HEARING OFFICER'S REPORT

TO: The Honorable Shawn M. Garvin
Cabinet Secretary, Dept. of Natural Resources and Environmental Control

FROM: Theresa Newman, Regulatory Specialist, Office of the Secretary,
Dept. of Natural Resources and Environmental Control

RE: **Proposed Regulation Amendments to 7 DE Admin. Code 1124:**
Section 26 - *Gasoline Dispensing Facility Stage I Vapor Recovery* and
Section 36 - *Vapor Emission Control at Gasoline Dispensing Facilities*

DATE: May 7, 2020

I. BACKGROUND AND PROCEDURAL HISTORY:

A public hearing was held on Wednesday, January 8, 2020, at 6:00 p.m. at the Department of Natural Resources and Environmental Control ("DNREC," "Department"), 89 Kings Highway, Dover, Delaware to receive comment on proposed amendments to 7 DE Admin. Code 1124: Section 26 - *Gasoline Dispensing Facility Stage I Vapor Recovery* and Section 36 - *Vapor Emission Control at Gasoline Dispensing Facilities* ("Amendments"). This action is taken by the Department to update requirements for gasoline dispensing facilities ("GDFs") to require: (1) to require all GDF's to decommission existing Stage II vapor recovery systems in light of the redundancy of on-board refueling vapor recovery canisters that exist in vehicles starting with model year 1998, (2) to remove the requirement that new GDFs must install Stage II systems, and (3) to update Stage I requirements to ensure all GDFs remain well controlled. The proposed amendments will also require regulated GDFs to monitor a vapor-tight status of its gasoline storage tanks by performing annual pressure decay tests or by installing a continuous pressure monitoring ("CPM") system.

Pursuant to 7 *Del.C.* §6010(a) and (c), the Department is proposing the Amendments to revise the Delaware State Implementation Plan ("SIP"), entitled *Decommissioning Stage II Vapor Recovery Systems and Requiring Stage I Enhanced Vapor Recovery Systems at Gasoline Dispensing Facilities*. The objectives of the

proposed SIP revisions are to analyze the regulatory impacts of the Amendments on Delaware's emissions of volatile organic compounds ("VOC") and to demonstrate that the Amendments meet the anti-backsliding requirements of the federal *Clean Air Act* ("CAA"), Sections 182(b)(2) and 110(ℓ). The CAA mandates states with moderate and higher ozone nonattainment areas, including Delaware, to revise their State SIP to require "owners or operators of gasoline dispensing systems to install and operate……a system for gasoline vapor recovery of emissions from the fueling of motor vehicles."

Since 1993, Delaware has required GDFs that have ever had/ have a throughput greater than 10,000 gallons of gasoline, to install Stage I and Stage II vapor recovery systems ("VRS"). This action was taken by the Department to control gasoline vapor emissions more efficiently during the transfer of gasoline. By implementing Stage I VRS, gasoline vapor emissions are controlled by collecting gasoline vapors displaced from a GDF's underground storage tank ("UST") or aboveground storage tank ("AST"), when a fuel tank truck delivers gasoline into said tanks, and then returning the collected vapors into the fuel tank of the delivery truck. A properly designed and installed Stage I system will assist in maintaining a vapor tight UST or AST and thereby prevent the escape of gasoline vapors during the daily operation at a GDF.

A Stage II VRS controls gasoline vapor emissions from motor vehicles during the refueling process by collecting gasoline vapors displaced from the vehicle's gasoline tank during the transfer of gasoline from a GDF to the vehicle's tanks, and then returning the collected vapors to GDF's UST or AST. There are two types of Stage II vapor recovery systems, the vacuum-assist system and the balance system. It should be noted that Stage II systems installed at Delaware GDFs are all vacuum-assist systems.

To further control vapor emissions, automobile manufacturers (in the United States) were required to install on-board refueling vapor recovery ("ORVR") systems on new vehicles starting in 1998, pursuant to CAA section 202(a)(6). While Stage II and ORVR systems are both effective for controlling gasoline vapor emissions during vehicle refueling, these two systems are incompatible. When a Stage II-equipped GDF refuels an

ORVR-equipped vehicle, the ORVR system will force the Stage II's vacuum pump to pull fresh air into the UST or AST, causing vapor pressure growth in the storage tanks. The vapor pressure growth leads to additional vapor emissions from the USTs or ASTs, especially when those tanks are not vapor-tight.

Due to the incompatibility of the two systems, the United States Environmental Protection Agency ("EPA") issued a final rule in May 2012, to waive Section 182(b)(3) Stage II requirements (77 FR 28772). The final rule was aimed at reducing the adverse effect of the functional overlap and incompatibility between the vacuum-assist Stage II systems at GDFs and the ORVR system on vehicles. Under the final rule, the states in the Ozone Transport Region (OTR), including Delaware, were allowed to remove their GDF's Stage II vapor recovery requirements, provided the overall emissions from the GDFs without Stage II systems did not increase.

As an OTR state, the Department then revised 7 DE Admin. Code 1124: Section 36.0- *Vapor Emission Control at Gasoline Dispensing Facilities* (hereafter referred to as "2015 Stage II Regulation") to allow the decommissioning of Stage II systems, and to incorporate new requirements, such as the enhanced Stage I systems and testing procedures, to ensure that gasoline storage tank's vapor recovery remains vapor-tight. More specifically new GDFs had the option to operate without Stage II systems and current GDFs had the option to decommission their Stage II systems.

Such non-Stage II GDFs were then required to maintain their gasoline UST or AST vapor-tight by installing one of the California Air Resources Board ("CARB") approved Stage I enhanced vapor recovery ("EVR") systems. To monitor the proper function of the Stage I EVR systems, these non-Stage II stations were further required to (1) install a continuous vapor pressure ("CPM") monitoring system, or (2) perform an annual pressure decay test and follow other testing requirements as defined in the 2015 Stage II Regulations.

The 2015 Stage II Regulations also allowed GDFs the option to operate with Stage II systems for an unspecified trial period. Although the length of the trial period was not specified, Division of Air Quality ("DAQ") believed that the benefit of maintaining Stage II system would diminish in approximately 3 years (after the implementation of 2015 Stage II Regulations) due to excess vapor emission caused by the incompatibility of GDF's vacuum-assist Stage II systems and vehicle's ORVR systems.

In 2017, DAQ staff conducted extensive field observations of the testing on vapor tightness of gasoline tanks at decommissioned sites and Stage II sites. Through the observations conducted and the feedback received from GDF owners/ operators, as well as testing contractors, DAQ then started the process to amend DE Admin. Code 1124: Section 26.0 and Section 36.0 in 2019. Much like the 2015 Stage II Regulations, the purpose of amending the Regulations is to control gasoline vapor emissions throughout GDFs in Delaware, however more specific to the proposed Amendments, those GDF's that have ever had/ have a throughput greater than 10,000 gallons of gasoline on a monthly basis.

In April and October of 2019, DAQ convened 3 workshops to receive feedback from the regulated community and the public, on measures to control gasoline vapor emissions from GDFs. During the first workshop in April 2019, DAQ commissioned interest of committee members to develop and review revisions to the Regulations. The review committee, consisting of representatives of the regulated community (i.e., GDFs' owners or operators), testing companies, regional organizations of gasoline distribution industry, environmental organizations, and regulatory agencies, convened 4 times between May 2019 and August 2019, to discuss the incompatibility solution for Stage II and ORVR systems, as well as the impacts to the regulated community. During said meetings, the committee concluded with agreeing: (1) to require new GDFs to install a complete Stage I EVR system approved by CARB and (2) to require existing GDFs to decommission Stage II systems by December 31, 2021 and to install and operate a complete Stage I EVR system approved by CARB by December 31, 2025. The time period between the two schedules allows existing GDFs more than 4 years to plan and

budget their Stage I EVR installation projects. Through the 4-year period, GDFs must cap Stage II system's vapor-return pipe at the dispenser end. Capping at the tank is required if the return vapor line is accessible or when the pipe is exposed during excavation activities. DAQ believes that capping at dispenser end will provide GDF owners flexibility in decommissioning Stage II systems and installing Stage I EVR systems, thus will not affect the tightness of the UST vapor systems. It is believed that capping the vapor return pipe will keep a small amount of vapor residue in the capped pipes until they are finally removed when the GDFs install Stage I EVR systems.

In addition to the install of Stage I EVR systems, the GDFs will be required to install a CPM system or perform monthly inspection and annual pressure decay test. Furthermore, in order to establish an effective connection between Section 26 and Section 36 of the Regulations, the Division also proposes revisions to the Stage I regulations *Gasoline Dispensing Facility Stage I Vapor Recovery* so that the GDFs in Delaware will be subject to the relevant Stage I EVR system requirements and testing of Section 36.

