

ILLINOIS POLLUTION CONTROL BOARD  
September 15, 1994

IN THE MATTER OF: )  
 )  
15% ROP PLAN CONTROL MEASURES FOR VOM )  
EMISSIONS - PART III: AIR OXIDATION ) R94-16  
AND ORGANIC EMISSIONS FROM STORAGE AND ) (Rulemaking)  
LOADING OPERATIONS: AMENDMENTS TO )  
35 ILL. ADM. CODE 211, 218 AND 219 )

Proposed Rule.            Second Notice.

OPINION AND ORDER OF THE BOARD (by E. Dunham):

On June 15, 1994, the Illinois Environmental Protection Agency (Agency) filed this proposal for rulemaking. Section 182(b)(1) of the Clean Air Act (42 USC 7511(b)(1)) requires all moderate and above ozone nonattainment areas to achieve a 15% reduction in 1990 emissions of volatile organic material (VOM) by 1996. The Chicago and the Metro-East St. Louis areas are classified as severe and moderate nonattainment areas for ozone and are subject to the 15% reduction requirement. The proposed rule represents Part III of the rules proposed in the Agency's 15% Rate of Progress Plan (ROP Plan). Section 182(b)(1) requires states to submit 15% ROP Plans within three years of the enactment of the CAA. Illinois submitted its plan on November 15, 1993. On January 21, 1994, the USEPA found the submitted plan to be incomplete because it was not accompanied by fully adopted rules. Illinois is currently on notice that it has 18 months to adopt the necessary rules before sanctions are imposed under Section 179(a) of the CAA (42 USC §7509(a)).

The Board's responsibility in this matter arises from the Environmental Protection Act (Act). (415 ILCS 5/1 et seq. (1992).) The Board is charged therein to "determine, define, and implement the environmental control standards applicable in the state of Illinois." (415 ILCS 5/5(b) (1992).) More generally, the Board's rulemaking charge is based on the system of checks and balances integral to the Illinois environmental governance: the Board bears responsibility for the rulemaking and principal adjudicatory functions; the Illinois Environmental Protection Agency (Agency) has primary responsibility for administration of the Act and the Board's regulations. The latter includes administering today's new regulation.

This proposal was filed pursuant to Section 28.5 of the Act. (415 ILCS 5/28.5 (1992).) Pursuant to the provisions of that section the Board is required to proceed within the set time frames toward the adoption of the regulation. The Board has no discretion to adjust these time frames under any circumstances. Today the Board acts to send this proposal to second notice under the Illinois Administrative Procedure Act (APA). (5 ILCS 100/1005-40 (1992).)

### PROCEDURAL HISTORY

The Board sent this proposal to first notice under the APA on June 23, 1994, without commenting on the merits of the proposal. The proposed rule was published in the Illinois Register on July 8, 1994, at 18 Ill. Reg. 10536 (Part 211), 18 Ill. Reg. 10549 (Part 218) and 18 Ill. Reg. 10584 (Part 219). A hearing was held on August 4, 1994, in Chicago, Illinois before Board hearing officer Diane O'Neill. Previously-scheduled second and third hearings were cancelled pursuant to Section 28.5(g) of the Act because a request for a second hearing was not received by the Board. (415 ILCS 5/28.5(g) (1992).) The comment period closed on August 22, 1994.

### PROPOSAL

The geographic areas affected by this proposal are the Chicago and Metro-East nonattainment areas. The proposed amendments to Subpart V increase the Total Resource Effectiveness (TRE) index and add a "once in always in" provision. This proposal also revises Subpart B (Organic Emissions from Storage and Loading Operations) of Parts 218 and 219. This revision is similar to the draft Control Techniques Guideline (CTG) and Alternative Control Technology (ACT) documents issued by the United States Environmental Protection Agency. The proposal adds the definitions of "fill" and "maximum true vapor pressure" to Part 211. The proposal also adds the definition for "opacity" to Part 211 from Part 240.

The proposal amends the air oxidation rules. The control requirements apply to any air oxidation process with a TRE index of 6.0 or less. The Agency has identified 5 potentially affected sources in the Chicago area. No air oxidation sources were found in the Metro-East area.

The proposal requires each affected owner or operator to reduce the VOM emissions vented by at least 98% by weight or to emit VOM at a concentration of less than 20 parts per million by volume, dry basis. The proposal also adds language which requires continued control even if a change in operations results in a TRE index that is above that which initially made the regulation applicable. Similarly phthalic anhydride air oxidation processes must maintain a control level of 90% or the equivalent of 50 ppmv, dry basis, until either the existing combustion device is considered to be replaced or December 31, 1999, whichever comes first.

The proposal affects owners or operators of VOL storage facilities in the Chicago and Metro-East nonattainment area who store VOL with a maximum true vapor pressure of 0.050 psia or greater but less than 11.1 psia in any tank reservoir, or other such container of more than 151 cubic meters (40,000 gal.)

The proposal requires each owner or operator of an organic liquid storage tank with a capacity of 40,000 gallons or more and a vapor pressure of 0.75 psia or greater but not exceeding 11.1 psia to install control systems. The control measures are specified according to the type of roof on the vessel containing the liquid. Owners or operators of organic liquid storage tanks with a vapor pressure of 0.50 psia or greater but less than 11.1 psia are required to maintain certain operational records for storage of VOL with a vapor pressure exceeding 0.75 psia to test and monitor operations at the storage tank.

#### PUBLIC COMMENTS

The Board received four public comments during the public comment period. Comments were submitted by the Department of Commerce and Community Affairs (DCCA) (PC #1), the Illinois Environmental Regulatory Group (IERG) (PC #2), the Agency (PC #3) and the Administrative Code Division of the Secretary of State (PC #4). The Board has considered all public comments, as well as all testimony and exhibits, in making its decisions in this matter. In general, there is no disagreement on the part of the participants and commenters on the substance of the proposal.

The comment from DCCA states that DCCA has reviewed the proposal for impact on small businesses. DCCA defers to the findings of the Board based on hearing and public comment. The Code Division suggest various form and typographical corrections which the Board accepts and incorporates into the proposed rules.

In its comment, IERG presents additional language suggested during the hearings. IERG recommends that Sections 218.120(a)(4)(C) and 219.120(a)(4)(C) be added to the proposed amendments. These new subsections would allow owners and operators who, prior to December 31, 1992, had installed control devices that were designed to reduce inlet VOM emissions by greater than or equal to 90 percent, to continue to operate the control devices at these design levels. IERG also suggest the inclusion of actual temperatures in the definition of "Maximum True Vapor Pressure" to replace "local maximum monthly average temperature". IERG also raises its concern over the applicability provision of the proposed rule in Sections 218.119 and 219.119. IERG states that these sections fail to reference each category of VOL storage containers subject to control requirements within the proposal. IERG also suggests the deletion of Sections 218.127(c) and 219.127(c) concerning approval of an operating plan.

The Agency in its comment expresses its agreement with the changes proposed by IERG. At hearing the Agency presented an errata sheet noting correction of typographic errors to the proposed amendments. (Exh. 1.) The Board will make the changes

recommended by IERG and agreed to by the Agency. The Board will also make the changes noted on the Agency's errata sheet.

#### CONCLUSION

The Board finds that the proposed rules are technically feasible and economically reasonable, and that the rules are necessary to meet the requirements of the Clean Air Act. We find that the record supports proceeding with the proposed rules as amended to second notice.

To assist comparison to today's proposal with the proposal as adopted for first notice the Board indicates significant revisions by highlighting (redlining) in the order that follows. Appropriate underlining and strikeouts are included within the highlighted text.

#### ORDER

The Board hereby proposes the following amendments to 35 Ill. Adm. Code 211, 218 and 219. The Board directs the Clerk to submit the following amendments to the Joint Committee on Administrative Rules for second notice.<sup>1</sup>

TITLE 35: ENVIRONMENTAL PROTECTION  
 SUBTITLE B: AIR POLLUTION  
 CHAPTER I: POLLUTION CONTROL BOARD  
 SUBCHAPTER c: EMISSION STANDARDS AND LIMITATIONS  
 FOR STATIONARY SOURCES

PART 211  
 DEFINITIONS AND GENERAL PROVISIONS

211.2300 Fill

211.3695 Maximum True Vapor Pressure

AUTHORITY: Implementing Sections 9, 9.1 and 10 and authorized by Section 27 and 28.5 of the Environmental Protection Act (~~Ill. Rev. Stat. 1991, ch. 111 $\frac{1}{2}$ , pars. 1009, 1009.1, 1010 and 1027~~), (~~P.A. 87-1213, effective September 26, 1992~~) [415 ILCS 5/9, 9.1, 10, 27 and 28.5 (1992)].

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<sup>1</sup> For mailing purposes, the Board has omitted from the order those portions to the tables of contents that are not proposed to be changed in this rulemaking. Interested persons may view the tables of contents in its entirety in the copy of the proposal submitted by the Agency and retained in the Clerk's file. An entire version including the full tables of contents was published in the Illinois Register, and a copy of that submittal is available in the Clerk's file.



## SUBPART B: DEFINITIONS

Section 211.2300 Fill

"Fill," for purposes of 35 Ill. Adm. Code 218.119 through 218.129 and 219.119 through 219.129, means the introduction of VOL into a storage vessel but not necessarily to complete capacity.

