available at the Office of the Secretary of State at a cost not to exceed actual cost of copy reproduction. The entire text of the rule is printed here. This note refers only to the incorporated by reference material.

(1) Applicability.

(A) The provisions of this rule apply to any vent stream originating from a process unit in which a reactor process or distillation operations is located.

(B) Exemptions from the provisions of this rule are as follows:

1. Any reactor process or distillation operation that is designed and operated in a batch mode is not subject to the provisions of this rule;

2. Any reactor process or distillation operation that is part of a polymer manufacturing operation is not subject to the provisions of this rule;

3. Any reactor process or distillation operation operating in a process unit with a total design capacity of less than one (1) gigagram (1,100 tons) per year for all chemicals produced within that unit is not subject to the provisions of this rule except for the reporting and record keeping requirements listed in subsection (4)(D) of this rule; and

4. Any vent stream for a reactor process or distillation operation with a flow rate less than 0.0085 standard cubic meter per minute or a total volatile organic compound (VOC) concentration less than five hundred (500) parts per million by volume is not subject to the provisions of this rule except for the performance testing requirement listed in subparagraph (3)(B)3.B., paragraph (3)(B)9. and the reporting and record keeping requirements listed in subsection (4)(C) of this rule.

(C) In the event that other rules in Title 10 Division 10 of the *Code of State Regulations* are also applicable to reactor processes and distillation operation processes in the chemical manufacturing industry, the more stringent rule shall apply.

(2) Definitions.

(A) Batch mode—A noncontinuous operation or process in which a discrete quantity or batch of feed is charged into a process unit and distilled or reacted at one time.

(B) Boiler—Any enclosed combustion device that extracts useful energy in the form of steam.

(C) By compound—By individual stream components, not carbon equivalents.

(D) Continuous recorder—A data recording device recording an instantaneous data value at least once every fifteen (15) minutes.

(E) Distillation operation—An operation separating one (1) or more feed stream(s) into two (2) or more exit stream(s), each exit stream having component concentration different from those in the feed stream(s). The separation is achieved by the redistribution of the components between the liquid- and vapor-phase as they approach equilibrium within the distillation unit.

(F) Distillation unit—A device or vessel in which distillation operations occur, including all associated internals (such as trays or packing) and accessories (such as reboiler, condenser, vacuum pump, stream jet, etc.), plus any associated recovery system.

(G) Flame zone—The portion of the combustion chamber in a boiler occupied by the flame envelope.

(H) Flow indicator—A device that indicates whether gas flow is present in a vent stream.

(I) Halogenated vent stream—Any vent stream determined to have a total concentration of halogen atoms (by volume) contained in organic compounds of two hundred (200) parts per million by volume or greater determined by Method 18 of 40 CFR part 60, Appendix A, or other test or data validated by Method 301 or 40 CFR part 63, Appendix A, or by engineering assessment or process knowledge that no halogenated organic compounds are present. For example, one hundred fifty (150) parts per million by volume of ethylene dichloride would contain three hundred (300) parts per million by volume of total halogen atoms.

(J) Incinerator—Any enclosed combustion device that is used for destroying organic compounds. Auxiliary fuel may be used to heat waste gas to combustion temperatures. Any energy recovery section present is not physically formed into one section; rather, the energy recovery system is a separate section following the combustion section and the two are joined by ducting or connections that carry fuel gas.

(K) Primary fuel—The fuel that provides the principal heat input to the device. To be considered primary, the fuel must be able to sustain operation without the addition of other fuels.

(L) Process heater—A device that transfers heat liberated by burning fuel to fluids contained in tubes, including all fluids except water that is heated to produce steam.

(M) Process unit—Equipment assembled and connected by pipes or ducts to produce, as intermediates or final products, one or more SOCOMI chemicals (see Appendix A of Control of Volatile Organic Compound Emissions from Reactor Processes and Distillation Operations Processes in the Synthetic Organic Chemical Manufacturing Industry, EPA-450/4-91-031, incorporated by reference). A process unit can operate independently if supplied with sufficient feed or raw materials and sufficient product storage facilities.

(N) Product—Any compound or SOCOMI chemical (see Appendix A of Control of Volatile Organic Compound Emissions from Reactor Processes and Distillation Operations Processes in the Synthetic Organic Chemical Manufacturing Industry, EPA-450/4-91-031, incorporated by reference) that is produced as that chemical for sales as a product, by-product, co-product, or intermediate or for use in the production of other chemicals or compounds.



(O) Reactor processes—Unit operations in which one (1) or more chemicals, or reactants other than air, are combined or decomposed in such a way that their molecular structures are altered and one or more new organic compounds are formed.

(P) Recovery device—An individual unit of equipment, such as an adsorber, carbon adsorber, or condenser, capable of and used for the purpose of recovering chemicals for use, reuse, or sale.

(Q) Recovery system—An individual recovery device or series of such devices applied to the same vent stream.

(R) Total organic compounds or “TOC”—Those compounds measured according to the procedures of Method 18 of 40 CFR part 60, Appendix A. For the purposes of measuring molar compositions as required in subparagraph (3)(B)3.D.; hourly emissions rate as required in subparagraph (3)(B)5.D. and paragraph (3)(B)2.; and TOC concentration as required in paragraph (4)(A)4. The definition of TOC excluded those compounds that the administrator designates as having negligible photochemical reactivity. The administrator has designated the following organic compounds negligibly reactive: methane; ethane; 1,1,1-trichloroethane; methylene chloride; trichlorofluoromethane; dichlorodifluoromethane; chlorodifluoromethane; trifluoromethane; trichlorotrifluoroethane; dichlorotetrafluoroethane; and chloropentafluoroethane.

(S) Total resource effectiveness index value or “TRE index value”—A measure of the supplemental total resource requirement per unit reduction of organic hazardous air pollutants associated with a process vent stream, based on vent stream flow rate, emission rate of volatile organic compound, net heating value, and corrosion properties (whether or not the vent stream contains halogenated compounds) as quantified by the given equations. The TRE index is a decision tool used to determine if the annual cost of controlling a given vent gas stream is acceptable when considering the emissions reduction achieved.