DAQ also proposes revisions to Delaware's SIP, pursuant to CAA Section 184(b)(2) and Section 110(ℓ). As an OTR State, Delaware must implement a plan that does not increase VOC emissions and does not contribute to violations of the 2015 Ozone National Ambient Air Quality Standards, established by the EPA. The Delaware SIP analyses projects that the decommissioning of Stage II systems by December 31, 2021, and installing Stage I EVR systems by December 31, 2025, will: (1) avoid incompatibility VOC emission of 71 tons in 2021, (2) provide 58 tons of VOC emission reduction after 2025, and (3) total 129 ton of long term VOC emission reductions for attaining and maintain the ozone air quality. By decommissioning Stage II systems, Delaware SIP will demonstrate that the change in requirements for GDFs will result in a decrease of emissions, thus satisfy the CAA anti-backsliding requirements.

Finally, in October 2019 the DAQ held the second public workshop (scheduled on two separate days and times), to report to the public the draft language of the

Amendments and to seek further comments from the public. After incorporating the comments from the second public workshop, the Department published the proposed Amendments to Section 26.0 and Section 36.0.

DAQ expects there to be a cost savings for new GDFs as a result of eliminating the need for Stage II vapor recovery systems. For both new and existing facilities, their monitoring and testing costs will be reduced as a result of installing the advanced vapor control systems. Per the testing requirements of the Regulations, there will be fewer re-tests required after a failed test: reducing 4 quarterly tests to 2 quarterly tests and providing a total of $500-$600 cost savings.

DAQ analyses assessed the emissions and air quality impacts of the proposed Amendments, by following the methods and procedures outlined in the 2012 EPA guidance document, entitled "*Guidance on Removing Stage II Gasoline Vapor Control Programs from State Implementation Plans and Assessing Comparable Measures*". DAQ expects environmental benefits associated with the reduction of gasoline vapor emissions as a result of the proposed Amendments. By the end of 2021, DAQ estimates a reduction of 71 tons per year VOC emissions and by the end of 2025 an additional 58 tons per per year of VOC emissions reduction.

The Department has the statutory basis and legal authority to act with regard to the proposed Amendments, pursuant to 7 *Del. C.* §6010(a) and (c). The Department published its initial proposed Amendments in the December 1, 2019 *Delaware Register of Regulations*. Thereafter, the public hearing regarding this matter was held on January 8, 2020. There were six (6) member of the public in attendance at the public hearing, four (4) of which provided verbal comment. Pursuant to Delaware law, the hearing record ("Record") remained open for fifteen (15) additional days subsequent to the date of the public hearing for receipt of public comment. The Record formally closed with regard to public comment at close of business on January 23, 2020, with additional written comments received by the Department.

After the record closed, the Department's Division of Air Quality staff prepared a Technical Response Memorandum ("TRM"), attached hereto as Appendix "B", at the request of this Hearing Officer.

It should be noted that all notification and noticing requirements concerning this matter were met by the Department. Proper notice of the hearing was provided as required by law.

II. SUMMARY OF THE PUBLIC HEARING RECORD:

The Record consists of the following documents: (1) a verbatim transcript; and (2) nineteen (19) documents introduced by Department staff at the public hearing held on January 8, 2020 and marked by this Hearing Officer at the time of the hearing accordingly as Department Exhibits 1-19. The Department's person primarily responsible for the drafting and overall promulgation of the proposed Amendments, Frank Gao, Engineer IV, Division of Air Quality, developed the Record with the relevant documents in the Department's files.

As stated previously, a TRM was provided by the Department's expert staff. The TRM responded to four comments provided at the hearing and subsequently the four commenters submitted written copies of their comments either at the hearing or after the hearing via email. The commenters addressed various concerns, provided suggestions and inquiries regarding the proposed Amendments.

The Department responded to the concerns regarding the financial impact of the proposed regulation with no guarantee of improvement in air quality. To that, the Department provided the cost saving data and environmental benefit analysis, referencing information within the Technical Support Document (Exhibit #19). The data provides the cost savings for new GDFs, decrease in testing cost, and reductions in gasoline vapor emissions. The Department believes that by reducing gasoline vapors that mainly contain

VOC's, the reduction of VOC's will help decrease adverse health effects to at risk populations, from ground level ozone.

Commenters also expressed concerns of the financial impact and air quality impact of requiring a complete enhanced vapor recovery system approved by the CARB, rather then allowing mix match components. Through the CARB certification process, an approved Stage I EVR guarantees 98% efficiency and are tested as one complete system, rather than components tested individually. The Department believes that allowing the mix-match of components in the Stage I EVR system cannot guarantee a 98% control efficiency, therefor can lead to increased VOC's and additional expenses to fix and test a mix matched system. Based on a 98% control efficiency of an approved Stage I EVR system the Department expects VOC emission reductions in the ozone season and annually by 9 tons and 21 tons of VOC emission by 2021, respectively, and more than 58 tons of VOC emission reduction every year by 2026 and thereafter. The Department does not believe that requiring a complete system will incur an additional financial impact on the industry, rather a complete system will lead to cost savings for a GDF, due to fewer leaks and less shutdown time for a station.

Additional concerns were addressed regarding the Department's reliance on California's Air Resources Board Executive Order, the requirements within the executive order and the the incomparable climate between Delaware and California. The Department believes that the CARB Executive Order provides Delaware valuable information for regulatory development. Although the Department must modify relevant provisions when CARB updates its Executive Orders, the Department believes testing and certification procedures are beyond its means and resources and would be redundant to CARB Certification. Furthermore, the Department believes testing and certification procedures are beyond the means and resources of Department and would be redundant to CARB Certification and additional certifications and testing would impart an unnecessary cost to industry in the state. Although Delaware's climate conditions vary, such as extreme temperatures, precipitation (rain/snow), humidity, etc, California climate is highly variable as well. California has a number of microclimates, including

rainforests in the north and deserts in the south, therefore, the Department believes that the CARB tests do take into consideration different weather conditions.

Other comments provided suggestions for Department to only require certain components of the Stage I EVR System that do not incur the cost associated with installing a complete Stage I EVR system and suggest that the Department should conduct additional studies of EVR spill buckets. Because the Stage I EVR systems are certified as a complete system to remain vapor tight, the installation of certain components will not guarantee 98% efficiency (as a CARB certified EVR system does) and may lead to failures during annual testing, resulting in increased cost and extra down time for GDFs. Therefore, the Department does not believe that a study of the VOC reductions from individual components is necessary.

A request was made that the Department to provide VOC emissions breakdown for each Stage I EVR component, however the Stage I EVR systems are certified as a system and not as individual components. Another inquiry stated that the testing requirements in section 26 were unclear, however the Department has directed that the testing requirements are provided in Section 36, where all testing and requirements of a GDF are listed. Lastly a commenter suggests that requiring Stage I EVR is not necessary to reduce VOC emissions. The Department provided a detail explanation within the TRM, including the benefits of installing a Stage I EVR system and provided additional calculations of the throughput yield of VOC reductions.

I find that the DAQ's TRM offers a detailed review of the proposed Amendments, identifies all the concerns raised by the public, and responds to the concerns in a balanced manner, accurately reflecting the information contained in the Record. Accordingly, the Department's proposed Amendments are attached hereto as Appendix "A".

III. RECOMMENDED FINDINGS AND CONCLUSIONS:

Based on the Record developed, I find and conclude that the Department has provided appropriate reasoning regarding the need for the proposed amendments to 7 DE Admin. Code 1124: Section 26 - *Gasoline Dispensing Facility Stage I Vapor Recovery* and Section 36 - *Vapor Emission Control at Gasoline Dispensing Facilities*, specifically to update requirements for GDF to: (1) to require all GDF's to decommission existing Stage II vapor recovery systems in light of the redundancy of on-board refueling vapor recovery canisters that exist in vehicles starting with model year 1998, (2) to remove the requirement that new GDFs must install Stage II systems, and (3) to update Stage I requirements to ensure all GDFs remain well controlled. Upon the approval of the proposed amendments, I also find that the Department has provided appropriate reasoning to revise the Delaware State Implementation Plan, entitled "*Decommissioning Stage II Vapor Recovery Systems and Requiring Stage I Enhanced Vapor Recovery Systems at Gasoline Dispensing Facilities*. Accordingly, I recommend promulgation of the same, in the customary manner provided by law.

Further, I recommend the Secretary adopt the following findings and conclusions:

1. The Department has the statutory basis and legal authority to act with regard to this proposed regulatory promulgation, pursuant to 7 *Del. C.* §6010(a) and (c);

2. The Department has jurisdiction under its statutory authority, pursuant to 7 *Del.C.* Chapter 60, to issue an Order adopting these proposed Amendments as final;

3. The Department provided adequate public notice of the initial proposed Amendments and all proceedings in a manner required by the law and regulations, and provided the public with an adequate opportunity to comment on the same, including at the time of the public hearing held on

January 8, 2020 and during the 15 days subsequent to the hearing (through January 23, 2020), before making any final decision;

4. Promulgation of the proposed amendments to 7 DE Admin. Code 1124: Section 26 - *Gasoline Dispensing Facility Stage I Vapor Recovery* and Section 36 - *Vapor Emission Control at Gasoline Dispensing Facilities*, will enable the Department to update requirements to: (1) to require all GDF's to decommission existing Stage II vapor recovery systems in light of the redundancy of on-board refueling vapor recovery canisters that exist in vehicles starting with model year 1998, (2) to remove the requirement that new GDFs must install Stage II systems, and (3) to update Stage I requirements to ensure all GDFs remain well controlled;

5. The Department has reviewed the proposed Amendments in the light of the Regulatory Flexibility Act, consistent with 29 *Del.C.* §104, and believes the same to be lawful, feasible and desirable, and the recommendations as proposed should be applicable to all Delaware citizens equally;

6. The Department's proposed regulatory Amendments, as initially published in the December 1, 2019 *Delaware Register of Regulations*, and as set forth in Appendix "A" hereto, are adequately supported, are not arbitrary or capricious, and are consistent with the applicable laws and regulations. Consequently, they should be approved as final regulatory Amendments, which shall go into effect ten days after their publication in the next available issue of the *Delaware Register of Regulations*; and

7. The Department shall submit the proposed Amendments as final regulatory amendments to the *Delaware Register of Regulations* for publication in its next available issue, and provide such other notice as the law and regulation require and the Department determines is appropriate.