(Source: Added at \_\_\_ Ill. Reg. \_\_\_\_, effective \_\_\_\_\_)

Section 211.3695 Maximum True Vapor Pressure

"Maximum true vapor pressure" means the equilibrium partial pressure exerted by stored VOL at the temperature equal to the highest calendar-month average of the VOL storage temperature for VOLs stored above or below the ambient temperature or at the local maximum monthly average temperature of 75 degrees fahrenheit for the Chicago nonattainment area as defined at 35 Ill. Adm. Code 218.100 or 79 degrees fahrenheit for the Metro-East nonattainment area as defined at 35 Ill. Adm. Code 219.100 as reported by the National Weather Service for VOLs stored at the ambient temperature, as determined:

- a) In accordance with methods described in American Petroleum Institute Bulletin 2517, Evaporation Loss from External Floating Roof Tanks, incorporated by reference at 35 Ill. Adm. Code 218.112 and 219.112; or
- b) By ASTM Method D2879-83, incorporated by reference at 35 Ill. Adm. Code 218.112(a)(1) and 219.112(a)(1).

(Source: Added at \_\_\_ Ill. Reg. \_\_\_\_, effective \_\_\_\_\_)

Section 211.4130 Opacity

"Opacity" means

- a) For purposes of Part 212, a condition which renders material partially or wholly impervious to transmittance of light and causes obstruction of an observer's view. For the purposes of these regulations, the following equivalence between opacity and Ringelmann shall be employed:

<u>Opacity Percent</u>	<u>Ringelmann</u>
<u>10</u>	<u>0.5</u>
<u>20</u>	<u>1.</u>
<u>30</u>	<u>1.5</u>
<u>40</u>	<u>2.</u>
<u>60</u>	<u>3.</u>
<u>80</u>	<u>4.</u>

- b) That fraction of light, expressed in percent, which when transmitted from a source through a smoke-obscured path, is prevented from reaching the observer or instrument receiver.

(Source: Amended at \_\_\_ Ill. Reg. \_\_\_\_\_, effective \_\_\_\_\_)

TITLE 35: ENVIRONMENTAL PROTECTION  
 SUBTITLE B: AIR POLLUTION  
 CHAPTER I: POLLUTION CONTROL BOARD  
 SUBCHAPTER c: EMISSIONS STANDARDS AND LIMITATIONS  
 FOR STATIONARY SOURCES

PART 218  
 ORGANIC MATERIAL EMISSION STANDARDS AND LIMITATIONS FOR THE  
 CHICAGO AREA

SUBPART B: ORGANIC EMISSIONS FROM STORAGE AND LOADING OPERATIONS

Section	
<u>218.119</u>	<u>Applicability for VOL</u>
<u>218.120</u>	<u>Control Requirements for Storage Containers of VOL</u>
<u>218.121</u>	<u>Storage Containers of VPL</u>
<u>218.122</u>	Loading Operations
<u>218.123</u>	Petroleum Liquid Storage Tanks
<u>218.124</u>	External Floating Roofs
<u>218.125</u>	Compliance Dates <del>(Repealed)</del>
<u>218.126</u>	Compliance Plan <del>(Repealed)</del>
<u>218.127</u>	<u>Testing VOL Operations</u>
<u>218.128</u>	<u>Monitoring VOL Operations</u>
<u>218.129</u>	<u>Recordkeeping and Reporting for VOL Operations</u>

SUBPART V: AIR OXIDATION PROCESSES

Section	
<u>218.520</u>	Emission Limitations from Air Oxidation Processes
<u>218.521</u>	Definitions <del>(Repealed)</del>
<u>218.522</u>	<u>Savings Clause</u>
<u>218.523</u>	<u>Compliance</u>
<u>218.524</u>	<u>Determination of Applicability</u>
<u>218.525</u>	Emission Limitations for Air Oxidation Processes <u>(Renumbered)</u>
<u>218.526</u>	Testing and Monitoring
<u>218.527</u>	Compliance Date <del>(Repealed)</del>

AUTHORITY: Implementing Section 10 and authorized by Section 28.5 of the Environmental Protection Act ~~(Ill. Rev. Stat. 1991, ch. 111 $\frac{1}{2}$ , par. 1010) (P.A. 87-1213, effective September 26, 1992)~~ [415 ILCS 5/10 and 28.5 (1992)].

## SUBPART B: ORGANIC EMISSIONS FROM STORAGE AND LOADING OPERATIONS

Section 218.119      Applicability for VOL

The limitations of Section 218.120 of this Subpart shall apply to all storage containers of volatile organic liquid (VOL) with a maximum true vapor pressure of 0.5-0.75 psia or greater but less than 11.1 psia in any stationary tank, reservoir, or other container of more than 151 cubic meters (40,000 gal) capacity or greater, except to vessels as provided below:

- a) Vessels with a capacity greater than or equal to 40,000 gallons storing a liquid with a maximum true pressure of less than 0.5 psia;
- b) Vessels of coke oven by-product plants;
- c) Pressure vessels designed to operate in excess of 29.4 psia and without emissions to the atmosphere;
- d) Vessels permanently attached to mobile vehicles such as trucks, rail cars, barges, or ships;
- e) Vessels storing petroleum liquids; or
- f) Vessels used to store beverage alcohol.
- g) Vessels with storage capacity less than 40,000 gallons must comply with Section 218.129(f).

(Source: Added at \_\_\_\_\_ Ill. Reg. \_\_\_\_\_, effective \_\_\_\_\_)

Section 218.120      Control Requirements for Storage Containers of VOL

- a) Every owner or operator storing VOL in a vessel of 40,000 gallons or greater with a maximum true vapor pressure equal to 0.75 psia but less than 11.1 psia subject to the requirements of this Subpart shall reduce VOM 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 that is equipped with a vapor control system that meets the specifications contained in subsection (a)(4) below:
    - 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 foam- or liquid-filled seal mounted in contact with the liquid (liquid-mounted seal). A liquid-mounted seal means 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;

ii) Two 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, which is 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.

C) Each opening in a noncontact internal floating roof except for automatic bleeder vents (vacuum breaker vents) and the rim space vents is to 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 is to be equipped with a cover or lid which is to be maintained in a closed position at all times (i.e., 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 are to 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 are to 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 90 percent of the opening.
  - 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 subsection (a)(1)(A) through (H) above.
- 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 is to consist of two 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 Section 218.127(b)(4) of this Subpart, 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 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 Section 218.127(b)(4) of this Subpart.

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 noncontact 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 is to be equipped with a gasketed cover, seal, or lid that is to be maintained in a closed position at all times (i.e., no visible gap) except when the device is in actual use. Automatic bleeder vents are to 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 are to be set to 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 are to be gasketed. Each emergency roof drain is to be provided with a slotted membrane fabric cover that covers at least 90 percent of the area of the opening.

C) The roof shall be floating on the liquid at all times (i.e., off the roof leg supports) 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) A closed vent system and control device respectively shall meet the following specifications:

A) The closed vent system shall be designed to collect all VOM vapors and gases discharged from the storage vessel and operated with no detectable emissions as indicated by an instrument reading of less than 500 ppm above background and visual inspections, as determined by the methods specified in 40 CFR 60.485(c), incorporated by reference at Section 218.112(d) of this Part.

- B) The control device shall be designed and operated to reduce inlet VOM emissions by 95 percent 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, incorporated by reference at Section 218.112(d) of this Part.
- 5) An alternative emission control plan equivalent to the requirements of subsection (a)(1), (a)(2), (a)(3), or (a)(4) above that has been approved by the Agency and the USEPA in a federally enforceable permit or as a SIP revision.
- b) The owner or operator of each storage vessel with a design capacity equal to or greater than 40,000 gallons which contain VOL that, as stored, has a maximum true vapor pressure greater than or equal to 11.1 psia shall equip each storage vessel with a closed vent system and control device as specified in subsection (a)(4) above.
- c) Notwithstanding subsection (b) of this section, where an owner or operator can demonstrate that the control device installed on a storage vessel on or before December 31, 1992, was designed to reduce inlet VOM emissions by greater than or equal to 90 percent but less than 95 percent, the control device shall be operated to reduce inlet VOM emission by 90 percent or greater.

(Source: Added at \_\_\_\_ Ill. Reg.\_\_\_\_\_, effective\_\_\_\_\_)

Section 218.121 Storage Containers of VPL

No person shall cause or allow the storage of any ~~VOL~~ volatile petroleum liquid (VPL) with a vapor pressure of ~~17.24~~ 10.34 kPa (~~2.5~~ 1.5 psia) or greater at 294.3°K (70°F) or any gaseous organic material in any stationary tank, reservoir or other container of more than 151 cubic meters (40,000 gal) capacity unless such tank, reservoir or other container:

- a) Is a pressure tank capable of withstanding the vapor pressure of such liquid or the pressure of the gas, so as to prevent vapor or gas loss to the atmosphere at all times; or,
- b) Is designed and equipped with one of the following vapor loss control devices:
- 1) A floating roof which rests on the surface of the ~~VOL~~ VPL and is equipped with a closure seal or seals between the roof edge and the tank wall. Such floating roof shall not be permitted if the

VOL VPL has a vapor pressure of 86.19 kPa (12.5 psia) or greater at 294.3°K (70°F). No person shall cause or allow the emission of air contaminants into the atmosphere from any gauging or sampling devices attached to such tanks, except during sampling or maintenance operations.

- 2) A vapor recovery system consisting of:
  - A) A vapor gathering system capable of collecting 85% or more of the uncontrolled VOM that would be otherwise emitted to the atmosphere; and,
  - B) A vapor disposal system capable of processing such VOM so as to prevent its emission to the atmosphere. No person shall cause or allow the emission of air contaminants into the atmosphere from any gauging or sampling devices attached to such tank, reservoir or other container except during sampling.
- 3) Other equipment or means of equal efficiency approved by the Agency according to the provisions of 35 Ill. Adm. Code 201, and further processed consistent with Section 218.108.