(T) Vent stream—Any gas stream discharge directly from a distillation operation or reactor process to the atmosphere or indirectly to the atmosphere after diversion through other process equipment. The vent stream excludes relief valve discharges and equipment leaks including, but not limited to, pumps, compressors, and valves.

(U) Definitions of certain terms specified in this rule, other than those specified in this rule section, may be found in 10 CSR 10-6.020.

(3) General Provisions.

(A) Control Requirements.

1. For individual vent streams within a process unit with a TRE index value less than or equal to one (1.0), the owner or operator shall—

A. Reduce emissions of TOC (less methane and ethane) by ninety-eight (98) weight-percent, or to twenty (20) parts per million by volume, on a dry basis corrected to three percent (3%) oxygen, whichever is less stringent. If a boiler or process heater is used to comply with this paragraph, then the vent stream shall be introduced into the flame zone of the boiler or process heater; or

B. Combust emissions in a flare. Flares used to comply with this paragraph shall comply with the requirements of 40 CFR 60.18. The flare operation requirement does not apply if a process, not subject to this rule, vents an emergency relief discharge into a common flare header and causes the flare servicing the process subject to this rule to be out of compliance with one or more of the provisions of the flare operation rule.

2. For each individual vent stream(s) within a process unit with a TRE index value greater than one (1.0), the owner or operator shall maintain vent stream parameters that result in a calculated total resource effectiveness greater than one (1.0) without the use of a volatile organic compound control device. The TRE index shall be calculated at the outlet of the final recovery device.

(B) Total Resource Effectiveness Determination, Performance Testing, and Exemption Testing.

1. For the purpose of demonstrating compliance with the TRE index value in paragraph (3)(A)2. of this rule, engineering assessment may be used to determine process vent stream flow rate, net heating value, and TOC emission rate for the representative operating condition expected to yield the lowest TRE index value.

A. If the TRE value calculated using such engineering assessment and the TRE equation in subparagraph (3)(B)6.A. of this rule is greater than four (4.0), then it is not recommended that the owner or operator perform the measures specified in paragraph (3)(B)5. of this rule.

B. If the TRE value calculated using such engineering assessment and the TRE equation in subparagraph (3)(B)6.A. of this rule is less than or equal to four (4.0), then it is recommended that the owner or operator perform the measurements specified in paragraph (3)(B)5. of this rule.

C. Engineering assessment includes, but is not limited to, the following:

(I) Previous test results proved the test is representative of current operating practices at the process unit;

(II) Bench-scale or pilot-scale test data representative of the process under representative operating conditions;

(III) Maximum flow rate specified or implied within a permit limit applicable to the process vent;

(IV) Design analysis based on accepted chemical engineering principles, measurable process parameters, or physical or chemical laws or properties. Examples for analytical methods include, but are not limited to:

(a) Use of material balances based on process stoichiometry to estimate maximum VOC concentration;

(b) Estimation of maximum flow rate based on physical equipment design such as pump or blower capacities;

(c) Estimation of TOC concentrations based on saturation conditions; and

(d) Estimation of maximum expected net heating value based on the stream concentration of each organic compound, or, alternatively, as if all TOC in the stream were the compound with the highest heating value; and

(V) All data, assumptions, and procedures used in the engineering assessment shall be documented.

2. For the purpose of demonstrating compliance with the control requirements of this rule, the process unit shall be run at representative operating conditions and flow rates during any performance test.

3. The following methods in 40 CFR part 60, Appendix A, shall be used to demonstrate compliance with the emission limit or percent reduction efficiency requirement listed in subparagraph (3)(A)1.A. of this rule:

A. Method 1 or 1A, as appropriate, for selection of the sampling sites. The control device inlet sampling site for determination of vent stream molar composition or TOC (less methane and ethane) reduction efficiency shall be located after the last recovery device but prior to the inlet of the control device, prior to any dilution of the process vent stream, and prior to release to the atmosphere;

B. Method 2, 2A, 2C, or 2D, as appropriate, for determination of gas stream volumetric flow rate;

C. The emission rate correction factor, integrated sampling, and analysis procedure of Method 3 to determine the oxygen concentration (%O_{2d}) for the purpose of determining compliance with the twenty (20) parts per million by volume limit. The sampling site shall be the same as that of the TOC



samples, and samples shall be taken during the same time that the TOC samples are taken. The TOC concentration corrected to three percent (3%) oxygen (C_c) shall be computed using the following equation:

$$C_c = C_{TOC} \times \left(\frac{17.9}{20.9 - \%O_{2d}} \right)$$

where:

C_c = Concentration of TOC (minus methane and ethane) corrected to three percent (3%) O_2 , dry basis, parts per million by volume;

C_{TOC} = Concentration of TOC (minus methane and ethane), dry basis, parts per million by volume; and

$\%O_{2d}$ = Concentration of oxygen, dry basis, percent by volume;

D. Method 18 to determine the concentration of TOC (less methane and ethane) at the outlet of the control device when determining compliance with the twenty (20) parts per million by volume limit, or at both the control device inlet and outlet when the reduction efficiency of the control device is to be determined.

(I) The minimum sampling time for each run shall be one (1) hour in which either an integrated sample or four (4) grab samples shall be taken. If grab sampling is used then the samples shall be taken at fifteen (15)-minute intervals.

(II) The emission reduction (R) of TOC (less methane and ethane) shall be determined using the following equation:

$$R = \frac{E_i - E_o}{E_i} \times 100$$

where:

R = Emission reduction, percent by weight.

E_i = Mass rate of TOC (minus methane and ethane) entering the control device, kilogram TOC per hour.

E_o = Mass rate of TOC (minus methane and ethane) discharged to the atmosphere, kilogram TOC per hour.