Theresa L. Newman
Public Hearing Officer

\ahear\ Reg.Amend. 1124: Section 26 - Gasoline Dispensing Facility Stage I Vapor Recovery and Section 36 - Vapor Emission Control at Gasoline Dispensing Facilities. 2019

Attachments/Appendix:
Appendix A: Proposed Reg. Amendments
Appendix B: Technical Response Memorandum

DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

DIVISION OF AIR QUALITY

Statutory Authority: 7 Delaware Code, Section 6010(a) and (c) (7 **Del.C.** §6010(a) & (c))
7 **DE Admin. Code** 1124

PROPOSED

REGISTER NOTICE
SAN #2018-07

1124 Control of Volatile Organic Compound Emissions

1. TITLE OF THE REGULATIONS:

7 **DE Admin. Code** 1124 Section 26 "Gasoline Dispensing Facility Stage I Vapor Recovery" and Section 36 "Vapor Emission Control at Gasoline Dispensing Facilities."

2. BRIEF SYNOPSIS OF THE SUBJECT, SUBSTANCE AND ISSUES:

Since the early 1990s, Delaware's ambient air quality has been in nonattainment for the health based air quality standard for the pollutant ground-level ozone. Because gasoline vapors contain volatile organic compounds (VOC) and contribute to the formation of ground-level ozone, Delaware implemented, in 1993, 7 **DE Admin. Code** 1124 Section 26 and Section 36. Sections 26 and 36 contain requirements to control gasoline vapor emissions from gasoline tanks and motor vehicles at any gasoline dispensing facility (GDF) with a monthly throughput greater than 10,000 gallons (Stage I and Stage II vapor recovery). In addition, since 1998, automobile manufacturers have been required by the federal Clean Air Act (CAA) to install on-board refueling vapor recovery (ORVR) systems on new vehicles.

The ORVR system is effective for controlling gasoline vapor emissions from refueling the ORVR equipped vehicles. However, when Stage II vapor recovery equipped GDF's are refueling ORVR equipped vehicles, fresh air is ingested into the GDF gasoline storage tanks, which leads to vapor growth in the gasoline storage tanks and vapor emissions from those tanks through leaks and pressure relief valves. The CAA allows Delaware to phase-out Stage II vapor recovery requirements, provided overall emissions do not increase.

The Division of Air Quality (DAQ) of the Department of Natural Resources and Environmental Control (DNREC, or the Department) is proposing amendments to Section 26 and Section 36 to require (1) any new GDF to install a Stage I Enhanced Vapor Recovery (EVR) system, instead of a Stage II vapor recovery system, at construction, and (2) any existing GDF to decommission its Stage II vapor recovery system by December 31, 2021 and to install a Stage I EVR system by December 31, 2025. The proposed amendments will also require a regulated GDF to monitor vapor-tight status of its gasoline storage tanks by performing annual pressure decay tests or by installing a continuous pressure monitoring (CPM) system.

DAQ is also proposing to submit to EPA a revision to Delaware State Implementation Plan (SIP), entitled "Decommissioning Stage II Vapor Recovery Systems and Requiring Stage I Enhanced Vapor Recovery Systems at Gasoline Dispensing Facilities." The objectives of the proposed SIP revision are to (1) analyze the regulatory impacts of the above regulation amendments on Delaware's emissions of volatile organic compounds (VOC), and (2) demonstrate that the above regulatory amendments meet the anti-backsliding requirements of the CAA Sections 182(b)(2) and 110(l).

3. POSSIBLE TERMS OF THE AGENCY ACTION:

None.

4. STATUTORY BASIS OR LEGAL AUTHORITY TO ACT:

7 **Del.C.** Ch. 60, Sections 6010(a) and 6010(c).

5. OTHER REGULATIONS THAT MAY BE AFFECTED BY THE PROPOSAL:

None.

6. NOTICE OF PUBLIC COMMENT:

A public hearing will be held on January 8, 2020, beginning at 6:00 pm, in DNREC Auditorium, 89 Kings Highway, Dover, DE 19901. Persons wishing to comment on the proposed amendments may do so either orally or in written form at the public hearing on January 8, 2020. In lieu of attending the public hearing, written comment may be submitted to the Hearing Officer via the online comment form at https://dnrec.alpha.delaware.gov/public-hearings/comment-form/, via email to DNRECHearingComments@delaware.gov, or via USPS to the below address. The Department will accept public comment through the close of business on Thursday, January 23, 2020.

Theresa Newman, Hearing Officer

DNREC – Office of the Secretary
89 Kings Highway, Dover, DE 19901

7. PREPARED BY:

Frank F. Gao, Ph.D., P.E.
Division of Air Quality-DNREC
715 Grantham Lane, New Castle, DE 19720
Phone: (302)739-9402; email: Frank.Gao@delaware.gov

1124 Control of Volatile Organic Compound Emissions

1.0 General Provisions

01/11/2017

1.1 This regulation, "Control of Volatile Organic Compound Emissions", replaces and supersedes Regulation No. 24, "Control of Volatile Organic Compound Emissions" dated July 3, 1990.

1.2 This regulation is applicable to the sources of Volatile Organic Compounds (VOCs) as set-forth herein, except:

1.2.1 Sources, other than solvent metal-cleaning sources, whose emissions of Volatile Organic Compounds (VOCs) are not more than fifteen (15) pounds per day, unless other limits are specified herein, provided the emission rates are determined and certified in a manner acceptable to the Department.

1.2.2 Sanitary landfills conforming to the State of Delaware Statewide Solid Waste Management Plan.

1.3 No owner or operator shall substitute either methyl chloroform or methylene chloride for any other Volatile Organic Compound (VOC) for any solvent metal cleaning purpose on or after the effective date of this regulation.

1.4 Reserved.

1.5 Any owner or operator currently permitted to operate a VOC emission source under 7 **DE Admin. Code** 1102 or the previous Regulation No. 24 shall submit to the Department, within 90 days of the effective date of this regulation, an application to amend the current permit and to comply with the provisions of this regulation. Any owner or operator of a non-permitted source subject to the provisions of this regulation, on and after the effective date of the regulation, shall immediately submit to the Department an application for a permit to construct, modify, reconstruct or operate the source.

1.6 Any owner or operator who owns or operates a process or operation regulated by a subsequent section of this regulation may submit to the Department proposals for alternative compliance schedules. The Department may, with the concurrence of the Administrator of the U. S. Environmental Protection Agency (U.S. EPA), approve the alternative compliance schedules if:

1.6.1 The proposal contains projected increments of progress which are substantially equivalent to the compliance schedules in the appropriate subsequent sections of this regulation, and,

1.6.2 Final compliance with emission standards is achieved not later than that stipulated in appropriate subsequent sections of this regulation, or not later than May 31, 1995, if agreed in writing by the Department.

1.7 In the event that the applicant's schedule of interim measures is not acceptable, the Department shall give written notice to the applicant, advising that the schedule contained in the appropriate sections of this regulation will be ordered unless an equitable compromise is agreed-upon, or a public hearing is requested. The expense of such hearing shall be borne by the applicant. The Department may order a schedule to be implemented after considering relevant testimony at the hearing, or, if no hearing is requested, issue an order on its own initiative.

1.8 Any alternative compliance schedule approved by the Department shall be incorporated in the State Implementation Plan (SIP).

12 DE Reg. 347 (09/01/08)
20 DE Reg. 556 (01/01/17)

2.0 Definitions

04/11/2010

For the purpose of this regulation, the following definitions apply:

"**Actual emissions**" means the quantity VOCs emitted from a source during a particular time period.

"**Adhesion primer**" means a coating that is applied to thermoplastic olefin (TPO) parts to promote adhesion of subsequent coatings. An adhesion primer is clearly identified as an adhesion primer or adhesion promoter on its accompanying material safety data sheet.

"**Aerosol coating product**" means a pressurized coating product containing pigments or resins that dispenses product ingredients by means of a propellant and in packaged in a disposable can for hand-held application, or for use in specialized equipment for ground traffic marking applications.

"Air-dried coating" means a coating that is cured at a temperature below 90° C (194° F).

"**As applied**" means including any dilution solvents added before application of the coating.

"Baked coating" means a coating that is cured at a temperature at or above 90° C (194° F).