(Source: Amended at \_\_\_Ill. Reg.\_\_\_\_\_, effective \_\_\_\_\_)

#### Section 218.125 Compliance Dates

Every owner or operator of a VOL or VPL storage vessel subject to the requirements of this Subpart shall comply with the requirements of this Subpart in accordance with the compliance schedule specified in the applicable subsection below:

- a) Every owner or operator of a VPL storage vessel of the type included in Sections 218.121, 218.123 and 218.124 of this Subpart shall have complied with the requirements of Sections 218.121, 218.123 and 218.124 by the date set forth in Section 218.106(a) or (b) of this Part.
- b) Every owner or operator of a VOL storage vessel of the type identified in Section 218.119 of this Subpart shall comply with the requirements of Section 218.120 of this Subpart as follows:
  - 1) For fixed roof tanks (Section 218.120(a)(1) of this Subpart), by March 15, 1996.
  - 2) For internal floating roof tanks (Section 218.120(a)(2) of this Subpart), either during the



next scheduled tank cleaning or by March 15, 2004, whichever comes first;

- 3) For external floating roof tanks (Section 218.120(a)(3) of this Subpart), either during the next scheduled tank cleaning or by March 15, 2004, whichever comes first; and,
- 4) For closed vent system and control device equipped tanks (Section 218.120(a)(4) of this Subpart), by March 15, 1996.

(Source: Added at \_\_\_Ill. Reg. \_\_\_, effective \_\_\_\_\_)

Section 218.127      Testing VOL Operations

The owner or operator of each storage vessel specified in Section 218.119 of this Subpart shall comply with the requirements of subsection (a), (b), or (c) below. The applicable subsection for a particular storage vessel depends on the control equipment installed to meet the requirements of this Subpart.

- a) After installing the control equipment necessary for the source to comply with the requirements of Section 218.120(a)(1) or (2) of this Subpart (permanently affixed roof and internal floating roof), each owner or operator shall:
  - 1) 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.
  - 2) 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 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 45 days. If a failure that is detected during inspections required in this subsection cannot be repaired within 45 days and if the vessel cannot be emptied within 45 days, the owner or operator may request

a 30-day extension from the Agency in the inspection report required in Section 218.129(a)(3) of this Subpart. 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 30 days.

- 3) For vessels equipped with both primary and secondary seals
  - A) Visually inspect the vessel as specified in subsection (a)(4) below at least every 5 years; or
  - B) Visually inspect the vessel as specified in subsection (a)(2) above.
- 4) 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 10 percent open area, the owner or operator shall repair the items as necessary so that none of the conditions specified in this 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 10 years in the case of vessels conducting the annual visual inspection as specified in subsections (a)(2) and (a)(3)(B) above and at intervals no greater than 5 years in the case of vessels specified in subsection (a)(3)(A) above.
- 5) Notify the Agency in writing at least 30 days prior to the filling or refilling of each storage vessel for which an inspection is required by subsections (a)(1) and (a)(4) above to afford the Agency the opportunity to have an observer present. If the inspection required by subsection (a)(4) above is not planned and the owner or operator could not have known about the inspection 30 days in advance of refilling the tank, the owner or operator shall notify the Agency at least 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 Agency at least 7 days prior to the refilling.

b) The owner or operator of external floating roof tanks shall:

1) 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.

A) 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 60 days of the initial fill with VOL and at least once every 5 years thereafter.

B) Measurements of gaps between the tank wall and the secondary seal shall be performed within 60 days of the initial fill with VOL and at least once per year thereafter.

C) If any source ceases to store VOL for a period of 1 year or more, subsequent introduction of VOL into the vessel shall be considered an initial fill for the purposes of subsections (b)(1)(A) and (b)(1)(B) above.

2) Determine gap widths and areas in the primary and secondary seals individually according to the following procedures:

A) Measure seal gaps, if any, at one or more floating roof levels when the roof is floating off the roof leg supports;

B) Measure seal gaps around the entire circumference of the tank in each place where a 1/8 inch 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

C) Determine the total surface area of each gap described in subsection (b)(2)(B) above 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.

- 3) 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 subsection (b)(4) below.
- 4) Make necessary repairs or empty the storage vessel within 45 days of identification in any inspection for seals not meeting the requirements listed in subsections (b)(4)(A) and (B) below:
  - A) The accumulated area of gaps between the tank wall and the mechanical shoe or liquid-mounted primary seal shall not exceed 10 in.<sup>2</sup> per foot of tank diameter, and the width of any portion of any gap shall not exceed 1.5 in. There are to be no holes, tears, or other openings in the shoe, seal fabric, or seal envelope.
  - B) The secondary seal is to meet the following requirements:
    - i) The secondary seal is to 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 subsection (b)(2)(C) above.
    - ii) 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 1.0 in.<sup>2</sup> per foot of tank diameter, and the width of any portion of any gap shall not exceed 0.5 in. There shall be no gaps between the tank wall and the secondary seal when used in combination with a vapor mounted primary seal.
    - iii) There are to be no holes, tears, or other openings in the seal or seal fabric.
  - C) If a failure that is detected during inspections required in Section 218.127(b)(1) of this Subpart cannot be repaired within 45

days and if the vessel cannot be emptied within 45 days, the owner or operator may request a 30-day extension from the Agency in the inspection report required in Section 218.129(b)(4) of this Subpart. 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.

- 5) Notify the Agency 30 days in advance of any gap measurements required by subsection (b)(1) above to afford the Agency the opportunity to have an observer present.
- 6) Visually inspect the external floating roof, the primary seal, secondary seal, and fittings each time the vessel is emptied and degassed.
  - A) 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 subsection exist before filling or refilling the storage vessel with VOL.
  - B) For all the inspections required by subsection (b)(6) above, the owner or operator shall notify the Agency in writing at least 30 days prior to the filling or refilling of each storage vessel to afford the Agency the opportunity to inspect the storage vessel prior to refilling. If the inspection required by subsection (b)(6) above is not planned and the owner or operator could not have known about the inspection 30 days in advance of refilling the tank, the owner or operator shall notify the Agency at least 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 Agency at least 7 days prior to the refilling.

- c) The owner or operator of each source that is equipped with a closed vent system and control device as required in Section 218.120(a)(4) of this Subpart (other than a flare) shall:
- 1) Submit for approval by the Agency an operating plan containing the information listed below:
    - A) Documentation demonstrating that the control device will achieve the required control efficiency during maximum loading conditions. This documentation is to include a description of the gas stream which enters the control device, including flow and VOM content under varying liquid level conditions (dynamic and static) and manufacturer's design specifications for the control device. If the control device or the closed vent capture system receives vapors, gases, or liquids other than fuels from sources that are not designated sources under this rule, the efficiency demonstration is to include consideration of all vapors, gases, and liquids received by the closed vent capture system and control device. If an enclosed combustion device with a minimum residence time of 0.75 seconds and a minimum temperature of 816°C is used to meet the 95 percent requirements, documentation that those conditions will exist is sufficient to meet the requirements of this paragraph; and
    - B) A description of the parameter or parameters to be monitored to ensure that the control device will be operated in conformance with its design and an explanation of the criteria used for selection of that parameter (or parameters).
  - 2) Operate the closed vent system and control device and monitor the parameters of the closed vent system and control device in accordance with the operating plan submitted to the Agency in accordance with subsection (c)(1) above, unless the plan was modified by the Agency during the review process. In this case, the modified plan applies.
- d) The owner or operator of each source that is equipped with a closed vent system and a flare to meet the requirements of Section 218.120(a)(4) of this Subpart shall meet the requirements specified in the general control device requirements of 40 CFR 60.18(e) and (f).

incorporated by reference at Section 218.112(d) of this Part.

(Source: Added at \_\_\_ Ill. Reg. \_\_\_, effective \_\_\_\_\_)

Section 218.128      Monitoring VOL Operations

- a) Except as provided in subsection (d) below, the owner or operator of each storage vessel with a design capacity greater than or equal to 40,000 gallons storing a liquid with a maximum true vapor pressure that is normally less than 0.75 psia shall notify the Agency within 30 days when the maximum true vapor pressure of the liquid exceeds 0.75 psia.
  
- b) Available data on the storage temperature may be used to determine the maximum true vapor pressure.
  - 1) 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.
  
  - 2) For other liquids, the vapor pressure:
    - A) Determined by ASTM Method D2879-83, incorporated by reference at Section 218.112(a)(1) of this Part;
  
    - B) Measured by an appropriate method approved by the Agency and USEPA; or
  
    - C) Calculated by an appropriate method approved by the Agency and USEPA.
  
- c) The owner or operator of each vessel storing a mixture of indeterminate or variable composition shall be subject to the following:
  - 1) 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 subsection (b) above.
  
  - 2) For vessels in which the vapor pressure of the anticipated liquid composition is 0.5 psia or greater but less than 0.75 psia above the cutoff for monitoring but below the cutoff for controls

as defined in Section 218.119 of this Subpart, an initial physical test of the vapor pressure is required; a physical test at least once every 6 months thereafter is required as determined by the following methods:

- A) ASTM Method D2879-83, incorporated by reference at Section 218.112(a)(1) of this Part; or
  - B) ASTM Method D323-82, incorporated by reference at Section 218.112(a)(25) of this Part; or
  - C) As measured by an appropriate method approved Agency.
- d) The owner or operator of each vessel equipped with a closed vent system and control device meeting the specifications of Section 218.120 of this Subpart is exempt from the requirements of subsections (a) and (b) above.

(Source: Added at \_\_\_\_ Ill. Reg.\_\_\_\_, effective \_\_\_\_\_)

Section 218.129            Recordkeeping and Reporting for VOL  
Operations

The owner or operator of each storage vessel specified in Section 218.120(a) of this Subpart shall maintain records and furnish reports as required by subsection (a), (b), or (c) below as appropriate for the control equipment installed to meet the requirements of Section 218.120. The owner or operator shall keep copies of all reports and records required by this Section, except for the records required by subsection (c)(1) below, for at least 3 years. The records required by subsection (c)(1) below shall be kept for the life of the control equipment.