(III) The mass rates of TOC (E_i , E_o) shall be computed using the following equations:

$$E_i = K_2 \left(\sum_{j=1}^n C_{ij} M_{ij} \right) Q_i$$

; and

$$E_o = K_2 \left(\sum_{j=1}^n C_{oj} M_{oj} \right) Q_o$$

where:

C_{ij} , C_{oj} = Concentration of sample component “j” of the gas stream at the inlet and outlet of the control device, respectively, dry basis, parts per million by volume;

M_{ij} , M_{oj} = Molecular weight of sample component “j” of the gas stream at the inlet and outlet of the control device, respectively, grams per gram-mole;

Q_i , Q_o = Flow rate of gas stream at the inlet and outlet of the control device, respectively, dry standard cubic meters per minute;

K_2 = 2.494×10^{-6} (liters per minute) (gram-mole per standard cubic meter)(kilogram per gram)(minute per hour), where standard temperature for (gram-mole per standard cubic meter) is twenty degrees Celsius (20 °C); and

n = Number of components in the sample.

(IV) The TOC concentration (C_{TOC}) is the sum of the individual components and shall be computed for each run using the following equation:

$$C_{TOC} = \sum_{j=1}^n C_j$$

where:

C_{TOC} = Concentration of TOC (minus methane and ethane), dry basis, parts per million by volume;

C_j = Concentration of sample component “j”, dry basis, parts per million by volume; and

n = Number of components in the sample; and

E. When a boiler or process heater with a design heat input capacity of forty-four (44) megawatts or greater, or a boiler or process heater into which the process vent stream is introduced with the primary fuel, is used to comply with the control requirements, an initial performance test is not required.

4. When a flare is used to comply with the control requirements of this rule, the flare shall comply with the requirements of 40 CFR part 60.18.

5. The following test methods shall be used to determine compliance with the TRE index value:

A. Method 1 or 1A, as appropriate,

for selection of the sampling site.

(I) The sampling site for the vent stream molar composition determination and flow rate prescribed in subparagraph (3)(B)5.B. and subparagraph (3)(B)5.C. of this rule shall be, except for the situations outlined in part (3)(B)5.A.(II) of this rule, after the final recovery device, if a recovery system is present, prior to the inlet of any control device, and prior to any post-reactor or post-distillation unit introduction of halogenated compounds into the process vent stream. No traverse site selection method is needed for vents smaller than ten (10) centimeters in diameter.

(II) If any gas stream other than the reactor or distillation vent stream is normally conducted through the final recovery device—

(a) The sampling site for vent stream flow rate and molar composition shall be prior to the final recovery device and prior to the point at which any nonreactor or nondistillation stream or stream from a non-affected reactor or distillation unit is introduced. Method 18 shall be used to measure organic compound concentrations at this site;

(b) The efficiency of the final recovery device shall be determined by measuring the organic compound concentrations using Method 18 at the inlet to the final recovery device after the introduction of all vent streams and at the outlet of the final recovery device; and

(c) The efficiency of the final recovery device determined according to subpart (3)(B)5.A.(II)(b) of this rule shall be applied to the organic compound concentrations measured according to subpart (3)(B)5.A.(II)(a) of this rule to determine the concentrations of organic compounds from the final recovery device attributable to the reactor or distillation vent stream. The resulting organic compound concentrations are then used to perform the calculations outlined in subparagraph (3)(B)5.D. of this rule;

B. The molar composition of the vent stream shall be determined as follows:

(I) Method 18 to measure the concentration of organic compounds including those containing halogens; and

(II) ASTM D1946-77 to measure the concentration of carbon monoxide and hydrogen;

C. The volumetric flow rate shall be determined using Method 2, 2A, 2C, or 2D, as appropriate;

D. The emission rate of TOC (minus methane and ethane), (E_{TOC}), in the vent stream shall be calculated using the following equation:



$$E_{\text{TOC}} = K_2 \sum_{j=1}^n C_j M_j Q_s$$

where:

E_{TOC} = Emission rate of TOC (minus methane and ethane) in the sample, kilograms per hour;

K_2 = Constant, 2.494×10^{-6} (liters per part per million)(gram-moles per standard cubic meter)(kilogram per gram)(minute per hour), where standard temperature for (gram-mole per standard cubic meter)(g-mole/scm) is twenty degrees Celsius (20 °C);

C_j = Concentration of compound “j”, on a dry basis, in parts per million as measured by Method 18, as indicated in subparagraph (3)(B)3.C. of this rule;

M_j = Molecular weight of sample “j”, grams per gram-mole;

Q_s = Vent stream flow rate (standard cubic meters per minute) at a temperature of twenty degrees Celsius (20 °C); and

n = Number of components in the sample;

E. The total process vent stream concentration (by volume) of compounds containing halogens (parts per million by volume, by compound) shall be summed from the individual concentrations of compounds containing halogens which were measured by Method 18; and

F. The net heating value of the vent stream shall be calculated using the equation:

$$H_T = K_1 \sum_{j=1}^n C_j H_j (1 - B_{\text{ws}})$$

where:

H_T = Net heating value of the sample (megajoule per standard cubic meter), where the net enthalpy per mole of vent stream is based on combustion at twenty-five degrees Celsius (25 °C) and seven hundred sixty (760) millimeters of mercury, but the standard temperature for determining the volume corresponding to one mole is twenty degrees Celsius (20 °C), as in the definition of Q_s (vent stream flow rate);

K_1 = Constant, 1.740×10^{-7} (parts per million)⁻¹ (gram-mole per standard cubic meter), (megajoule per kilocalorie), where standard temperature for (gram-mole per standard cubic meter) is twenty degrees Celsius (20 °C);

B_{ws} = Water vapor content of the vent stream, proportion by volume: except that if the vent stream passes through a final stream jet and is not condensed, it shall be assumed

that $B_{\text{ws}} = 0.023$ in order to correct to 2.3 percent moisture;

C_j = Concentration on a dry basis of compound “j” in parts per million, as measured for all organic compounds by Method 18 and measured for hydrogen and carbon monoxide by the American Society for Testing and Materials D1946-77;

H_j = Net heat of combustion of compound “j”, kilocalorie per gram-mole, based on combustion at twenty-five degrees Celsius (25 °C) and seven hundred sixty (760) millimeters of mercury. The heat of combustion of vent stream components shall be determined using ASTM D2382-76 if published values are not available or cannot be calculated; and

n = Number of components in the sample.