"**Basecoat**" means a pigmented topcoat that is the first coat applied as part of a multistage topcoat system.

"**Bulk gasoline plant**" means a gasoline storage and distribution facility with an average daily throughput of 76,000 liters (L) (20,000 gallons [gal]) of gasoline or less on a monthly average.

"**Bulk gasoline terminal**" means a gasoline storage facility that receives gasoline from refineries, delivers gasoline to bulk gasoline plants or to commercial or retail accounts, and has a daily throughput of more than 76,000 L (20,000 gal) of gasoline on a monthly average.

"**Capture efficiency**" means the weight per unit time of VOC entering a capture system and delivered to a control device divided by the weight per unit time of total VOC generated by a source of VOC, expressed as a percentage.

"**Capture system**" means all equipment (including, but not limited to, hoods, ducts, fans, booths, ovens, dryers, etc.) that contains, collects, and transports an air pollutant to a control device.

"**Carbon absorber**" means an add-on control device that uses activated carbon to absorb VOCs from a gas stream.

"**Carbon adsorption system"** means a carbon adsorber with an inlet and outlet for exhaust gases and a system to regenerate the saturated adsorbent.

"**Clearcoat**" means a topcoat that contains no pigments or only transparent pigments and that is the final coat applied as part of a multistage topcoat system.

"**Coating**" means a material applied onto or impregnated into a substrate for protective, decorative, or functional purposes. Such materials include, but are not limited to, paints, varnishes, sealants, adhesives, inks, maskants, and temporary protective coatings.

"**Coating unit**" means a series of one or more coating applicators and any associated drying area or oven wherein a coating is applied, dried, or cured. A coating unit ends at the point where the coating is dried or cured, or prior to any subsequent application of a different coating. It is not necessary to have an oven or a flash-off area in order to be included in this definition.

"**Continuous vapor control system**" means a vapor control system that treats vapors displaced from tanks during filling on a demand basis without intermediate accumulation.

"**Control device**" means equipment (such as an incinerator or carbon adsorber) used to reduce, by destruction or removal, the amount of air pollutant or pollutants in an air stream prior to discharge to the ambient air.

"**Control system**" means a combination of one or more capture system or systems and control device or devices working in concert to reduce discharges of pollutants to the ambient air.

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

"**Destruction or removal efficiency**" means the amount of VOC destroyed or removed by a control device expressed as a percent of the total amount of VOC entering the device.

"Dip coating" means the application method of a coating material to a substrate by dipping the part into a tank of coating material.

"**Double block-and-bleed system**" means two block valves connected in series with a bleed valve or line that can vent the line between the two block valves.

"Electric-insulating and thermal-conducting coating" means a coating that displays an electrical insulation of at least 1000 volts DC per mil on a flat test plate and an average thermal conductivity of at least 0.27 BTU per hour-foot-degree Fahrenheit.

"Electrostatic spray" means a method of applying a spray coating in which opposite electric charges are applied to the substrate and the coating. The coating is attracted to the substrate by the electrostatic potential between them.

"**Exempt compounds**" means any of the compounds listed in 2.0 of 7 **DE Admin. Code** 1101 - Definitions, "Volatile Organic Compounds," which have been determined to have negligible photochemical reactivity.

For determining compliance with emission limits, VOCs will be measured according to the procedures in Methods 25 and 25A of **Appendix A** of 40 CFR, Part 60, and the procedures and equations in §60.755. Where such a method also measures compounds with negligible photochemical reactivity, an owner or operator may exclude these negligibly-reactive compounds when determining compliance with an emission standard. However, the Department may require such owner or operator, as a precondition to excluding these compounds for purposes of determining compliance, to provide monitoring methods and monitoring results demonstrating, to the satisfaction of the Department, the amount of negligibly-reactive compounds in the sources emissions.

In addition to the procedures for requesting a satisfactory compliance determination, where the Department proposes to allow the use of a test method for excluding negligibly-reactive compounds that is different or not specified in the approved SIP, such change shall be submitted to the U.S. EPA for approval as part of a SIP revision.

"**External floating roof**" means a cover over an open-top storage tank consisting of a double deck or pontoon single deck that rests upon and is supported by the volatile organic liquid being contained and is equipped with a closure seal or seals to close the space between the roof edge and tank shell.

"**Extreme high-gloss coating**" means a coating which, when tested by ASTM International Method D-523, adopted in 1980, shows a reflectance of 75 or more on a 600 meter.

"**Extreme performance coating**" means a coating used on a metal surface where the coated surface is, in its intended use, subject to the following; (a) chronic exposure to corrosive, caustic or acidic agents, chemicals, chemical fumes, chemical mixtures or solutions: or (b) repeated exposure to temperatures in excess of 250 0F; or (c) repeated heavy abrasion, including mechanical wear and repeated scrubbing with industrial grade solvents, cleansers of scouring agents.

"**Facility**" means all of the pollutant-emitting activities, excluding pollutant-emitting activities from mobile sources that are located on one or more contiguous or adjacent properties, and are under the control of the same person (or person under common control).

"**First attempt at repair**" means to take rapid action for the purpose of stopping or reducing leakage of organic material to the atmosphere using best practices.

"**Flash-off area**" means the space between the coating application area and the oven.

"**Flow coating**" means the application of a coating material to a substrate by pouring the coating over the suspended part.

"**Gasoline tank truck**" means a delivery tank truck used at bulk gasoline plants, bulk gasoline terminals, or gasoline dispensing facilities that is loading or unloading gasoline or that has loaded or unloaded gasoline on the immediately previous load.

"**Gloss flattener**" means a low-gloss coating that is formulated to eliminate glare on the interior surfaces of a vehicle for safety purposes, as specified under the U.S. Department of Transportation Motor Vehicle Safety Standards.

"**Hand application**" means a method of applying coatings by non-mechanical hand-held equipment, including, but not limited to, paint brushes, hand rollers, caulking guns, trowels, spatulas, syringe daubers, rags and sponges.

"**Heavy-duty truck**" means any motor vehicle rated at greater than 3,864 kg (8,500 lb) gross weight designed primarily to transport property.

"**High-volume, low-pressure (HVLP) spray equipment**" means spray equipment that is used to apply coatings using a spray gun that operates less than or equal to 10 psig of atomized air pressure at the air cap.

"**Incinerator**" means a combustion apparatus in which solid, semisolid, liquid, or gaseous combustible wastes are ignited and burned and from which the solid and gaseous residues contain little or no combustible material.

"**Intermittent vapor control system**" means a vapor control system that employs an intermediate vapor holder to accumulate vapors displaced from tanks during filling. The control device treats the accumulated vapors only during automatically controlled cycles.

"**Internal Floating Roof**" means a cover or roof in a fixed-roof tank that rests upon or is floated upon, the liquid being contained, and is equipped with a closure seal or seals to close the space between the roof edge and the tank shell.

"**Knife coating**" means the application of a coating material to a substrate by means of drawing the substrate beneath a knife that spreads the coating evenly over the full width of the substrate.

"**Leak**" means a VOC emission indicated by an instrument calibrated according to Method 21 of 40 CFR, Part 60, **Appendix A**, using zero air (less than 10 parts per million [ppm] of hydrocarbon in air) and a mixture of methane or n-hexane and air at a concentration of about, but less than, 10,000 ppm methane or n-hexane.

“**Lease custody transfer**” means the transfer of produced crude oil or condensate, after processing or treating in the producing operations, from storage tanks or automatic transfer facilities to pipelines or any other forms of transportation.

“**Liquid-mounted seal**” means a primary seal mounted in continuous contact with the liquid between the tank wall and the floating roof around the circumference of the tank.

“**Loading rack**” means an aggregation or combination of gasoline loading equipment arranged so that all loading outlets in the combination can be connected to a tank truck or trailer parked in a specified loading space.

“**Lower explosive limit**” (LEL) means the concentration of a compound in air below which a flame will not propagate if the mixture is ignited.

“**Maximum theoretical emissions**” means the quantity of VOC that theoretically could be emitted by a source without control devices based on the design capacity or maximum production capacity of the source and 8,760 hours of operation per year. The design capacity or maximum production capacity includes use of coatings and inks with the highest VOC content used in practice by the source for the two preceding years.

“**Maximum true vapor pressure**” means the equilibrium partial pressure exerted by a stored liquid at the temperature equal to:

1. for liquids stored above or below the ambient temperature, the highest calendar-month average of the liquid storage temperature, or
2. for liquids stored at the ambient temperature, the local maximum monthly average temperature as reported by the National Weather Service. This pressure shall be determined by one of the following:

i. In accordance with methods described in American Petroleum Institute Bulletin 2517, "Evaporation Loss From External Floating Roof Tanks."

ii. By using standard reference texts.

iii. By ASTM D2879-83.

iv. By any other method approved by the Department as part of the State Implementation Plan (SIP) Revision.

"**Metallic coating**" means a coating which contains more than 5 grams of metal particles per liter of coating, as applied. Metal particles are pieces of a pure elemental metal or a combination of elemental metals.

"**Mold-seal coating**" means the initial coating applied to a new mold or a repaired mold to provide a smooth surface which, when coated with a mold release coating prevents products from sticking to the mold.