- a) After installing control equipment in accordance with Section 218.120(a)(1) or (2) of this Subpart (fixed roof and internal floating roof), the owner or operator shall:
  - 1) Furnish the Agency with a report that describes the control equipment and certifies that the control equipment meets the specifications of Sections 218.120(a)(1) and 218.127(a)(1) of this Subpart;
  - 2) Keep a record of each inspection performed as required by Sections 218.127(a)(1), (a)(2), (a)(3), and (a)(4) of this Subpart. 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 (seals, internal floating roof, and fittings);

- 3) If any of the conditions described in Section 218.127(a)(2) of this Subpart are detected during the annual visual inspection required by Section 218.127(a)(2), report to the Agency within 30 days of 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
  - 4) After each inspection required by Section 218.127(a)(3) of this Subpart where holes or tears in the seal or seal fabric, or defects in the internal floating roof, or other control equipment defects listed in Section 218.127(a)(3)(B) of this Subpart are discovered, report to the Agency within 30 days of the inspection the identity of the storage vessel and the reason it did not meet the specifications of Section 218.120(a)(1) or (2) or Section 218.127(a) of this Subpart, and list each repair made.
- b) After installing control equipment in accordance with Section 218.120(a)(3) of this Subpart (external floating roof), the owner or operator shall:
- 1) Furnish the Agency with a report that describes the control equipment and certify that the control equipment meets the specifications of Sections 218.120(a)(3) and 218.127(b)(2), (b)(3), and (b)(4) of this Subpart;
  - 2) Within 60 days of performing the seal gap measurements required by Section 218.127(b)(1) of this Subpart, furnish the Agency with a report that contains:
    - A) The date of measurement;
    - B) The raw data obtained in the measurement; and
    - C) The calculations of this Subpart described in Section 218.127(b)(2) and (b)(3) of this Subpart;
  - 3) Maintain records of each gap measurement performed as required by Section 218.127(b) of this Subpart. Such records shall identify the storage vessel in which the measurement was performed and shall contain:

- A) The date of measurement;
  - B) The raw data obtained in the measurement; and
  - C) The calculations described in Section 218.127(b)(2) and (b)(3) of this Subpart;
- 4) After each seal gap measurement that detects gaps exceeding the limitations specified by Section 218.127(b)(4) of this Subpart, submit a report to the Agency within 30 days of the inspection identifying the vessel and containing the information specified in subsection (b)(2) above and the date the vessel was emptied or the repairs were made and the date of repair.
- c) After installing control equipment in accordance with Section 218.120(a)(4) of this Subpart (closed vent system and control device other than a flare), the owner or operator shall maintain the following records:
- 1) A copy of the operating plan; and
  - 2) The measured values of the parameters monitored in accordance with Section 218.127(c)(2) of this Subpart.
- d) After installing a closed vent system and flare to comply with Section 218.127 of this Subpart, the owner or operator shall:
- 1) Provide the Agency with a report containing the measurements required by 40 CFR 60.18 (f)(1), (2), (3), (4), (5), and (6), incorporated by reference at Section 218.112(d) of this Part, within 6 months of 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), incorporated by reference at Section 218.112(d) of this Part, in which the pilot flame was absent.
- e) The owner or operator shall maintain all records required by this Section, except for the records required by subsection (f) below, for at least 3 years. The records required by subsection (f) below shall be kept for the life of the source.
- f) The owner or operator of each storage vessel specified in Section 218.119 of this Subpart shall maintain readily accessible records of the dimension of the

storage vessel and an analysis of the capacity of the storage vessel. Each storage vessel with a design capacity less than 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. Section 218.128 of this Subpart.

- g) Except as provided in Section 218.128 (c) and (d) of this Subpart, the owner or operator of each storage vessel subject to the requirements in Section 218.120 with a design capacity greater than or equal to 40,000 gallons storing a liquid with a maximum true vapor pressure greater than or equal to 0.5 psia but less than 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.

(Source: Added at \_\_\_\_ Ill. Reg. \_\_\_\_, effective \_\_\_\_\_)

#### SUBPART V: AIR OXIDATION PROCESSES

##### Section 218.520~~218.525~~ Emission Limitations for Air Oxidation Processes

- a) No person shall cause or allow the emission of VOM from any process vent stream unless the process vent stream is vented to a combustion device which is designed and operated either:
- 1) To reduce the volatile organic emissions vented to it with an efficiency of at least ninety eight percent (98%) by weight; or
  - 2) To emit VOM at a concentration less than twenty parts per million by volume, dry basis.
- b) Combustion Device at a Phthalic Anhydride Air Oxidation Process
- 1) Notwithstanding subsection (a) above, and subject to subsection (b)(2) below, no person shall cause or allow the emissions of VOM through an existing combustion device at an phthalic anhydride air oxidation process, unless the combustion device is operated to achieve:
    - A) 90% control of the volatile organic emissions vented to it; or

B) VOM emissions concentration of less than 50 parts per million by volume, dry basis.

2) ~~A air oxidation process vent stream for which an~~  
Any existing combustion device subject to  
~~subsection (b) (1) above is employed to control~~  
~~process VOM emissions is not required to meet the~~  
98 percent emissions limit until set forth in  
~~subsection (a) above either upon replacing the~~  
~~combustion device is replaced for any other~~  
~~reasons, which shall be considered to include~~  
including, but not be limited to, normal  
maintenance, malfunction, accident, and  
obsolescence, or the date of December 31, 1999,  
whichever comes first. ~~The A~~ combustion device is  
 considered to be replaced when

~~1A)~~ All of the device is replaced; or

~~2B)~~ When the cost of the repair of the device or  
 the cost of replacement of part of the device  
 exceeds 50% of the cost of replacing the  
 entire device with a device which complies.

c) The limitations of subsection (a) above shall de not  
 apply to any process vent stream or combination of  
 process vent streams ~~which has with~~ a Total Resource  
 Effectiveness Index (TRE) ~~greater less~~ than ~~1.0 or~~  
equal to 6.0. TRE shall be as determined by the  
 following methods:

1) If an air oxidation process has more than one  
 process vent stream, the TRE shall be the more  
stringent of either the TRE based upon a  
combination of the process vent streams, or the  
TRE based upon each individual process vent  
stream.

2) The TRE of a process vent stream and the TRE of a  
combination of process vent streams, whichever is  
applicable, shall be determined according to the  
 following equation:

$$TRE = \frac{E^{-1} [a + bF^n + cF + dFH + e(FH)^n + fF^{0.5}]}{E^{-1}}$$

where:

$$n = 0.88;$$

TRE = Total resource effectiveness index;

F = Vent stream flowrate (scm/min), at  
 a standard temperature of 20°C;

E = Hourly measured emissions in kg/hr;

H = Net heating value of vent stream (MJ/scm), where the net enthalpy per mole of offgas is based on combustion at 25°C and 760 mm Hg, but the standard temperature for determining the volume corresponding to one mole is 20°C, as in the definition of "Flow";

a, b, c,

d, e

and f = Coefficients obtained by use of Appendix D.

- 3) For nonchlorinated process vent streams, if the net heating value, H, is greater than 3.6 MJ/scm, F shall be replaced by F' for purposes of calculating TRE. F' is computed as follows:

$$F' = FH / 3.6$$

where F and H are as defined in subsection (c)(2) of this Section.

- 4) The actual numerical values used in the equation described in subsection (c)(2) above shall be determined as follows:
- A) All reference methods and procedures for determining the flow, (F), hourly emissions, (E), and net heating, (H), value shall be in accordance with Appendix C.
- B) All coefficients described in subsection (c)(2) of this Section shall be in accordance with Appendix D.

(Source: Renumbered from Section 218.525 and amended at \_\_\_Ill. Reg.\_\_\_\_\_, effective \_\_\_\_\_)

#### Section 218.522 Savings Clause

The owner or operator of an air oxidation process with a TRE of 1.0 or less shall have complied with the requirements of Section 218.520 (a) of this Subpart by the dates set forth in Section 218.106 (a) and (b) of this Part. Sources that are subject to 218.520 (b) of this Subpart, which become subject to the control requirements of 218.520 (a) of this Subpart after the compliance dates set out in 218.106 (a) and (b) of this Part shall comply with the timetable set forth within Section 218.520 (b).

(Source: Added at \_\_\_Ill. Reg.\_\_\_\_\_, effective \_\_\_\_\_)

Section 218.523 Compliance

The emissions limitations for air oxidation processes located in Section 218.520 (a) of this Subpart are applicable to air oxidation processes on the effective date of that Section.

- a) An owner or operator of an air oxidation process with a TRE of 6.0 or less that is subject to the requirements of Section 218.520(a) of this Subpart on the effective date of that Section shall comply with the provisions of Section 218.520(a) by December 31, 1999, or upon startup of the emission unit, whichever comes first. This subsection does not supersede the Savings Clause rule in Section 218.522 of this Part.
- b) An owner or operator of an air oxidation process that becomes subject to the requirements of Section 218.520(a) of this Subpart after the effective date of that Section shall comply with the requirements of Section 218.520(a) upon startup of the emission unit.

(Source: Added at 18 Ill. Reg. \_\_\_\_\_, effective \_\_\_\_\_)

Section 218.524 Determination of Applicability

- a) Sources subject to the requirements of Section 218.520(a) of this Subpart either through application of 218.520(c) of this Subpart or through continued application under 218.522 of this Subpart shall continue to be subject to the applicable limitations even if operations change so as to result in a TRE that is above that which initially made the regulation applicable to the source's operations.
- b) Notwithstanding Section 218.520(c) of this Subpart, any air oxidation process that utilizes a combustion device to control process vent streams at any time shall maintain the process in compliance with the provisions of Section 218.520(a) of this Subpart at all times thereafter.