6. The Total Resource Effectiveness (TRE) index.

A. The TRE index value of the vent shall be calculated using the following equation:

$$\text{TRE} = \frac{1}{E_{\text{TOC}}} [a + b (Q_s) + c (H_T) + d (E_{\text{TOC}})]$$

where:

TRE = TRE index value;

E_{TOC} = Hourly emission rate of TOC (minus methane and ethane), (kilograms per hour) as calculated in subparagraph (3)(B)5.D. of this rule;

Q_s = Vent stream flow rate standard cubic meters per minute at a standard temperature of twenty degrees Celsius (20 °C);

H_T = Vent stream net heating value (megajoules per standard cubic meter), as calculated in subparagraph (3)(B)5.F. of this rule; and

a,b,c,d = Coefficients presented in Table 1.

Table 1
Coefficients for Total Resource Effectiveness for Nonhalogenated and Halogenated Vent Streams

Type of Stream	Control Device Basis	Values of Coefficients			
		a	b	c	d
Nonhalogenated	Flare	2.129	0.183	-0.005	0.359
	Thermal incinerator 0 percent heat recovery	3.075	0.021	-0.037	0.018
	Thermal incinerator 70 Percent heat recovery	3.803	0.032	-0.042	0.007
Halogenated	Thermal incinerator and scrubber	5.470	0.181	-0.040	0.004

B. The owner or operator of a vent stream shall use the applicable coefficients in Table 1 to calculate the TRE index value based on a flare, a thermal incinerator with zero percent (0%) heat recovery, and a thermal incinerator with seventy percent (70%) heat recovery, and shall select the lowest TRE index value.

C. The owner or operator of a unit with a halogenated vent stream, determined as any stream with a total concentration of halogen atoms contained in organic compounds of two hundred (200) parts per million by volume or greater, shall use the applicable coefficients in Table 1 to calculate the total resource effectiveness index value based on a thermal incinerator and scrubber.

7. Each owner or operator of an affected facility seeking to comply with paragraph (3)(A)2. of this rule shall recalculate the flow rate and TOC concentration for that affected facility whenever process changes are made. Examples of process changes include changes in production capacity, feedstock type, or catalyst type, or whenever there is replacement, removal, or addition of recovery equipment. The flow rate and VOC concentration shall be recalculated based on test data, or on best engineering estimates of the effects of the change to the recovery system.

8. Where the recalculated values yield a TRE index ≤ 1.0 , the owner or operator shall notify the state Air Pollution Control Program within one (1) week of the recalculation and shall conduct a performance test according to the methods and procedures required by subsection (3)(B) of this rule.

9. For the purpose of demonstrating that a process vent stream has a VOC concentration below five hundred (500) parts per million by volume, the following procedures shall be followed:

A. The sampling site shall be selected as specified in subparagraph (3)(B)3.A. of this rule;

B. Method 18 or Method 25A of 40 CFR part 60, Appendix A shall be used to measure concentration; alternatively, any other method or data that has been validated according to the protocol in Method 301 of 40 CFR part 63, Appendix A may be used.

(I) Where Method 18 is used, the following procedures shall be used to calculate parts per million by volume concentration:

(a) The minimum sampling time for each run shall be one (1) hour in which either an integrated sample or four (4) grab samples shall be taken. If grab sampling is used, then the samples shall be taken at approximately equal intervals in time, such as fifteen (15)-minute intervals during the run; and



(b) The concentration of TOC (minus methane and ethane) shall be calculated using Method 18 according to subparagraph (3)(B)3.D. of this rule.

(II) Where Method 25A is used, the following procedures shall be used to calculate parts per million by volume TOC concentration:

(a) Method 25A shall be used only if a single VOC is greater than fifty percent (50%) of total VOC, by volume, in the process vent stream;

(b) The process vent stream composition may be determined by either process knowledge, test data collected using an appropriate EPA method or a method of data collection validated according to the protocol in Method 301 of 40 CFR part 63, Appendix A. Examples of information that could constitute process knowledge include calculations based on material balances, process stoichiometry, or previous test results provided the results are still relevant to the current process vent stream conditions;

(c) The VOC used as the calibration gas for Method 25A shall be the single VOC present at greater than fifty percent (50%) of the total VOC by volume;

(d) The span value for Method 25A shall be fifty (50) parts per million by volume;

(e) Use of Method 25A is acceptable if the response from the high-level calibration gas is at least twenty (20) times the standard deviation of the response from the zero calibration gas when the instrument is zeroed on the most sensitive scale; and

(f) The concentration of TOC shall be corrected to three percent (3%) oxygen using the procedures and equation in subparagraph (3)(B)3.C. of this rule; and

C. The owner or operator shall demonstrate that the concentration of TOC including methane and ethane measured by Method 25A is below two hundred fifty (250) parts per million by volume with VOC concentration below five hundred (500) parts per million by volume to qualify for the low concentration exclusion.

(C) Monitoring Requirements.

1. The owner or operator of an affected facility that uses an incinerator to seek to comply with the TOC emission limit specified under subparagraph (3)(A)1.A. of this rule shall install, calibrate, maintain, and operate according to manufacturer's specifications: a temperature monitoring device equipped with a continuous recorder and having a minimum accuracy of plus or minus one percent ($\pm 1\%$) of the temperature being measured expressed in degrees Celsius or plus or minus (± 0.5) °C, whichever is more accurate.

A. Where an incinerator other than a catalytic incinerator is used, a temperature monitoring device shall be installed in the firebox.

B. Where a catalytic incinerator is used, temperature monitoring devices shall be installed in the gas stream immediately before and after the catalyst bed.

2. The owner or operator of an affected facility that uses a flare to seek to comply with subparagraph (3)(A)1.B. of this rule shall install, calibrate, maintain, and operate according to manufacturer's specifications, a heat-sensing device, such as an ultraviolet beam sensor or thermocouple, at the pilot light to indicate continuous presence of a flame.