“**Multicomponent coating**” means a coating which is packaged in two or more parts, which parts are combined before application, and where a coreactant from one part of the coating chemically reacts, at ambient conditions, with a coreactant from another part of the coating.

"**One-component coating**" means a coating that is ready for application as it comes out of its container to form an acceptable dry film. A thinner, necessary to reduce the viscosity, is not considered a component.

“**Open-ended valve or line**” means any valve, except safety relief valves, having one side of the valve seat in contact with process fluid and one side open to the atmosphere, either directly or through open piping.

“**Organic compound**” means any carbon-containing chemical compound excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate.

“**Oven**” means a chamber which is used to bake, cure, polymerize, or dry a coating.

“**Overall emission reduction efficiency**” means the weight per unit time of VOC removed or destroyed by a control device divided by the weight per unit time of VOC generated by a source, expressed as a percentage. The overall emission reduction efficiency can also be calculated as the product of the capture efficiency and the control device destruction or removal efficiency.

“**Owner or Operator**” means any person who owns, leases, controls, operates or supervises a facility, a source, or air pollution control or monitoring equipment.

“**Person**” means any individual, partnership, copartnership, firm, company, corporation, association, joint stock company, trust, estate, political subdivision, or any other legal entity, or their legal representative, agent, or assigns.

“**Petroleum**” means the crude oil removed from the earth and the oils derived from tar sands, shale and coal.

“**Petroleum Liquid**” means petroleum condensate, and any finished or intermediate products manufactured in a petroleum refinery.

“**Plastisol**” means a coating made of a mixture of finely divided resin and a plasticizer. Plastisol is applied as a thick gel that solidifies when heated.

“**Press-Ready Ink**” means the ink, as applied to the substrate, after all solvents and diluents have been added.

“**Pressure release**” means the emission of materials resulting from system pressure being greater than set pressure of the pressure relief device.

"**Pretreatment coating**" means a coating which contains no more than 12% solids by weight, and at least 0.5% acid by weight, is used to provide surface etching, and is applied directly to metal surfaces to provide corrosion resistance, adhesion, and ease of stripping.

“**Primer**” means any coating applied prior to the application of a topcoat or color coat for the purposes of surface preparation, corrosion resistance, adhesion, and color uniformity.

“**Process unit shutdown**” means a work practice or operational procedure that stops production from a process unit or part of a process unit. An unscheduled work practice or operational procedure that stops production from a process unit or part of a process unit for less than 24 hours is not a process unit shutdown. The use of spare equipment and technically feasible bypassing of equipment without stopping production are not process unit shutdowns.

“**Reid vapor pressure**” means the absolute vapor pressure of volatile crude oil and volatile nonviscous petroleum liquids, except liquified petroleum gases, as determined by ASTM D323-82.

"**Repair coating**" means a coating used to re-coat portions of a previously coated product which has sustained mechanical damage to the coating following normal coating operations.

“**Repaired**” means that equipment is adjusted, or otherwise altered, in order to eliminate a leak as indicated by one of the following: an instrument reading of 10,000 ppm or greater, indication of liquids dripping, or indication by a sensor that a seal or barrier fluid system has failed.

“**Roll coating**” means the application of a coating material to a moving substrate by means of hard rubber, elastomeric, or metal rolls.

“**Rotogravure coating**” means the application of a coating material to a substrate by means of a roll coating technique in which the pattern to be applied is recessed relative to the non-image area, and the coating material is picked up in these recessed areas and is transferred to the substrate.

"**Safety-indicating coatings**" means a coating which changes physical characteristics, such as color, to indicate unsafe conditions.

“**Shutdown**” means the cessation of operation of a facility or of its emission control or emission monitoring equipment.

"**Solar-absorbent coating**" means a coating which has as its prime purpose the absorption of solar radiation.

"**Solid-film lubricant**" means a very thin coating consisting of a binder system containing as its chief pigment material one or more of molybdenum disulfide, graphite, polytetraflouroethylene (PTFE) or other solids that act as a dry lubricant between faying surfaces.

“**Source**” means any building, structure, equipment (excluding mobile equipment temporarily in place), or installation that directly or indirectly releases or discharges, or has the potential to release or discharge, VOCs into the atmosphere.

“**Stage I Vapor Recovery System**” means the control of gasoline vapor from any delivery vessel into any stationary storage vessel, where the vapor displaced by the liquid gasoline is returned to the delivery vessel and transported to the refinery.

“**Stage II Vapor Recovery System**” means a system that controls the emissions of gasoline vapor at the vehicle fill-pipe, where the vapor is captured and returned to a vapor-tight storage tank, or is destroyed; which achieves an overall control efficiency of at least 95%.

“**Standard conditions**” means a temperature of 20°C (68°F) and pressure of 760 mm Hg (29.92 in. Hg).

“**Startup**” means the setting in operation of a source or of its emission control or emission monitoring equipment.

"**Stencil coating**" means a coating which is rolled or brushed onto a template or stamp in order to add identifying letters, symbols or numbers.

“**Storage Vessel**” means each tank, reservoir or container used for the storage of Volatile Organic Liquids, but does not include:

1. Frames, housing, auxiliary supports or other components that are not directly involved in the containment of liquids or vapors; or
2. Subsurface caverns or porous rock reservoirs.

“**Submerged fill**” means the method of filling a delivery vessel or storage vessel where product enters within 150 millimeters (mm) (5.9 inches [in.]) of the bottom of the delivery or storage vessel. Bottom filling of delivery and storage vessels is included in this definition.

“**Substrate**” means the surface onto which a coating is applied or into which a coating is impregnated.

"**Throughput**" means the amount of gasoline dispensed at a gasoline dispensing facility during a calendar month after November 15, 1990.

"**Touch-up coating**" means a coating used to cover minor coating imperfections appearing after the main coating operation.

"**Transfer efficiency**" means the ratio of the amount of coating solids adhering to the object being coated to the total amount of coating solids used in the application process, expressed as a percentage.

"**Two-component paint**" means a coating that is manufactured in two components that are mixed shortly before use. When mixed, the two liquids rapidly crosslink to form a solid composition.

"**Vacuum-metalizing coating**" means the undercoat applied to the substrate on which the metal is deposited or the overcoat applied directly to the metal film. Vacuum metalizing/physical vapor deposition (PVD) is the process whereby metal is vaporized and deposited on a substrate in a vacuum chamber.

"**Vapor collection system**" means all piping, seals, hoses, connections, pressure-vacuum vents, and other equipment between the gasoline tank truck and the vapor processing unit or the storage tanks and vapor holder.

"**Vapor control system**" means a system that limits or prevents release to the atmosphere of organic compounds in the vapors displaced from a tank during the transfer of gasoline.

"**Vapor-mounted seal**" means a primary seal mounted so there is an annular vapor space underneath the seal. The annular vapor space is bounded by the bottom of the primary seal, the tank wall, the liquid surface and the floating roof.

"**Vapor recovery system**" means a vapor-gathering system capable of collecting VOC vapors and gases emitted during the operation of any transfer, storage, or process equipment.

"**Vapor-tight**" means equipment that allows no loss of vapors. Compliance with vapor-tight requirements can be determined by checking to ensure that the concentration at a potential leak source is not equal to or greater than 100% of the LEL when measured with a combustible gas detector, calibrated with propane, at a distance of 2.54 centimeters (cm) (1 inch) from the source.

"**Vapor-tight gasoline tank truck**" means a gasoline tank truck that has demonstrated within the 12 preceding months that its product delivery tank will sustain a pressure change of not more than 75 mm (3.0 in.) of water within five minutes (min) after it is pressurized to 450 mm (18 in.) of water; or when evacuated to 150 mm (5.9 in.) of water, the same tank will sustain a pressure change of not more than 75 mm (3.0 in.) of water within 5 min. This capability is to be demonstrated using the test procedures specified in Method 27 of **Appendix A** of 40 CFR, Part 60 (July 1, 1992).

"**Volatile Organic Liquid**" (VOL) means any organic liquid which can emit any Volatile Organic Compound into the atmosphere (see definition of "Volatile Organic Compound" of this regulation).

"**Volatile Organic Compound**" (VOC) means any carbon-containing compound excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate, which participates in atmospheric photochemical reactions. This includes any organic compounds other than those defined as "Exempt Compounds", which have been determined to have negligible photochemical reactivity (see definition of "Exempt Compounds" of this regulation). In addition to the procedures for requesting a satisfactory compliance demonstration, where the Department proposes to allow the use of a test method for excluding negligibly reactive compounds that is different from or not specified in the approved SIP, such change shall be submitted to the Environmental Protection Agency (U.S. EPA) for approval as part of a SIP Revision.

"**Web coating line**" means all of the coating applicator or applicators, drying area or areas, or oven or ovens, located between an unwind station and a rewind station, that are used to apply coating onto a continuous strip of substrate (the web). A web coating line need not have a drying oven.

13 DE Reg. 1344 (04/01/10)

3.0 Applicability

01/11/1993

3.1 All existing, new, reconstructed and modified sources shall meet all applicable provisions of this regulation.

3.2 Nothing in this regulation shall be construed to exempt new, reconstructed or modified sources from meeting any other applicable Department or federal rules, including New Source Review requirements.