(Source: Added at 18 Ill. Reg. \_\_\_\_\_, effective \_\_\_\_\_)

Section 218.525 Emission Limitations for Air Oxidation Processes (Renumbered)

(Source: Section 218.525 renumbered to Section 218.520 at 18 Ill. Reg. \_\_\_\_\_ effective \_\_\_\_\_)

Section 218.Appendix C

Reference Test Methods For Air Oxidation Processes and Procedures

## Introduction

This Appendix presents the reference methods and procedures required for implementing Reasonably Available Control Technology (RACT). Methods and procedures are identified for two types of RACT implementation:

- a) Determination of VOM destruction efficiency for evaluating compliance with the 98 weight percent VOM reduction or 20 ppmv emission limit specified in Sections ~~215.520~~ 218.520 through ~~215.527~~ 218.527 of this Part; and
- b) Determination of offgas flowrate, hourly emissions and stream net heating value for calculating TRE.

All reference methods identified in this Appendix refer to the reference methods specified at 40 CFR 60, Appendix A, incorporated by reference in Section ~~215.105~~ 218.112 of this Part.

#### VOM DESTRUCTION EFFICIENCY DETERMINATION

The following reference methods and procedures are required for determining compliance with the percent destruction efficiency specified in Sections ~~215.520~~ 218.520 through ~~215.527~~ 218.527 of this Part.

- a) Reference Method 1 or 1A for selection of the sampling site. The control device inlet sampling site for determination of vent stream molar composition or total organic compound destruction efficiency shall be prior to the inlet of any control device and after all recovery devices.
- b) Reference Methods 2, 2A, 2C or 2D for determination of the volumetric flowrate.
- c) Reference Method 3 to measure oxygen concentration of the air dilution correction. The emission sample shall be corrected to 3 percent oxygen.
- d) Reference Method 25 (a) to determine the concentration of total organic compounds (minus methane and ethane) in the control device outlet and total organic compound reduction efficiency of the control device.

#### TRE DETERMINATION

The following reference methods and procedures are required for determining the offgas flowrate, hourly emissions, and the net heating value of the gas combusted to calculate the vent stream TRE.

- a) Reference Method 1 or 1A for selection of the sampling site. The sampling site for the vent stream flowrate and molar composition determination prescribed in (b) and (c) shall be prior to the inlet of any combustion device, prior to any

post-reactor dilution of the stream with air and prior to any post-reactor introduction of halogenated compounds into the vent stream. Subject to the preceding restrictions on the sampling site, it shall be after the final recovery device. If any gas stream other than the air oxidation vent stream is normally conducted through the recovery system of the affected facility, such stream shall be rerouted or turned off while the vent stream is sampled, but shall be routed normally prior to the measuring of the initial value of the monitored parameters for determining compliance with the recommended RACT. If the air oxidation vent stream is normally routed through any equipment which is not a part of the air oxidation process as defined in 35 Ill. Adm. Code ~~211.122~~ 211.350 of this Part, such equipment shall be bypassed by the vent stream while the vent stream is sampled, but shall not be bypassed during the measurement of the initial value of the monitored parameters for determining compliance with Subpart V.

- b) The molar composition of the vent stream shall be determined using the following methods:
- 1) Reference Method 18 to measure the concentration of all organics, including those containing halogens, unless a significant portion of the compounds of interest are polymeric (high molecular weight), can polymerize before analysis or have low vapor pressures, in which case Reference Method 25(a) shall be used.
  - 2) ASTM D1946-67 (reapproved 1977), incorporated by reference in Section ~~215.105~~ 218.112 of this Part, to measure the concentration of carbon monoxide and hydrogen.
  - 3) Reference Method 4 to measure the content of water vapor, if necessary.
- c) The volumetric flowrate shall be determined using Reference Method 2, 2A, 2C or 2D, as appropriate.
- d) The net heating value of the vent stream shall be calculated using the following equation:

$$H = K \sum_{i=1}^n C_i H_i$$

Where:

H = Net heating value of the sample, MJ/scm, where the net enthalpy per mole of offgas is based on combustion at 25°C and 760 mm Hg, but the standard temperature for determining the volume corresponding to one mole is 20°C, as in the definition of F (vent stream flowrate) below.



- K = Constant,  $1.740 \times 10^{-7}$  (1/ppm) (mole/scm) (MJ/kcal) where standard temperature for mole/scm is 20°C.
- C<sub>i</sub> = Concentration of sample component i, reported on a wet basis, in ppm, as measured by Reference Method 18 or ASTM D1946-67 (reapproved 1977), incorporated by reference in Section ~~215.105~~ 218.112 of this Part.
- H<sub>i</sub> = Net heat of combustion of sample component i, kcal/mole based on combustion at 25°C and 760 mm Hg. If published values are not available or cannot be calculated, the heats of combustion of vent stream components are required to be determined using ASTM D2382-76, incorporated by reference in Section ~~215.105~~ 218.112 of this Part.

- e) The emission rate of total organic compounds in the process vent stream shall be calculated using the following equation:

$$E = K \quad F \quad \sum_{i=1}^n C_i M_i$$

Where:

- E = Emission rate of total organic compounds (minus methane and ethane) in the sample in kg/hr;
- K = Constant  $2.494 \times 10^{-6}$  (1/ppm) (mole/scm) (kg/g) (min/hr), where standard temperature for (mole/scm) is 20°C;
- M<sub>i</sub> = Molecular weight of sample component i (g/mole);
- F = Vent stream flowrate (scm/min), at a standard temperature of 20°C.
- f) The total vent stream concentration (by volume) of compounds containing halogens (ppmv, by compound) shall be summed from the individual concentrations of compounds containing halogens which were measured by Reference Method 18.

(Source: Amended at \_\_Ill. Reg.\_\_\_\_\_, effective \_\_\_\_\_)

TITLE 35: ENVIRONMENTAL PROTECTION  
 SUBTITLE B: AIR POLLUTION  
 CHAPTER I: POLLUTION CONTROL BOARD  
 SUBCHAPTER c: EMISSIONS STANDARDS AND LIMITATIONS  
 FOR STATIONARY SOURCES

PART 219  
 ORGANIC MATERIAL EMISSION STANDARDS AND LIMITATIONS FOR THE  
 CHICAGO AREA

SUBPART B: ORGANIC EMISSIONS FROM STORAGE AND LOADING OPERATIONS

Section

- 219.119     Applicability for VOL
- 219.120     Control Requirements for Storage Containers of VOL
- 219.121     Storage Containers of VPL
- 219.122     Loading Operations
- 219.123     Petroleum Liquid Storage Tanks
- 219.124     External Floating Roofs
- 219.125     Compliance Dates ~~(Repealed)~~
- 219.126     Compliance Plan (Repealed)
- 219.127     Testing VOL Operations
- 219.128     Monitoring VOL Operations
- 219.129     Recordkeeping and Reporting for VOL Operations

SUBPART V: AIR OXIDATION PROCESSES

Section

- 219.520     Emission Limitations from Air Oxidation Processes
- 219.521     Definitions (Repealed)
- 219.522     Savings Clause
- 219.523     Compliance
- 219.524     Determination of Applicability
- 219.525     Emission Limitations for Air Oxidation Processes  
                   (Renumbered)
- 219.526     Testing and Monitoring
- 219.527     Compliance Date (Repealed)

AUTHORITY: Implementing Section 10 and authorized by Section 28.5 of the Environmental Protection Act ~~(Ill. Rev. Stat. 1991, ch. 111 $\frac{1}{2}$ , par. 1010) (P.A. 87-1213, effective September 26, 1992)~~ [415 ILCS 5/10 and 28.5 (1992)].

SUBPART B: ORGANIC EMISSIONS FROM STORAGE AND LOADING OPERATIONS

Section 219.119            Applicability for VOL

The limitations of Section 219.120 of this Subpart shall apply to all storage containers of volatile organic liquid (VOL) with a maximum true vapor pressure of 0.5-0.75 psia or greater but less than 11.1 psia in any stationary tank, reservoir, or other

container of more than 151 cubic meters (40,000 gal) capacity or greater, except to vessels as provided below:

- a) Vessels with a capacity greater than or equal to 40,000 gallons storing a liquid with a maximum true pressure of less than 0.5 psia;
- b) Vessels of coke oven by-product plants;
- c) Pressure vessels designed to operate in excess of 29.4 psia and without emissions to the atmosphere;
- d) Vessels permanently attached to mobile vehicles such as trucks, rail cars, barges, or ships;
- e) Vessels storing petroleum liquids; or
- f) Vessels used to store beverage alcohol.
- g) Vessels with storage capacity less than 40,000 gallons must comply with Section 219.129(f).

(Source: Added at \_\_\_\_\_ Ill. Reg. \_\_\_\_\_, effective \_\_\_\_\_)

Section 219.120 Control Requirements for Storage Containers of VOL

- a) Every owner or operator storing VOL in a vessel of 40,000 gallons or greater with a maximum true vapor pressure equal to 0.75 psia but less than 11.1 psia subject to the requirements of this Subpart shall reduce VOM 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 that is equipped with a vapor control system that meets the specifications contained in subsection (a)(4) below:
    - 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 foam- or liquid-filled seal mounted in contact with the liquid (liquid-mounted seal). A liquid-mounted seal means 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;
  - ii) Two 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, which is 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.
- C) Each opening in a noncontact internal floating roof except for automatic bleeder vents (vacuum breaker vents) and the rim space vents is to 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 is to be equipped with a cover or lid which is to be maintained in a closed position at all times (i.e., 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 are to 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 are to 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 90 percent of the opening.
  - 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 subsection (a)(1)(A) through (H) above.
- 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 is to consist of two 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 Section 219.127(b)(4) of this Subpart, 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 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 Section 219.127(b)(4) of this Subpart.
    - 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 noncontact

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 is to be equipped with a gasketed cover, seal, or lid that is to be maintained in a closed position at all times (i.e., no visible gap) except when the device is in actual use. Automatic bleeder vents are to 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 are to be set to 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 are to be gasketed. Each emergency roof drain is to be provided with a slotted membrane fabric cover that covers at least 90 percent of the area of the opening.