3. The owner or operator of an affected facility that uses a boiler or process heater with a design heat input capacity less than forty-four (44) megawatts to seek to comply with subparagraph (3)(A)1.A. of this rule shall install, calibrate, maintain, and operate according to the manufacturer's specifications, a temperature monitoring device in the firebox. The monitoring device should be equipped with a continuous recorder and have a minimum accuracy of plus or minus one percent ($\pm 1\%$) of the temperature being measured expressed in degrees Celsius or plus or minus (± 0.5) °C, whichever is more accurate. Any boiler or process heater in which all vent streams are introduced with primary fuel is exempt from this requirement.

4. The owner or operator of an affected facility that seeks to demonstrate compliance with the total resource effectiveness index limit specified under paragraph (3)(A)2. of this rule shall install, calibrate, maintain, and operate according to manufacturer's specifications the following equipment:

A. Where an absorber is the final recovery device in the recovery system—

(I) A scrubbing liquid temperature monitor equipped with a continuous recorder; and

(II) Specific gravity monitor equipped with continuous recorders;

B. Where a condenser is the final recovery device in the recovery system, a condenser exit (product side) temperature monitoring device equipped with a continuous recorder and having a minimum accuracy of plus or minus one percent ($\pm 1\%$) of the temperature being monitored expressed in degrees Celsius or plus or minus (± 0.5) °C, whichever is more accurate;

C. Where a carbon adsorber is the final recovery device unit in the recovery system, in integrating regeneration stream flow monitoring device having a minimum accuracy of plus or minus ten percent ($\pm 10\%$),

capable of recording the total regeneration stream mass flow for each regeneration cycle; and a carbon bed temperature monitoring device having a minimum accuracy of plus or minus one percent ($\pm 1\%$) of the temperature being monitored expressed in degrees Celsius or plus or minus (± 0.5) °C, whichever is more accurate, and capable of recording the carbon bed temperature after each regeneration and within fifteen (15) minutes of completing any cooling cycle; or

D. Where an absorber scrubs halogenated streams after an incinerator, boiler, or process heater, the following monitoring equipment is required for the scrubber—

(I) A pH monitoring device equipped with a continuous recorder; and

(II) Flow meters equipped with continuous recorders to be located at the scrubber influent for liquid flow and the scrubber inlet for gas stream flow.

5. The owner or operator of a process vent using a vent system that contains bypass lines that could divert a vent stream away from the combustion device used shall either—

A. Install, calibrate, maintain, and operate a flow indicator that provides a record of vent stream flow at least once every fifteen (15) minutes. The flow indicator shall be installed at the entrance to any bypass line that could divert the vent stream away from the combustion device to the atmosphere; or

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

(4) Reporting and Record Keeping.

(A) Each reactor process or distillation operation subject to this rule shall keep records of the following parameters measured during a performance test or TRE determination required under subsection (3)(B) of this rule and required to be monitored under subsection (3)(C) of this rule.

1. Where an owner or operator subject to the provisions of this rule seeks to demonstrate compliance with subparagraph (3)(A)1.A. of this rule through the use of either a thermal or catalytic incinerator—

A. The average firebox temperature of the incinerator (or the average temperature upstream and downstream of the catalyst bed for a catalytic incinerator), measured at least every fifteen (15) minutes and averaged over the same time period of the performance testing; and

B. The percent reduction of TOC



determined as specified in paragraph (3)(B)3. of this rule achieved by the incinerator, or the concentration of TOC (parts per million by volume, by compound) determined as specified in paragraph (3)(B)3. of this rule at the outlet of the control device on a dry basis corrected to three percent (3%) oxygen.

2. Where an owner or operator subject to the provisions of this rule seeks to demonstrate compliance with subparagraph (3)(A)1.A. of this rule through the use of a boiler or process heater and the boiler or process heater is not exempt from these requirements due to all vent streams being introduced with primary fuel—

A. A description of the location at which the vent stream is introduced into the boiler or process heater; and

B. The average combustion temperature of the boiler or process heater with a design heat input capacity of less than forty-four (44) megawatts measured at least every fifteen (15) minutes and averaged over the same time period of the performance test.

3. Where an owner or operator subject to the provisions of this rule seeks to demonstrate compliance with subparagraph (3)(A)1.B. of this rule through the use of a smokeless flare; flare design (i.e., steam-assisted, air-assisted, or nonassisted), all visible emission readings, heat content determinations, flow rate measurements, and exit velocity determinations made during the performance test, continuous records of the flare pilot flame monitoring, and records of all periods of operations during which the pilot flame is absent.

4. Where an owner or operator subject to the provisions of this rule seeks to demonstrate compliance with paragraph (3)(A)2. of this rule—

A. All measurements and calculations performed to determine the flow rate, and volatile organic compound concentration, heating value, and TRE index value of the vent stream; and

B. Records shall be kept of the following final recovery device parameters:

(I) Where an absorber is the final recovery device in the recovery system, the exit specific gravity (or alternative parameter which is a measure of the degree of absorbing liquid saturation, if approved, by the permitting authority), and average exit temperature of the absorbing liquid measured at least fifteen (15) minutes and averaged over the same time period of the performance testing (both measured while the vent stream is normally routed and constituted);

(II) Where a condenser is the final recovery device in the recovery system, the average exit (product side) temperature measured at least every fifteen (15) minutes and averaged over the same time period of the

performance testing while the vent stream is routed and constituted normally; or

(III) Where a carbon adsorber is the final recovery device in the recovery system, the total stream mass or volumetric flow measured at least every fifteen (15) minutes and averaged over the same time period of the performance test (full carbon bed cycle), temperature of the carbon bed after regeneration (and within fifteen (15) minutes of completion of any cooling cycle(s)), and duration of the carbon bed steaming cycle (all measured while the vent stream is routed and constituted normally).