3.3 This regulation does not apply to any equipment at a facility used exclusively for chemical or physical analysis or determination of product quality and commercial acceptance provided the operation of the equipment is not an integral part of the production process and the total actual emissions from all such equipment at the facility do not exceed 204 kilograms (kg) (450 pounds [lb]) in any calendar month. Any facility claiming exemption from the provisions 3.3 of this regulation shall comply with the provisions of 3.5 of this regulation.

3.4

3.4.1 Any facility that becomes or is currently subject to the provisions of this regulation by exceeding an applicability threshold will remain subject to these provisions, even if its throughput or emissions later fall below the applicability threshold, except as provided in 3.7 of this regulation.

3.4.2 Any facility that is currently subject to a state or federal rule promulgated pursuant to the Clean Air Act Amendments of 1977 by exceeding an applicability threshold is and will remain subject to these provisions, even if its throughput or emissions have fallen or later fall below the applicability threshold.

3.5 Any facility that claims exemption from the provisions of this regulation by reason of meeting the conditions in 3.3 of this regulation shall maintain the following annual records in a readily accessible location for at least 5 years and shall make those records available to the Department upon verbal or written request:

3.5.1 Records to document the purpose of the equipment for which the exemption is claimed.

3.5.2 Records to document the amount of each volatile organic compound (VOC)-containing material used in the equipment each calendar month and the VOC content of each material such that emissions can be determined for each calendar month.

3.6 The owner or operator of a facility or source subject to any control requirement of this regulation may comply with an alternative control plan that has been approved by the Department and the U.S. EPA.

3.7 The owner or operator of a facility or source subject to this regulation may petition the Department for exemption from the requirements of this regulation upon a showing that such facility or source no longer has the potential to emit Volatile Organic Compounds (VOCs). Any exemption granted shall be embodied in a Consent Order which shall contain terms and conditions necessary to ensure that no Volatile Organic Compounds (VOCs) may be emitted from the facility or source. For federal enforcement purposes, such exemption shall not be effective until approved by the U.S. EPA.

4.0 Compliance Certification, Recordkeeping, and Reporting Requirements for Coating Sources

11/29/1994

4.1 To establish the records required under 4.0 of this regulation, the volatile organic compound (VOC) content of each coating, as applied, and the efficiency of each capture system and control device shall be determined by the applicable test methods and procedures specified in **Appendix B** and **Appendix D** of this regulation.

4.2 Requirements for coating sources exempt from emission limitations. Any owner or operator of a coating unit, line, or operation that is exempt from the emission limitations of 10.0 through 23.0 of this regulation because combined VOC emissions from all coating units, lines, and operations at the facility are below the applicability threshold specified in the individual sections of this regulation, before the application of capture systems and control devices, shall comply with the following for each section of this regulation from which the owner or operator claims an exemption:

4.2.1 Certification. By November 15, 1993, the owner or operator of a facility referenced in 4.2 of this regulation shall certify to the Department that the facility is exempt from emission limitations by providing all of the following:

4.2.1.1 The name and location of the facility.

4.2.1.2 The address and telephone number of the person responsible for the facility.

4.2.1.3 A declaration that the facility is exempt from the emission limitations of 10.0 through 23.0 of this regulation because combined VOC emissions from all coating units, lines, and operations at the facility that are covered by an individual section of this regulation are below the appropriate applicability threshold before the application of capture systems and control devices.

4.2.1.4 Calculations of the daily-weighted average that demonstrate that the combined VOC emissions from all coating units, lines, and operations at the facility that are covered by an individual section of this regulation for a day representative of current maximum production levels are less than 6.8 kilograms (kg) (15 pounds [lb]) before the application of capture systems and control devices. The following equation shall be used to calculate total VOC emissions for that day:

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

(4-1)

where:

T = Total VOC emissions from coating units, lines, and operations at the facility before the application of capture systems and control devices in units of kg/day (lb/day).

n = Number of different coatings applied on each coating unit, each coating line, or each operation at the facility.

i = Subscript denoting an individual coating.

A_i = Mass of VOC per volume of coating (i) (excluding water and exempt compounds), as applied, used at the facility in units of kilograms VOC per liter (kg VOC/L) (pounds VOC per gallon [lb VOC/gal]).

B_i = Volume of coating (i) (excluding water and exempt compounds), as applied, used at the facility in units of liters per day (L/day) (gallons per day [gal/day]). The instrument or method by which the owner or operator accurately measured or calculated the volume of each coating, as applied, used at the facility shall be described in the certification to the Department.

4.2.2 Recordkeeping. On and after November 15, 1993, the owner or operator of a facility referenced in 4.2 of this regulation shall collect and record all of the following information each day and maintain the information at the facility for a period of 5 years:

4.2.2.1 The name and identification number of each coating, as applied.

4.2.2.2 The mass of VOC per volume (excluding water and exempt compounds) and the volume of coating (i) (excluding water and exempt compounds), as applied, used each day.

4.2.2.3 The total VOC emissions at the facility, as calculated using the equation under 4.2.1.4 of this regulation.

4.2.3 Reporting. On and after November 15, 1993, the owner or operator of a facility referenced in 4.2 of this regulation shall notify the Department of any record showing that combined VOC emissions from all coating units, lines, and operations at the coating facility exceed 6.8 kg (15 lb) on any day, before the application of capture systems and control devices. A copy of such record shall be sent to the Department within 45 calendar days after the exceedance occurs. This reporting requirement is in addition to any other exceedance reporting requirements mandated by the State of Delaware.

4.3 Requirements for coating sources using complying coatings. Any owner or operator of a coating unit, line, or operation subject to the limitations of 10.0 through 12.0 or 13.3.1 or 14.0 through 23.0 of this regulation and complying by means of the use of complying coatings shall comply with the following:

4.3.1 Certification. By November 15, 1993, or upon startup of a new coating unit, line, or operation, or upon changing the method of compliance for an existing subject coating unit, line, or operation from daily-weighted averaging or control devices to the use of complying coatings, the owner or operator of a coating unit, line, or operation referenced in 4.3 of this regulation shall certify to the Department that the coating unit, line, or operation is or will be in compliance with the requirements of the applicable section of this regulation on and after November 15, 1993, or on and after the initial startup date. Such certification shall include:

4.3.1.1 The name and location of the facility.

4.3.1.2 The address and telephone number of the person responsible for the facility.

4.3.1.3 Identification of subject sources.

4.3.1.4 The name and identification number of each coating, as applied, on each coating unit, line, or operation.

4.3.1.5 The mass of VOC per volume (excluding water and exempt compounds) and the volume of each coating (excluding water and exempt compounds), as applied per day.

4.3.1.6 The time at which the facility's "day" begins if a time other than midnight local time is used to define a "day."

4.3.2 Recordkeeping. On and after November 15, 1993, or on and after the initial startup date, the owner or operator of a coating unit, line, or operation referenced in 4.3 of this regulation and complying by the use of complying coatings shall collect and record all of the following information each day for each coating unit, line, or operation and maintain the information at the facility for a period of five years:

4.3.2.1 The name and identification number of each coating, as applied, on each coating unit, line, or operation.

4.3.2.2 The mass of VOC per volume of each coating (excluding water and exempt compounds), as applied, used each day on each coating unit, line, or operation.

4.3.2.3 The volume of each coating applied each day on each coating unit line or operation.

4.3.3 Reporting. On and after November 15, 1993, the owner or operator of a subject coating unit, line, or operation referenced in 4.3 of this regulation shall notify the Department in either of the following instances:

4.3.3.1 Any record showing use of any non-complying coatings shall be reported by sending a copy of such record to the Department within 45 calendar days following that use.

4.3.3.2 At least 30 calendar days before changing the method of compliance from the use of complying coatings to daily-weighted averaging or control devices, the owner or operator shall comply with all requirements of 4.4.1 or 4.5.1 of this regulation, respectively, as well as 7 **DE Admin. Code** 1102. Upon changing the method of compliance from the use of complying coatings to daily-weighted averaging or control devices, the owner or operator shall comply with all requirements of the section of this regulation applicable to the coating unit, line, or operation referenced in 4.3 of this regulation.

4.4 Requirements for coating sources using daily-weighted averaging. Any owner or operator of a coating unit, line, or operation subject to the limitations of 10.0 through 12.0 or 13.3.1 or 14.0 through 23.0 of this regulation and complying by means of daily-weighted averaging on that unit, line, or operation shall comply with the following:

4.4.1 Certification. By November 15, 1993, or upon startup of a new coating unit, line, or operation, or upon changing the method of compliance for an existing subject coating unit, line, or operation from the use of complying coatings or control devices to daily-weighted averaging, the owner or operator of the subject coating unit, line, or operation shall certify to the Department that the coating unit, line, or operation is or will be in compliance with 4.4 of this regulation on and after November 15, 1993, or on and after the initial startup date. Such certification shall include:

4.4.1.1 the name and location of the facility.

4.4.1.2 the address and telephone number of the person responsible for the facility.

4.4.1.3 Identification of subject sources.

4.4.1.4 The name and identification number of each coating unit, line, or operation that will comply by means of daily-weighted averaging.