C) The roof shall be floating on the liquid at all times (i.e., off the roof leg supports) 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) A closed vent system and control device respectively shall meet the following specifications:

A) The closed vent system shall be designed to collect all VOM vapors and gases discharged from the storage vessel and operated with no detectable emissions as indicated by an instrument reading of less than 500 ppm above background and visual inspections, as determined by the methods specified in 40 CFR 60.485(c), incorporated by reference at Section 219.112(d) of this Part.

B) The control device shall be designed and operated to reduce inlet VOM emissions by 95 percent 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, incorporated by reference at Section 219.112(d) of this Part.

- 5) An alternative emission control plan equivalent to the requirements of subsection (a)(1), (a)(2), (a)(3), or (a)(4) above that has been approved by the Agency and the USEPA in a federally enforceable permit or as a SIP revision.
- b) The owner or operator of each storage vessel with a design capacity equal to or greater than 40,000 gallons which contain VOL that, as stored, has a maximum true vapor pressure greater than or equal to 11.1 psia shall equip each storage vessel with a closed vent system and control device as specified in subsection (a)(4) above.
- c) Notwithstanding subsection (b) of this section, where an owner or operator can demonstrate that the control device installed on a storage vessel on or before December 31, 1992, was designed to reduce inlet VOM emissions by greater than or equal to 90 percent but less than 95 percent, the control device shall be operated to reduce inlet VOM emission by 90 percent or greater.

(Source: Added at \_\_\_\_\_ Ill. Reg. \_\_\_\_\_, effective \_\_\_\_\_)

Section 219.121 Storage Containers of VPL

No person shall cause or allow the storage of any ~~VOL~~ volatile petroleum liquid (VPL) with a vapor pressure of ~~17.24~~ 10.34 kPa (~~2.5~~ 1.5 psia) or greater at 294.3°K (70°F) or any gaseous organic material in any stationary tank, reservoir or other container of more than 151 cubic meters (40,000 gal) capacity unless such tank, reservoir or other container:

- a) Is a pressure tank capable of withstanding the vapor pressure of such liquid or the pressure of the gas, so as to prevent vapor or gas loss to the atmosphere at all times; or,
- b) Is designed and equipped with one of the following vapor loss control devices:
- 1) A floating roof which rests on the surface of the ~~VOL~~ VPL and is equipped with a closure seal or seals between the roof edge and the tank wall. Such floating roof shall not be permitted if the ~~VOL~~ VPL has a vapor pressure of 86.19 kPa (12.5 psia) or greater at 294.3°K (70°F). No person shall cause or allow the emission of air contaminants into the atmosphere from any gauging or sampling devices attached to such tanks, except during sampling or maintenance operations.
  - 2) A vapor recovery system consisting of:

- A) A vapor gathering system capable of collecting 85% or more of the uncontrolled VOM that would be otherwise emitted to the atmosphere; and,
  - B) A vapor disposal system capable of processing such VOM so as to prevent its emission to the atmosphere. No person shall cause or allow the emission of air contaminants into the atmosphere from any gauging or sampling devices attached to such tank, reservoir or other container except during sampling.
- 3) Other equipment or means of equal efficiency approved by the Agency according to the provisions of 35 Ill. Adm. Code 201, and further processed consistent with Section 219.108.

(Source: Amended at \_\_\_Ill. Reg.\_\_\_\_\_, effective\_\_\_\_\_)

Section 219.125 Compliance Dates

Every owner or operator of a VOL or VPL storage vessel subject to the requirements of this Subpart shall comply with the requirements of this Subpart in accordance with the compliance schedule specified in the applicable subsection below:

- a) Every owner or operator of a VPL storage vessel of the type included in Sections 219.121, 219.123 and 219.124 of this Subpart shall have complied with the requirements of Sections 219.121, 219.123 and 219.124 by the date set forth in Section 219.106(a) or (b) of this Part.
- b) Every owner or operator of a VOL storage vessel of the type identified in Section 219.119 of this Subpart shall comply with the requirements of Section 219.120 of this Subpart as follows:
  - 1) For fixed roof tanks (Section 219.120(a)(1) of this Subpart), by March 15, 1996.
  - 2) For internal floating roof tanks (Section 219.120(a)(2) of this Subpart), either during the next scheduled tank cleaning or by March 15, 2004, whichever comes first;
  - 3) For external floating roof tanks (Section 219.120(a)(3) of this Subpart), either during the next scheduled tank cleaning or by March 15, 2004, whichever comes first; and,



- 4) For closed vent system and control device equipped tanks (Section 219.120(a)(4) of this Subpart), by March 15, 1996.

(Source: Added at \_\_\_Ill. Reg. \_\_\_, effective \_\_\_\_\_)

Section 219.127      Testing VOL Operations

The owner or operator of each storage vessel specified in Section 219.119 of this Subpart shall comply with the requirements of subsection (a), (b), or (c) below. The applicable subsection for a particular storage vessel depends on the control equipment installed to meet the requirements of this Subpart.

- a) After installing the control equipment necessary for the source to comply with the requirements of Section 219.120(a)(1) or (2) of this Subpart (permanently affixed roof and internal floating roof), each owner or operator shall:
- 1) 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.
  - 2) 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 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 45 days. If a failure that is detected during inspections required in this subsection cannot be repaired within 45 days and if the vessel cannot be emptied within 45 days, the owner or operator may request a 30-day extension from the Agency in the inspection report required in Section 219.129(a)(3) of this Subpart. 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 30 days.

- 3) For vessels equipped with both primary and secondary seals
  - A) Visually inspect the vessel as specified in subsection (a)(4) below at least every 5 years; or
  - B) Visually inspect the vessel as specified in subsection (a)(2) above.
- 4) 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 10 percent open area, the owner or operator shall repair the items as necessary so that none of the conditions specified in this 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 10 years in the case of vessels conducting the annual visual inspection as specified in subsections (a)(2) and (a)(3)(B) above and at intervals no greater than 5 years in the case of vessels specified in subsection (a)(3)(A) above.
- 5) Notify the Agency in writing at least 30 days prior to the filling or refilling of each storage vessel for which an inspection is required by subsections (a)(1) and (a)(4) above to afford the Agency the opportunity to have an observer present. If the inspection required by subsection (a)(4) above is not planned and the owner or operator could not have known about the inspection 30 days in advance of refilling the tank, the owner or operator shall notify the Agency at least 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 Agency at least 7 days prior to the refilling.

b) The owner or operator of external floating roof tanks shall:

- 1) 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.
  - A) 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 60 days of the initial fill with VOL and at least once every 5 years thereafter.
  - B) Measurements of gaps between the tank wall and the secondary seal shall be performed within 60 days of the initial fill with VOL and at least once per year thereafter.
  - C) If any source ceases to store VOL for a period of 1 year or more, subsequent introduction of VOL into the vessel shall be considered an initial fill for the purposes of subsections (b)(1)(A) and (b)(1)(B) above.
- 2) Determine gap widths and areas in the primary and secondary seals individually according to the following procedures:
  - A) Measure seal gaps, if any, at one or more floating roof levels when the roof is floating off the roof leg supports;
  - B) Measure seal gaps around the entire circumference of the tank in each place where a 1/8 inch 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
  - C) Determine the total surface area of each gap described in subsection (b)(2)(B) above 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.
- 3) 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 subsection (b)(4) below.

4) Make necessary repairs or empty the storage vessel within 45 days of identification in any inspection for seals not meeting the requirements listed in subsections (b)(4)(A) and (B) below:

A) The accumulated area of gaps between the tank wall and the mechanical shoe or liquid-mounted primary seal shall not exceed 10 in.<sup>2</sup> per foot of tank diameter, and the width of any portion of any gap shall not exceed 1.5 in. There are to be no holes, tears, or other openings in the shoe, seal fabric, or seal envelope.

B) The secondary seal is to meet the following requirements:

i) The secondary seal is to 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 subsection (b)(2)(C) above.

ii) 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 1.0 in.<sup>2</sup> per foot of tank diameter, and the width of any portion of any gap shall not exceed 0.5 in. There shall be no gaps between the tank wall and the secondary seal when used in combination with a vapor mounted primary seal.

iii) There are to be no holes, tears, or other openings in the seal or seal fabric.

C) If a failure that is detected during inspections required in Section 219.127(b)(1) of this Subpart cannot be repaired within 45 days and if the vessel cannot be emptied within 45 days, the owner or operator may request a 30-day extension from the Agency in the inspection report required in Section 219.129(b)(4) of this Subpart. 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.

- 5) Notify the Agency 30 days in advance of any gap measurements required by subsection (b)(1) above to afford the Agency the opportunity to have an observer present.
- 6) Visually inspect the external floating roof, the primary seal, secondary seal, and fittings each time the vessel is emptied and degassed.
  - A) 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 subsection exist before filling or refilling the storage vessel with VOL.
  - B) For all the inspections required by subsection (b)(6) above, the owner or operator shall notify the Agency in writing at least 30 days prior to the filling or refilling of each storage vessel to afford the Agency the opportunity to inspect the storage vessel prior to refilling. If the inspection required by subsection (b)(6) above is not planned and the owner or operator could not have known about the inspection 30 days in advance of refilling the tank, the owner or operator shall notify the Agency at least 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 Agency at least 7 days prior to the refilling.