5. As an alternative to subparagraphs (4)(A)4.A. or (4)(A)4.B. of this rule, the concentration level or reading indicated by the organics monitoring device at the outlet of the absorber, condenser, or carbon adsorber, measured at least every fifteen (15) minutes and averaged over the same time period as the performance testing while the vent stream is normally routed and constituted.

(B) Each reactor process or distillation operation seeking to comply with paragraph (3)(A)2. of this rule shall also keep records of the following information:

1. Any changes in production capacity, feedstock type, or catalyst type, or of any replacement, removal, and addition of recovery equipment or reactors and distillation units; and

2. Any recalculation of the flow rate, TOC concentration, or TRE value performed according to paragraph (3)(B)7. of this rule.

(C) Each reactor process or distillation operation seeking to comply with the flow rate or concentration exemption level in paragraph (1)(B)4. of this rule shall keep records to indicate that the stream flow rate is less than 0.0085 standard cubic meters per minute or the concentration is less than five hundred (500) parts per million by volume.

(D) Each reactor process or distillation operation seeking to comply with the production capacity exemption level of one (1) gigagram per year shall keep records of the design production capacity and changes in equipment or process operation that may affect design production capacity to the affected process unity.

(E) All records must be kept on-site for a period of five (5) years and made available to the department upon request.

(5) Test Methods. See section (3) of this rule for applicable test methods.

AUTHORITY: section 643.050, RSMo Supp. 1998. Original rule filed July 15, 1999, effective Feb. 29, 2000.*

**Original authority: 643.050, RSMo 1965, amended 1972, 1992, 1993, 1995.*

10 CSR 10-5.570 Control of Sulfur Emissions From Stationary Boilers

PURPOSE: This rule limits sulfur dioxide (SO₂) emissions from industrial boilers in the St. Louis Nonattainment Area. By reducing SO₂ emissions released into the atmosphere, emissions of fine particles (PM_{2.5}) will be reduced. This rule is intended to curb emission in the St. Louis Nonattainment Area in compliance with the federal Clean Air Fine Particle Implementation Rule to reduce the risk of PM_{2.5} violations, which may prompt redesignation and/or sanctions from the U.S. Environmental Protection Agency. The evidence supporting the need for this proposed rulemaking, per section 536.016, RSMo, is the federally approved 2007 Clean Air Fine Particle Implementation Rule.

PUBLISHER'S NOTE: The secretary of state has determined that the publication of the entire text of the material which is incorporated by reference as a portion of this rule would be unduly cumbersome or expensive. This material as incorporated by reference in this rule shall be maintained by the agency at its headquarters and shall be made available to the public for inspection and copying at no more than the actual cost of reproduction. This note applies only to the reference material. The entire text of the rule is printed here.

(1) Applicability. This rule shall apply to all applicable installations located in the counties of Franklin, Jefferson, St. Charles, St. Louis, and the City of St. Louis.

(A) This rule applies to installations that own or operate an industrial, commercial, or institutional boiler or process heater that has a nameplate capacity greater than fifty (50) million British thermal units (mmBtu) per hour.

(B) Installations affected by this rule shall be in compliance no later than December 31, 2010.

(C) The types of boilers and process heaters listed in paragraphs (1)(C)1. through 5. of this rule are not subject to this rule.

1. Any unit subject to and in compliance with the Phase II Acid Rain program (40 CFR 96 subpart AAA).

2. A boiler or process heater that is used specifically for research and development. This does not include units that only provide heat or steam commercially to a process at a research and development installation.

3. Temporary boilers as defined in section (2) of this rule.

4. Any unit under subsection (1)(A) of this rule which demonstrates, using the emission estimation methods outlined in section (5) of this rule, that the unit's mass SO₂ emissions are twenty-five (25) tons or less during



the calendar year. To the extent such demonstration relies on pollution control equipment or operational controls, such controls must be enforceable.

5. Boilers that exclusively burn natural gas, liquefied petroleum (LP) gas, and/or fuel oil number two (2) with less than five-tenths percent (0.5%) sulfur, at the option of the installation.

6. Loss of exemption. If the exemption limit in paragraph (1)(C)4. of this rule is subsequently exceeded, the exemption shall no longer apply and the owner or operator must notify the staff director or designee within thirty (30) days of such event. If the owner or operator can demonstrate to the staff director or designee that the exemption limit was exceeded due to emergency operations or uncontrolled circumstances, the exemption in paragraph (1)(C)4. of this rule shall be reinstated. Emergency events include the use of boilers to produce power for critical networks or equipment when electric power from the local utility or the normal power source, if the installation runs on its own power production, is interrupted, or the use of boilers to pump water in the case of fire or flood, etc. The use of boilers to reduce electricity drawn from a power utility during utility designated peak time periods, to supply power to an electric grid, or to supply power as part of a financial arrangement with another entity is not considered an emergency event.

7. Compliance with this rule shall not relieve any owner or operator of the responsibility to comply fully with applicable provisions of the Air Conservation Law or any other requirements under local, state, or federal law. Specifically, compliance with this rule shall not violate the permit conditions previously established under 10 CSR 10-6.060 or 10 CSR 10-6.065.

(2) Definitions. Definitions of certain terms specified in this rule may be found in 10 CSR 10-6.020.

(3) General Provisions.

(A) Emission Limitations.

1. Except as otherwise provided in this section, no installation shall cause or allow the emission of sulfur dioxide (SO₂) into the atmosphere exceeding one (1.0) pound (lb) of SO₂ per mmBtu of actual heat input in any thirty (30)-day period from any installation with applicable units.

2. No brewery shall cause or allow the combined total of atmospheric emissions of SO₂ from all applicable emission units within an installation to exceed three thousand fifty (3,050) tons during any twelve (12)-month rolling period. SO₂ emission from all applicable units shall be determined by com-

pliance with subparagraph (3)(C)2.D. of this rule.