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

4.4.1.6 The method by which the owner or operator will create and maintain records each day as required in 4.4.2 of this regulation.

4.4.1.7 Calculation of the daily-weighted average, using the procedure in 1.0 of **Appendix C** of this regulation, for a day representative of current or projected maximum production levels.

4.4.1.8 The time at which the facility's "day" begins if a time other than midnight local time is used to define a "day."

4.4.2 Recordkeeping. On and after November 15, 1993, or on and after the initial startup date, the owner or operator of a coating unit, line, or operation referenced in 4.4 of this regulation and complying by means of daily-weighted averaging shall collect and record all of the following information each day for each coating unit, line, or operation and maintain the information at the facility for a period of five years:

4.4.2.1 The name and identification number of each coating, as applied, on each coating unit, line, or operation.

4.4.2.2 The mass of VOC per volume (excluding water and exempt compounds) and the volume of each coating (excluding water and exempt compounds), as applied, used each day on each coating unit, line, or operation.

4.4.2.3 The daily-weighted average VOC content of all coatings, as applied, on each coating unit, line, or operation calculated according to the procedure in 1.0 of **Appendix C** of this regulation.

4.4.3 Reporting. On and after November 15, 1993, the owner or operator of a subject coating unit, line, or operation referenced in 4.4 of this regulation shall notify the Department in either of the following instances:

4.4.3.1 Any record showing noncompliance with the applicable daily-weighted average requirements shall be reported by sending a copy of the record to the Department within 45 calendar days following the occurrence.

4.4.3.2 At least 30 calendar days before changing the method of compliance from daily-weighted averaging to the use of complying coatings or control devices, the owner or operator shall comply with all requirements of 4.3.1 or 4.5.1 of this regulation, respectively, as well as 7 **DE Admin. Code** 1102. Upon changing the method of compliance from daily-weighted averaging to the use of complying coatings or control devices, the owner or operator shall comply with all requirements of the section of this regulation applicable to the coating unit, line, or operation referenced in 4.4 of this regulation.

4.5 Requirements for coating sources using control devices. Any owner or operator of a coating unit, line, or operation subject to the limitations of 10.0 through 23.0 of this regulation and complying by means of control devices shall comply with the following:

4.5.1 Testing of control equipment. By November 15, 1993, or upon startup of a new coating unit, line, or operation, or upon changing the method of compliance for an existing coating unit, line, or operation from the use of complying coatings or daily-weighted averaging to control devices, the owner or operator of the subject coating unit, line, or operation shall perform a compliance test. Testing shall be performed within 90 days of startup, and pursuant to the procedures in **Appendix A** through **Appendix D** of this regulation. The owner or operator of the subject coating unit, line, or operation shall submit to the Department the results of all tests and calculations necessary to demonstrate that the subject coating unit, line, or operation is or will be in compliance with the applicable section of this regulation on and after November 15, 1993, or on and after the initial startup date.

4.5.2 Recordkeeping. On and after November 15, 1993, or on and after the initial startup date, the owner or operator of a coating unit, line, or operation referenced in 4.5 of this regulation shall collect and record all of the following information each day for each coating unit, line, or operation and maintain the information at the facility for a period of five years:

4.5.2.1 The name and identification number of each coating used on each coating unit, line, or operation.

4.5.2.2 The mass of VOC per unit volume of coating solids, as applied, the volume solids content, as applied, and the volume, as applied, of each coating used each day on each coating unit, line, or operation.

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

4.5.2.4 The required overall emission reduction efficiency for each day for each coating unit, line, or operation as determined in 10.5.1.3, 11.4, 12.5.1.3, 13.5.1.3, 14.5.1.3, 15.5.1.3, 16.5.1.3, 17.5.1.3, 18.5.1.3, 19.5.1.3, 20.5.1.3, 21.5.1.3, 22.5.1.3, 23.5.1.3 of this regulation.

4.5.2.5 The actual overall emission reduction efficiency achieved for each day for each coating unit, line, or operation as determined in 3.0 of **Appendix D** of this regulation.

4.5.2.6 Control device monitoring data.

4.5.2.7 A log of operating time for the capture system, control device, monitoring equipment, and the associated coating unit, line, or operation.

4.5.2.8 A maintenance log for the capture system, control device, and monitoring equipment detailing all routine and non-routine maintenance performed including dates and duration of any outages.

4.5.2.9 For thermal incinerators, all 3-hour periods of operation in which the average combustion temperature was more than 28°C (50°F) below the average combustion temperature during the most recent performance test that demonstrated that the facility was in compliance. The combustion chamber set-point shall be no less than that during the most recent performance test that demonstrated that the facility was in compliance.

4.5.2.10 For catalytic incinerators, all 3-hour periods of operation in which the average temperature of the process vent stream immediately before the catalyst bed is more than 28°C (50°F) below the average temperature of the process vent stream immediately before the catalyst bed during the most recent performance test that demonstrated that the facility was in compliance. The set-point for the process vent stream immediately before the catalyst bed shall be no less than that during the most recent performance test that demonstrated that the facility was in compliance.

4.5.2.11 For carbon adsorbers, all three-hour periods of operation during which either the average VOC concentration or the reading of organics in the exhaust gases is more than 20% greater than the average exhaust gas concentration or reading measured by the organics monitoring device during the most recent determination of the recovery efficiency of the carbon adsorber that demonstrated that the facility was in compliance.

4.5.3 Reporting. On and after November 15, 1993, the owner or operator of a subject coating unit, line, or operation referenced in 4.5 of this regulation shall notify the Department in either of the following instances:

4.5.3.1 Any record showing noncompliance with the applicable requirements for control devices shall be reported by sending a copy of the record to the Department within 45 calendar days following the occurrence.

4.5.3.2 At least 30 calendar days before changing the method of compliance from control devices to the use of complying coatings or daily-weighted averaging, the owner or operator shall comply with all

requirements of 4.3.1 or 4.4.1 of this regulation, respectively, as well as 7 **DE Admin. Code** 1102. Upon changing the method of compliance from control devices to the use of complying coatings or daily-weighted averaging, the owner or operator shall comply with all requirements of the section of this regulation applicable to the coating unit, line, or operation referenced in 4.5 of this regulation.

5.0 Compliance Certification, Recordkeeping, and Reporting Requirements for Non-Coating Sources

01/11/1993

5.1 Initial compliance certification. The owner or operator of any facility containing sources subject to 5.0 of this regulation shall submit to the Department an initial compliance certification by November 15, 1993. The owner or operator of any new facility containing sources that become subject to 5.0 of this regulation after November 15, 1992 shall submit an initial compliance certification immediately upon startup of the facility.

5.1.1 The initial compliance certification shall provide at a minimum the following information:

5.1.1.1 The name and location of the facility.

5.1.1.2 The address and telephone number of the person responsible for the facility.

5.1.1.3 Identification of subject sources.

5.1.2 For each subject source, the initial compliance certification shall also provide at a minimum:

5.1.2.1 The applicable emission limitation, equipment specification, or work practice.

5.1.2.2 The method of compliance.

5.1.2.3 For each source subject to numerical emission limitations of this regulation, the estimated emissions without control.

5.1.2.4 The control system or systems in use.

5.1.2.5 The design performance efficiency of the control system.

5.1.2.6 For each source subject to numerical emission limitations of this regulation, the estimated emissions after control.

5.1.2.7 Certification that each subject source at the facility is in compliance with the applicable emission limitation, equipment specification, or work practice.

5.1.2.8 The time at which the facility's "day" begins if a time other than midnight local time is used to define a "day."

5.2 Reports of excess emissions. The owner or operator of any facility containing sources subject to 5.0 of this regulation shall, for each occurrence of excess emissions, within 30 calendar days of becoming aware of such occurrence, supply the Department with the following information, in addition to complying with any other reporting requirements mandated by the State of Delaware:

5.2.1 The name and location of the facility.

5.2.2 The subject sources that caused the excess emissions.

5.2.3 The time and date of first observation of the excess emissions.

5.2.4 The cause and expected duration of the excess emissions.

5.2.5 For sources subject to numerical emission limitations, the estimated rate of emissions (expressed in the units of the applicable emission limitation) and the operating data and calculations used in determining the magnitude of the excess emissions.

5.2.6 The proposed corrective actions and schedule to correct the conditions causing the excess emissions.

5.3 Requirements for sources using control devices.

5.3.1 Testing of control equipment. By November 15, 1993, or upon startup of a new source, or upon changing the method of compliance for an existing source, the owner or operator of the subject source shall perform all tests and submit to the Department the results of all tests and calculations necessary to demonstrate that the subject source will be in compliance with the applicable section of this regulation on and after November 15, 1993, or on and after the initial startup date.