~~c) The owner or operator of each source that is equipped with a closed vent system and control device as required in Section 219.120(a)(4) of this Subpart (other than a flare) shall:~~

- ~~1) Submit for approval by the Agency an operating plan containing the information listed below:~~

~~A) Documentation demonstrating that the control device will achieve the required control efficiency during maximum loading conditions. This documentation is to include a description of the gas stream which enters the control device, including flow and VOC content under varying liquid level conditions (dynamic and static) and manufacturer's design specifications for the control device. If the control device or the closed vent capture system receives vapors, gases, or liquids other than fuels from sources that are not designated sources under this rule, the efficiency demonstration is to include consideration of all vapors, gases, and liquids received by the closed vent capture system and control device. If an enclosed combustion device with a minimum residence time of 0.75 seconds and a minimum temperature of 816°C is used to meet the 95 percent requirements, documentation that these conditions will exist is sufficient to meet the requirements of this paragraph) and~~

~~B) A description of the parameter or parameters to be monitored to ensure that the control device will be operated in conformance with its design and an explanation of the criteria used for selection of that parameter (or parameters).~~

~~2) Operate the closed vent system and control device and monitor the parameters of the closed vent system and control device in accordance with the operating plan submitted to the Agency in accordance with subsection (c)(1) above, unless the plan was modified by the Agency during the review process. In this case, the modified plan applies.~~

~~d) The owner or operator of each source that is equipped with a closed vent system and a flare to meet the requirements of Section 219.120(a)(4) of this Subpart shall meet the requirements specified in the general control device requirements of 40 CFR 60.18(e) and (f), incorporated by reference at Section 219.112(d) of this Part.~~

(Source: Added at \_\_ Ill. Reg. \_\_\_\_, effective \_\_\_\_\_)

Section 219.128      Monitoring VOL Operations

a) Except as provided in subsection (d) below, the owner or operator of each storage vessel with a design

capacity greater than or equal to 40,000 gallons storing a liquid with a maximum true vapor pressure that is normally less than 0.75 psia shall notify the Agency within 30 days when the maximum true vapor pressure of the liquid exceeds 0.75 psia.

- b) Available data on the storage temperature may be used to determine the maximum true vapor pressure.
- 1) 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.
  - 2) For other liquids, the vapor pressure:
    - A) Determined by ASTM Method D2879-83, incorporated by reference at Section 219.112(a)(1) of this Part;
    - B) Measured by an appropriate method approved by the Agency and USEPA; or
    - C) Calculated by an appropriate method approved by the Agency and USEPA.
- c) The owner or operator of each vessel storing a mixture of indeterminate or variable composition shall be subject to the following:
- 1) 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 subsection (b) above.
  - 2) For vessels in which the vapor pressure of the anticipated liquid composition is 0.5 psia or greater but less than 0.75 psia above the cutoff for monitoring but below the cutoff for controls as defined in Section 219.119 of this Subpart, an initial physical test of the vapor pressure is required; a physical test at least once every 6 months thereafter is required as determined by the following methods:
    - A) ASTM Method D2879-83, incorporated by reference at Section 219.112(a)(1) of this Part; or

- B) ASTM Method D323-82, incorporated by reference at Section 219.112(a)(25) of this Part; or
- C) As measured by an appropriate method approved Agency.
- d) The owner or operator of each vessel equipped with a closed vent system and control device meeting the specifications of Section 219.120 of this Subpart is exempt from the requirements of subsections (a) and (b) above.

(Source: Added at \_\_\_ Ill. Reg.\_\_\_\_\_, effective \_\_\_\_\_)

Section 219.129 Recordkeeping and Reporting for VOL Operations

The owner or operator of each storage vessel specified in Section 219.120(a) of this Subpart shall maintain records and furnish reports as required by subsection (a), (b), or (c) below as appropriate for the control equipment installed to meet the requirements of Section 219.120. The owner or operator shall keep copies of all reports and records required by this Section, except for the records required by subsection (c)(1) below, for at least 3 years. The records required by subsection (c)(1) below shall be kept for the life of the control equipment.

- a) After installing control equipment in accordance with Section 219.120(a)(1) or (2) of this Subpart (fixed roof and internal floating roof), the owner or operator shall:
  - 1) Furnish the Agency with a report that describes the control equipment and certifies that the control equipment meets the specifications of Sections 219.120(a)(1) and 219.127(a)(1) of this Subpart;
  - 2) Keep a record of each inspection performed as required by Sections 219.127(a)(1), (a)(2), (a)(3), and (a)(4) of this Subpart. 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 (seals, internal floating roof, and fittings);
  - 3) If any of the conditions described in Section 219.127(a)(2) of this Subpart are detected during the annual visual inspection required by Section 219.127(a)(2), report to the Agency within 30 days of 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

- 4) After each inspection required by Section 219.127(a)(3) of this Subpart where holes or tears in the seal or seal fabric, or defects in the internal floating roof, or other control equipment defects listed in Section 219.127(a)(3)(B) of this Subpart are discovered, report to the Agency within 30 days of the inspection the identity of the storage vessel and the reason it did not meet the specifications of Section 219.120(a)(1) or (2) or Section 219.127(a) of this Subpart, and list each repair made.
- b) After installing control equipment in accordance with Section 219.120(a)(3) of this Subpart (external floating roof), the owner or operator shall:
  - 1) Furnish the Agency with a report that describes the control equipment and certify that the control equipment meets the specifications of Sections 219.120(a)(3) and 219.127(b)(2), (b)(3), and (b)(4) of this Subpart;
  - 2) Within 60 days of performing the seal gap measurements required by Section 219.127(b)(1) of this Subpart, furnish the Agency with a report that contains:
    - A) The date of measurement;
    - B) The raw data obtained in the measurement; and
    - C) The calculations of this Subpart described in Section 219.127(b)(2) and (b)(3) of this Subpart;
  - 3) Maintain records of each gap measurement performed as required by Section 219.127(b) of this Subpart. Such records shall identify the storage vessel in which the measurement was performed and shall contain:
    - A) The date of measurement;
    - B) The raw data obtained in the measurement; and
    - C) The calculations described in Section 219.127(b)(2) and (b)(3) of this Subpart;
  - 4) After each seal gap measurement that detects gaps exceeding the limitations specified by Section

219.127(b)(4) of this Subpart, submit a report to the Agency within 30 days of the inspection identifying the vessel and containing the information specified in subsection (b)(2) above and the date the vessel was emptied or the repairs were made and the date of repair.

- c) After installing control equipment in accordance with Section 219.120(a)(4) of this Subpart (closed vent system and control device other than a flare), the owner or operator shall maintain the following records:
- 1) A copy of the operating plan; and
  - 2) The measured values of the parameters monitored in accordance with Section 219.127(c)(2) of this Subpart.
- d) After installing a closed vent system and flare to comply with Section 219.127 of this Subpart, the owner or operator shall:
- 1) Provide the Agency with a report containing the measurements required by 40 CFR 60.18 (f)(1), (2), (3), (4), (5), and (6), incorporated by reference at Section 219.112(d) of this Part, within 6 months of 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), incorporated by reference at Section 219.112(d) of this Part, in which the pilot flame was absent.
- e) The owner or operator shall maintain all records required by this Section, except for the records required by subsection (f) below, for at least 3 years. The records required by subsection (f) below shall be kept for the life of the source.
- f) The owner or operator of each storage vessel specified in Section 219.119 of this Subpart shall maintain readily accessible records of the dimension of the storage vessel and an analysis of the capacity of the storage vessel. Each storage vessel with a design capacity less than 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. ~~Section 219.128 of this Subpart.~~

- g) Except as provided in Section 219.128 (c) and (d) of this Subpart, the owner or operator of each storage vessel subject to the requirements in Section 219.120 with a design capacity greater than or equal to 40,000 gallons storing a liquid with a maximum true vapor pressure greater than or equal to 0.5 psia but less than 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.

(Source: Added at \_\_ Ill. Reg.\_\_\_\_, effective\_\_\_\_\_)

SUBPART V: AIR OXIDATION PROCESSES

Section 219.520~~219.525~~ Emission Limitations for Air Oxidation Processes

- a) No person shall cause or allow the emission of VOM from any process vent stream unless the process vent stream is vented to a combustion device which is designed and operated either:
- 1) To reduce the volatile organic emissions vented to it with an efficiency of at least ninety eight percent (98%) by weight; or
  - 2) To emit VOM at a concentration less than twenty parts per million by volume, dry basis.
- b) Combustion Device at a Phthalic Anhydride Air Oxidation Process
- 1) Notwithstanding subsection (a) above, and subject to subsection (b)(2) below, no person shall cause or allow the emissions of VOM through an existing combustion device at an phthalic anhydride air oxidation process, unless the combustion device is operated to achieve:
    - A) 90% control of the volatile organic emissions vented to it; or
    - B) VOM emissions concentration of less than 50 parts per million by volume, dry basis.
  - 2) A air oxidation process vent stream for which an Any existing combustion device subject to subsection (b)(1) above is employed to control process VOM emissions is not required to meet the 98 percent emissions limit until set forth in subsection (a) above either upon replacing the combustion device is replaced for any other reasons, which shall be considered to include

including, but not ~~be~~ limited to, normal maintenance, malfunction, accident, and obsolescence, or the date of December 31, 1999, whichever comes first. The A combustion device is considered to be replaced when

- ~~1A)~~ All of the device is replaced; or
- ~~2B)~~ When the cost of the repair of the device or the cost of replacement of part of the device exceeds 50% of the cost of replacing the entire device with a device which complies.
- c) The limitations of subsection (a) above shall de-not apply to any process vent stream or combination of process vent streams which has with a Total Resource Effectiveness Index (TRE) greater less than ~~1.0~~ or equal to 6.0. TRE shall be as determined by the following methods:
- 1) If an air oxidation process has more than one process vent stream, the TRE shall be the more stringent of either the TRE based upon a combination of the process vent streams- or the TRE based upon each individual process vent stream.
  - 2) The TRE of a process vent stream and the TRE of a combination of process vent streams, whichever is applicable, shall be determined according to the following equation:

$$TRE = E^{-1} [a + bF^n + cF + dFH + e(FH)^n + fF^{0.5}]$$

where:

$$n = 0.88;$$

TRE = Total resource effectiveness index;

F = Vent stream flowrate (scm/min), at a standard temperature of 20°C;

E = Hourly measured emissions in kg/hr;

H = Net heating value of vent stream (MJ/scm), where the net enthalpy per mole of offgas is based on combustion at 25°C and 760 mm Hg, but the standard temperature for determining the volume corresponding to one mole is 20°C, as in the definition of "Flow";

a, b, c,  
d, e  
and f= Coefficients obtained by use of  
Appendix D.