(B) Measurements for Single Units. Measurements shall be one (1) of the following:

1. Measurements of SO₂ emissions from stationary sources shall be made according to an applicable method specified in 40 CFR 60, Appendix A, Method 6, 6A, 6B, or 6C promulgated as of December 23, 1971, and incorporated by reference in this rule, as published by the U.S. Government Printing Office, 732 N. Capitol Street NW, Washington, DC 20401 or by measurement procedures established pursuant to 40 CFR 60.8(b) promulgated as of May 16, 2007, and incorporated by reference in this rule, as published by the U.S. Government Printing Office, 732 N. Capitol Street NW, Washington, DC 20401. This rule does not incorporate any subsequent amendments or additions; or

2. Monthly analysis method. Installations subject to this rule shall demonstrate compliance or non-compliance by an analysis of calendar monthly composites of daily fuel samples using American Society for Testing and Materials (ASTM) procedures, or by vendor certification, at the option of the installation. Installations opting to use vendor certification shall provide monthly individual verification from all vendors using the ASTM procedures prescribed in this paragraph of consumed solid fuels including different vendor supplied batches of coal. The specific ASTM procedures, D2234 (published in May 1, 2007), D2013 (published in June 10, 2007), D3177 (published in May 1, 2007), D3180 (published in July 15, 2007), D4239 (published in February 1, 2008), D5865 (published in November 1, 2007), D240 (published in May 1, 2007), D2622 (published in March 1, 2008), D5504 (published in June 1, 2006), and D6228 (published in May 10, 2003) shall be used for fossil fuel or gaseous fuel sampling, sulfur, and, if needed, heating value determinations and are incorporated by reference in this rule, as published by ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959. This rule does not incorporate any subsequent amendments or additions.

(C) Measurements for Multi-Unit and Multi-Fuel Installations. For sources not controlling SO₂ emissions by flue gas desulfurization equipment or by sorbent injection, the following alternate compliance method may be used:

1. SO₂ emission rates for a single boiler that burns different fuels. The owner or operator of an affected installation shall determine the SO₂ emission rate of a large boiler which

burns multiple fuels separately, according to the following formula:

$$E_s = \frac{\sum_{i=1}^q (K_a)_i + \sum_{i=1}^r (K_b)_i + \sum_{i=1}^s (K_c)_i}{H_T}$$

Where:

E_s = unit SO₂ emissions in lb per mmBtu heat input;

K_a = solid fuel sample monthly composite SO₂ emission rate in lbs;

K_b = liquid fuel sample monthly composite SO₂ emission rate in lbs;

K_c = gaseous fuel sample monthly composite SO₂ emission rate in lbs;

q = number of different solid fuels used including the number of different batches of coal;

r = number of different liquid fuels used;

s = number of different gaseous fuels used; and

H_T = total heat content for all fuels in any monthly period.

2. Averaging SO₂ emissions among different boilers.

A. To meet the requirements of paragraphs (3)(A)1. and (3)(A)2. of this rule, if there is more than one (1) existing boiler located at an installation, compliance may be demonstrated by emission averaging according to the procedures in this paragraph.

B. For a group of two (2) or more existing boilers that each vent to a separate or common stack, SO₂ emissions may be averaged to demonstrate compliance with the limits in paragraphs (3)(A)1. and (3)(A)2. of this rule.

C. Compliance with the limit in paragraph (3)(A)1. of this rule must be demonstrated on a monthly rolling average. The first period begins on the compliance date. For each monthly period, the following equation must be used to calculate the monthly rolling average weighted emission rate using the actual heat capacity for each existing boiler participating in the emissions averaging option.

$$\text{Avg Weighted Emissions} = \frac{\sum_{i=1}^n (E_r \times H_b)}{\sum_{i=1}^n H_b}$$

Where:

Avg Weighted Emissions = monthly average weighted emission level for SO₂, in units of lbs per mmBtu of heat input;

E_r = Emission rate, in units of lbs per mmBtu of heat input;

H_b = The average heat input for each monthly period of boiler, i, in units of mmBtu; and



n = Number of boilers participating in the emissions averaging option.

D. Compliance with the limit in paragraph (3)(A)2. of this rule must be demonstrated on a twelve (12)-month rolling total. The first period begins on the compliance date. For each twelve (12)-month period, the following equation must be used to calculate the twelve (12)-month rolling total weighted emission rate using the actual heat capacity for each existing boiler participating in the emission averaging option.

$$\text{Avg SO}_2 \text{ Emissions} = \sum_{i=1}^n \frac{\sum_{i=1}^q (K_{a,q})_n + \sum_{i=1}^r (K_{b,r})_n + \sum_{i=1}^s (K_{c,s})_n}{1}$$

Where:

Avg SO₂ Emissions = twelve (12)-month total weighted emission level for SO₂, in units of tons of SO₂;

K_a = solid fuel monthly SO₂ emissions in tons based on material/mass balance as the source of the emission factor;

Where:

$$K_a = \frac{\text{Sulfur \% by weight}}{100} \times \frac{64.064}{32.065} \times \frac{\text{tons fuel}}{\text{burned}}$$

K_b = liquid fuel monthly SO₂ emissions in tons based on similar material/mass balance calculations as K_a as the source of the emission factor;

K_c = gaseous fuel monthly SO₂ emissions in tons based on similar material/mass balance calculations as K_a as the source of the emission factor;

n = number of boilers participating in the emissions averaging option;

q = number of different solid fuels used including the number of different batches of coal;

r = number of different liquid fuels used; and

s = number of different gaseous fuels used.

(D) Monitoring Requirements. Any owner or operator of an industrial, commercial, or institutional boiler; or process heater subject to this rule equipped with flue gas desulfurization or sorbent inject controls shall use a continuous emission monitoring system (CEMS) to monitor compliance. Owners or operators subject to this rule without control equipment shall comply with one (1) of the following requirements:

1. A CEMS that:

A. Meets the applicable requirements of 40 CFR part 60, subpart A, Appendix B, promulgated as of September 28, 2007, and incorporated by reference in this rule, as pub-

lished by the U.S. Government Printing Office, 732 N. Capitol Street NW, Washington, DC 20401. This rule does not incorporate any subsequent amendments or additions; and

B. Complies with the quality assurance procedures regardless of whether the installation is subject to new source performance standards (NSPS) specified in 40 CFR part 60, Appendix F, promulgated as of June 13, 2007, and incorporated by reference in this rule, as published by the U.S. Government Printing Office, 732 N. Capitol Street NW, Washington, DC 20401. This rule does not incorporate any subsequent amendments or additions;

2. An alternate monitoring procedure or monitoring plan approved by the director and the U.S. Environmental Protection Agency (EPA).