- 3) For nonchlorinated process vent streams, if the net heating value, H, is greater than 3.6 MJ/scm, F shall be replaced by F' for purposes of calculating TRE. F' is computed as follows:

$$F' = FH / 3.6$$

where F and H are as defined in subsection (c) (2) of this Section.

- 4) The actual numerical values used in the equation described in subsection (c) (2) above shall be determined as follows:
- A) All reference methods and procedures for determining the flow, (F), hourly emissions, (E), and net heating, (H), value shall be in accordance with Appendix C.
- B) All coefficients described in subsection (c) (2) of this Section shall be in accordance with Appendix D.

(Source: Section 219.520 renumbered from Section 219.525 and amended at \_\_\_Ill. Reg. \_\_\_\_, effective \_\_\_\_\_)

#### Section 219.522 Savings Clause

The owner or operator of an air oxidation process with a TRE of 1.0 or less shall have complied with the requirements of Section 219.520 (a) of this Subpart by the dates set forth in Section 219.106 (a) and (b) of this Part. Sources that are subject to 219.520 (b) of this Subpart, which become subject to the control requirements of 219.520 (a) of this Subpart after the compliance dates set out in 219.106 (a) and (b) of this Part shall comply with the timetable set forth within Section 219.520 (b).

(Source: Added at \_\_\_Ill. Reg. \_\_\_\_, effective \_\_\_\_\_)

#### Section 219.523 Compliance

The emissions limitations for air oxidation processes located in Section 219.520 (a) of this Subpart are applicable to air oxidation processes on the effective date of that Section.

- a) An owner or operator of an air oxidation process with a TRE of 6.0 or less that is subject to the requirements of Section 219.520(a) of this Subpart on the effective date of that Section shall comply with the provisions

of Section 219.520(a) by December 31, 1999, or upon startup of the emission unit, whichever comes first. This subsection does not supersede the Savings Clause rule in Section 219.522 of this Part.

- b) An owner or operator of an air oxidation process that becomes subject to the requirements of Section 219.520(a) of this Subpart after the effective date of that Section shall comply with the requirements of Section 219.520(a) upon startup of the emission unit.

(Source: Added at \_\_ Ill. Reg. \_\_\_\_, effective \_\_\_\_\_)

Section 219.524 Determination of Applicability

- a) Sources subject to the requirements of Section 219.520(a) of this Subpart either through application of 219.520(c) of this Subpart or through continued application under 219.522 of this Subpart shall continue to be subject to the applicable limitations even if operations change so as to result in a TRE that is above that which initially made the regulation applicable to the source's operations.
- b) Notwithstanding Section 219.520(c) of this Subpart, any air oxidation process that utilizes a combustion device to control process vent streams at any time shall maintain the process in compliance with the provisions of Section 219.520(a) of this Subpart at all times thereafter.

(Source: Added at \_\_ Ill. Reg. \_\_\_\_, effective \_\_\_\_\_)

Section 219.525 Emission Limitations for Air Oxidation Processes (Renumbered)

(Source: Section 219.525 renumbered to Section 219.520 at 18 Ill. Reg. \_\_\_\_\_ effective \_\_\_\_\_)

Section 219.Appendix C

Reference ~~Test~~ Methods ~~For Air Oxidation Processes~~ and Procedures

Introduction

This Appendix presents the reference methods and procedures required for implementing Reasonably Available Control Technology (RACT). Methods and procedures are identified for two types of RACT implementation:

- a) Determination of VOM destruction efficiency for evaluating compliance with the 98 weight percent VOM reduction or 20 ppmv emission limit specified in Sections ~~215.520~~ 219.520 through ~~215.527~~ 219.527 of this Part; and

- b) Determination of offgas flowrate, hourly emissions and stream net heating value for calculating TRE.

All reference methods identified in this Appendix refer to the reference methods specified at 40 CFR 60, Appendix A, incorporated by reference in Section ~~215.105~~ 219.112 of this Part.

#### VOM DESTRUCTION EFFICIENCY DETERMINATION

The following reference methods and procedures are required for determining compliance with the percent destruction efficiency specified in Sections ~~215.520~~ 219.520 through ~~215.527~~ 219.527 of this Part.

- a) Reference Method 1 or 1A for selection of the sampling site. The control device inlet sampling site for determination of vent stream molar composition or total organic compound destruction efficiency shall be prior to the inlet of any control device and after all recovery devices.
- b) Reference Methods 2, 2A, 2C or 2D for determination of the volumetric flowrate.
- c) Reference Method 3 to measure oxygen concentration of the air dilution correction. The emission sample shall be corrected to 3 percent oxygen.
- d) Reference Method 25 (a) to determine the concentration of total organic compounds (minus methane and ethane) in the control device outlet and total organic compound reduction efficiency of the control device.

#### TRE DETERMINATION

The following reference methods and procedures are required for determining the offgas flowrate, hourly emissions, and the net heating value of the gas combusted to calculate the vent stream TRE.

- a) Reference Method 1 or 1A for selection of the sampling site. The sampling site for the vent stream flowrate and molar composition determination prescribed in (b) and (c) shall be prior to the inlet of any combustion device, prior to any post-reactor dilution of the stream with air and prior to any post-reactor introduction of halogenated compounds into the vent stream. Subject to the preceding restrictions on the sampling site, it shall be after the final recovery device. If any gas stream other than the air oxidation vent stream is normally conducted through the recovery system of the affected facility, such stream shall be rerouted or turned off while the vent stream is sampled, but shall be routed normally prior to the measuring of the initial value of the monitored parameters for determining compliance with

the recommended RACT. If the air oxidation vent stream is normally routed through any equipment which is not a part of the air oxidation process as defined in 35 Ill. Adm. Code ~~211.122~~ 211.350 of this Part, such equipment shall be bypassed by the vent stream while the vent stream is sampled, but shall not be bypassed during the measurement of the initial value of the monitored parameters for determining compliance with Subpart V.

- b) The molar composition of the vent stream shall be determined using the following methods:
- 1) Reference Method 18 to measure the concentration of all organics, including those containing halogens, unless a significant portion of the compounds of interest are polymeric (high molecular weight), can polymerize before analysis or have low vapor pressures, in which case Reference Method 25(a) shall be used.
  - 2) ASTM D1946-67 (reapproved 1977), incorporated by reference in Section ~~215.105~~ 219.112 of this Part, to measure the concentration of carbon monoxide and hydrogen.
  - 3) Reference Method 4 to measure the content of water vapor, if necessary.
- c) The volumetric flowrate shall be determined using Reference Method 2, 2A, 2C or 2D, as appropriate.
- d) The net heating value of the vent stream shall be calculated using the following equation:

$$H = K \sum_{i=1}^n C_i H_i$$

Where:

- H = Net heating value of the sample, MJ/scm, where the net enthalpy per mole of offgas is based on combustion at 25°C and 760 mm Hg, but the standard temperature for determining the volume corresponding to one mole is 20°C, as in the definition of F (vent stream flowrate) below.
- K = Constant,  $1.740 \times 10^{-7}$  (1/ppm) (mole/scm) (MJ/kcal) where standard temperature for mole/scm is 20°C.
- C<sub>i</sub> = Concentration of sample component i, reported on a wet basis, in ppm, as measured by Reference Method 18 or ASTM D1946-67 (reapproved 1977), incorporated by reference in Section ~~215.105~~ 219.112 of this Part.



$H_i$  = Net heat of combustion of sample component  $i$ , kcal/mole based on combustion at 25°C and 760 mm Hg. If published values are not available or cannot be calculated, the heats of combustion of vent stream components are required to be determined using ASTM D2382-76, incorporated by reference in Section ~~215.105~~ 219.112 of this Part.

- e) The emission rate of total organic compounds in the process vent stream shall be calculated using the following equation:

$$E = K \quad F \quad \sum_{i=1}^n C_i M_i$$

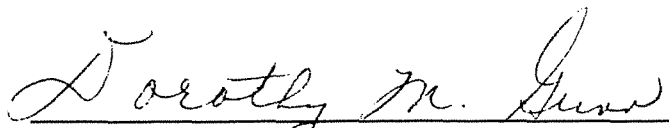
Where:

- $E$  = Emission rate of total organic compounds (minus methane and ethane) in the sample in kg/hr;
- $K$  = Constant  $2.494 \times 10^{-6}$  (1/ppm) (mole/scm) (kg/g) (min/hr), where standard temperature for (mole/scm) is 20°C;
- $M_i$  = Molecular weight of sample component  $i$  (g/mole);
- $F$  = Vent stream flowrate (scm/min), at a standard temperature of 20°C.
- f) The total vent stream concentration (by volume) of compounds containing halogens (ppmv, by compound) shall be summed from the individual concentrations of compounds containing halogens which were measured by Reference Method 18.

(Source: Amended at \_\_\_ Ill. Reg. \_\_\_\_\_, effective \_\_\_\_\_)

IT IS SO ORDERED.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above opinion and order was adopted on the 15<sup>th</sup> day of September, 1994, by a vote of 6-0.

  
 Dorothy M. Gunn, Clerk  
 Illinois Pollution Control Board