(4) Reporting and Record Keeping.

(A) Reporting Requirements. The owner or operator subject to this rule shall—

1. Submit the calculation and record keeping procedure by February 15 of each year based upon correlations with ASTM and 40 CFR part 60, Appendix A reference method results, promulgated as of December 23, 1971, and incorporated by reference in this rule, as published by the U.S. Government Printing Office, 732 N. Capitol Street NW, Washington, DC 20401. This rule does not incorporate any subsequent amendments or additions;

2. Submit an annual report to the director by February 15 following the end of the initial compliance period and by February 15 for each year thereafter unless the affected unit is subject to an NSPS. The annual report shall document for each affected unit, the average of the tons of SO₂ emitted during the previous twelve (12)-month period or the twelve (12)-month rolling total starting the first full year after the compliance period;

3. By February 15 of every year following the initial compliance period, submit monthly reports for the previous calendar year unless the affected unit is subject to an NSPS. The monthly reports shall document

the following information for each affected unit:

A. For units equipped with a CEMS, both the total heat input in mmBtu and the SO₂ emission rate in lbs per mmBtu for the unit; and

B. For units without a CEMS, the total number of tons of each solid fuel burned including different vendor supplied batches of coal, volume of each gaseous fuel and/or volume each liquid fuel; average percent sulfur content of each solid fuel including different vendor supplied batches of coal, each liquid fuel and/or each gaseous fuel; and each solid fuel including different vendor supplied batches of coal, each liquid fuel and/or each gaseous fuel average heat content in Btu per lb; and

4. Excess emissions.

A. Units maintaining a CEMS, shall submit an excess emissions monitoring system performance report by February 15 following the end of the initial compliance period and by February 15 for each year thereafter unless the affected unit is subject to an NSPS, in accordance with—

(I) 40 CFR 60.7(c), promulgated as of February 12, 1999, and incorporated by reference in this rule, as published by the U.S. Government Printing Office, 732 N. Capitol Street NW, Washington, DC 20401. This rule does not incorporate any subsequent amendments or additions.; and

(II) 40 CFR 60.13, promulgated as of June 13, 2007, and incorporated by reference in this rule, as published by the U.S. Government Printing Office, 732 N. Capitol Street NW, Washington, DC 20401. This rule does not incorporate any subsequent amendments or additions.

B. Units not maintaining a CEMS, shall submit a written report of excess emissions according to 10 CSR 10-6.260, subsection (4)(A) regardless of whether 10 CSR 10-6.260 applies, unless the affected unit is subject to an NSPS.

(B) Record Keeping Requirements. The owner or operator subject to this rule shall maintain all records necessary to demonstrate compliance with this rule for a period of five (5) years at the plant at which the unit is located. Daily records, along with the twelve (12)-month rolling tonnage or twelve (12)-month rolling average, shall be made available no later than one (1) month following any calendar month. The records shall be made available to the director upon request. The owner or operator shall maintain records of the following information for each month the unit is operated:

1. The identification number of each



unit and the name and address of the plant where the unit is located for each unit subject to this rule;

2. The calendar date of record;

3. The number of hours the unit is operated each day including start-ups, shutdowns, malfunctions, and the type and duration of maintenance and repair;

4. The date and results of each emissions inspection;

5. A summary of any emissions corrective maintenance taken;

6. The results of all compliance tests;

7. If a unit is equipped with a CEMS—

A. The identification of time periods during which SO₂ standards are exceeded, the reason for exceedance, and action taken to correct the exceedance and prevent similar future exceedances; and

B. The identification of the time periods for which operating conditions and pollutant data were not obtained, including reasons for not obtaining sufficient data, and a description of corrective actions taken;

8. The total heat input for each fuel used per emissions unit on a monthly basis;

9. The amount of each fuel consumed per emissions unit on a monthly basis;

10. The average heat content for each fuel used per emissions unit on a monthly basis;

11. The average percent sulfur for each fuel used per emissions unit on a monthly basis;

12. The emission rate in lbs per mmBtu for each unit on a monthly basis for those units complying with the limit in paragraph (3)(A)1. of this rule. The twelve (12)-month rolling averages must be made available upon request for the inspector to review no later than one (1) month following any calendar month;

13. The monthly emission rate in tons SO₂ for those units complying with the limit in paragraph (3)(A)2. of this rule. The twelve (12)-month rolling tonnages must be made available upon request for inspector review no later than one (1) month following any calendar month; and

14. Any other reports deemed necessary by the director.

(5) Test Methods. The following hierarchy of methods shall be used to determine if a unit qualifies for the low-emitter exemption in paragraph (1)(C)4. of this rule. If data is not available for an emission estimation method or an emission estimation method is impractical for a source, then the subsequent emission estimation method shall be used in its place:

(A) CEMS as specified in 10 CSR 10-6.110;

(B) Stack tests as specified in 10 CSR 10-6.110;

(C) Material/mass balance;

(D) AP-42 (EPA *Compilation of Air Pollution Emission Factors*) or FIRE (Factor Information and Retrieval System) (as updated);

(E) Other EPA documents as specified in 10 CSR 10-6.110;

(F) Sound engineering calculations; or

(G) Installations shall obtain department and EPA pre-approval of any other alternate emission estimation method not listed in this section before using such method to estimate emissions.

AUTHORITY: section 643.050, RSMo Supp. 2012. Original rule filed Dec. 16, 2008, effective Sept. 30, 2009. Amended: Filed March 13, 2013, effective Oct. 30, 2013.*

**Original authority: 643.050, RSMo 1965, amended 1972, 1992, 1993, 1995, 2011.*