5.3.2 Recordkeeping.

5.3.2.1 Each owner or operator of a source subject to 5.0 of this regulation shall maintain up-to-date, readily accessible continuous records of any equipment operating parameters specified to be monitored in the applicable section of this regulation as well as up-to-date, readily accessible records of periods of operation during which the parameter boundaries established during the most recent performance test are exceeded. These records shall be maintained for at least five years. The Department may at any time require a report of these data. Periods of operation during

which the parameter boundaries established during the most recent performance tests are exceeded are defined as follows:

5.3.2.1.1 For thermal incinerators, all three-hour periods of operation in which the average combustion temperature was more than 28°C (50°F) below the average combustion temperature during the most recent performance test that demonstrated that the facility was in compliance. The combustion chamber set-point shall be no less than that during the most recent performance test that demonstrated that the facility was in compliance.

5.3.2.1.2 For catalytic incinerators, all three-hour periods of operation in which the average temperature of the process vent stream immediately before the catalyst bed is more than 28°C (50°F) below the average temperature of the process vent stream immediately before the catalyst bed during the most recent performance test that demonstrated that the facility was in compliance. The set-point for the process vent stream immediately before the catalyst bed shall be no less than that during the most recent performance test that demonstrated that the facility was in compliance.

5.3.2.1.3 For carbon adsorbers, all three-hour periods of operation during which either the average VOC concentration or the reading of organics in the exhaust gases is more than 20% greater than the average exhaust gas concentration or reading measured by the organics monitoring device during the most recent determination of the recovery efficiency of the carbon adsorber that demonstrated that the facility was in compliance.

5.3.2.2 A log of operating time for the capture system, control device, monitoring equipment, and the associated source.

5.3.2.3 A maintenance log for the capture system, control device, and monitoring equipment detailing all routine and non-routine maintenance performed including dates and duration of any outages.

6.0 General Recordkeeping

01/11/1993

Each owner or operator of a source subject to this regulation shall maintain all records necessary for determining compliance with this regulation at the facility for a period of five years.

7.0 Circumvention

01/11/1993

7.1 No owner or operator subject to this regulation may build, erect, install, or use any article, machine, equipment, process, or other method the use of which conceals emissions that would otherwise constitute non-compliance with an applicable section of this regulation.

7.2 7.1 of this regulation includes, but is not limited to, the use of gaseous diluents to achieve compliance, and the piecemeal carrying out of an operation to avoid coverage by a section of this regulation that applies only to operations larger than a specified size.

7.3 No owner or operator of a facility subject to this regulation shall discharge or dispose of VOCs or material containing VOCs to surface impoundments, pits, wastewater treatment facilities or sewers for the purpose of circumventing any provision or requirement of this regulation.

8.0 Handling, Storage, and Disposal of Volatile Organic Compounds (VOCs)

03/11/11

8.1 Except as provided for in 8.3 of this regulation, the requirements of 8.0 of this regulation apply to any facility that is subject to any of the requirements of 10.0 through 50.0 of this regulation, and any facility that emits at least 6.8 kg/day (15 lb/day) of VOC before consideration of controls.

8.2 Definitions

"**Cleanup solvent**" means a VOC-containing material used to remove any loosely held uncured (i.e., not dry to the touch) adhesive or sealant that is subject to 4.0 of 7 **DE Admin. Code** 1141 from a substrate, or to clean equipment used in applying an adhesive or sealant subject to 4.0 of 7 **DE Admin. Code** 1141.

"**Electrical and electronic components**" means components and assemblies of components that generate, convert, transmit, or modify electrical energy. Electrical and electronic components include, but are not limited to, wires, windings, stators, rotors, magnets, contacts, relays, printed circuit boards, printed wire assemblies, wiring boards, integrated circuits, resistors, capacitors and transistors. Cabinets in which electrical and electronic components are housed are not considered electrical and electronic components.

"**Flushing**" means pumping a solvent from a reservoir through a pipe or hose or through equipment (e.g., pipes, hoses, tanks) to remove contaminants or residue.

"**Hand-wiping**" means a method of cleaning a surface by physically rubbing it with a material such as a rag, paper, sponge or a cotton swab moistened with a solvent.

"**Medical device**" means an instrument, apparatus, implement, machine, contrivance, implant, in vitro reagent or other similar article, including any component or accessory that is, (i) intended for use in the diagnosis of disease or other conditions, or in the cure, mitigation, treatment, or prevention of diseases, or (ii) is intended to affect the structure or any function of the body, or (iii) is defined in the National Formulary or the United States Pharmacopoeia or any supplement to it.

"**Non-manufacturing area cleaning**" means the cleaning of cafeterias, laboratories, pilot facilities, restrooms, office buildings, etc.

"**Medical Device and Pharmaceutical Manufacturing**" means Medical devices; pharmaceutical products; and associated manufacturing and product handling equipment and material, work surfaces, maintenance tools and room surfaces that are subject to US FDA current Good Manufacturing/Laboratory Practice, or CDC/ NIH guidelines for biological disinfection of surfaces.

"**Pharmaceutical product**" means a preparation or compound, which includes any drug, analgesic, decongestant, antihistamine, cough suppressant, vitamin, mineral or herb supplement intended for human or animal consumption and used to cure, mitigate or treat disease or improve or enhance health.

"**Precision optics**" means the optical elements used in electro-optical devices that are designed to sense, detect, or transmit light energy, including specific wavelengths of light energy and changes of light energy levels.

"**Solvent Cleaning Operation**" means the removal of uncured adhesives, inks, coatings, or contaminants including dirt, soil, and grease from parts, products, tools, machinery, equipment, and general work areas. Solvent cleaning operations include hand-wiping, surface preparation, flushing and the cleaning of spray guns/ cleaning of equipment used to spray coatings, adhesives, etc.

"**Stripping**" means the removal of cured coatings, cured inks, or cured adhesives.

"**Surface preparation**" means the removal of contaminants such as dust, soil, oil, grease, etc., prior to coating, adhesive, or ink applications.

"**Surface preparation solvent**" means a solvent used to remove dirt, oil and other contaminants from a substrate prior to the application of a primer, adhesive or sealant that is subject to 4.0 of 7 **DE Admin. Code** 1141.

8.3 Exemptions.

8.3.1 The requirements of 8.0 this regulation do not apply to any equipment or operation that is specifically subject to the emission limitations of 10.0, 11.0 or 38.0 of this regulation; or to any piece of equipment that is specifically subject to the requirements of 33.0 of this regulation.

8.3.2 Existing sources affected by 8.0 of this regulation shall comply with the provisions of 8.0 of this regulation on and after March 11, 2011, except for the requirements of 8.5 of this regulation. Existing sources affected by 8.5 of this regulation shall comply with the requirements of 8.5 of this regulation beginning as soon as practical, but no later than March 11, 2012. New, modified, or reconstructed sources affected by 8.0 of this regulation shall comply with the provisions of 8.0 of this regulation on and after startup.

8.3.3 The requirements of 8.5 of this regulation shall not apply to any facility subject to 47.0 of this regulation, or to:

8.3.3.1 The surface preparation or cleaning of electrical and electronic components;

8.3.3.2 The surface preparation or cleaning of precision optics;

8.3.3.3 The surface preparation or cleaning of numismatic dies;

8.3.3.4 Stripping of cured inks, coatings, and adhesives;

8.3.3.5 The cleaning of resin, coating, ink, and adhesive mixing, molding, and application equipment;

8.3.3.6 Surface preparation associated with research and development activities;

8.3.3.7 Surface preparation associated with medical device and pharmaceutical manufacturing;

8.3.3.8 Cleaning associated with performance or quality assurance testing of coatings, inks, or adhesives involved;

8.3.3.9 Non-manufacturing area cleaning, and

8.3.3.10 The use of any surface preparation solvent or cleanup solvent subject to 4.0 of 7 **DE Admin. Code** 1141.

8.4 Work Practice Standards.

8.4.1 No owner or operator of a facility subject to 8.4 of this regulation may cause, allow, or permit the disposal of more than five kilograms (kg) (11 pounds [lb]) of any VOC, or of any materials containing more than five kg (11 lb) of any VOCs, at that facility in any one day in a manner that would permit the evaporation of VOC into the ambient air. This provision does not apply to:

8.4.1.1 Any VOC or material containing VOC emitted from a regulated entity that is subject to a VOC standard under this regulation.

8.4.1.2 Coating sources that are exempt from the emission limitations of 10.0 through 23.0 of this regulation.

8.4.1.3 Waste paint (sludge) handling systems, water treatment systems, and other similar operations at coating facilities using complying coatings.

8.4.1.4 Any VOC or material containing VOCs used during process maintenance turnarounds for cleaning purposes, provided that the provisions of 8.4.3, 8.4.4, 8.4.5 and 8.4.6 of this regulation are followed.

8.4.2 The requirements of 8.4.1 of this regulation includes, but are not limited to, the disposal of VOC from VOC control devices.

8.4.3 No owner or operator of a facility subject to 8.4 of this regulation shall use open containers for the storage or disposal of cloth or paper impregnated with VOCs. Containers for the storage or disposal of cloth or paper impregnated with VOCs shall be kept closed, except when adding or removing material.

8.4.4 No owner or operator of a facility subject to 8.4 of this regulation shall store in open containers spent or fresh VOC or VOC containing material. Containers for the storage of spent or fresh VOCs or VOC containing material shall be kept closed, except when adding or removing material.

8.4.5 No owner or operator of a facility subject to 8.4 of this regulation shall use VOC for the cleanup of spray equipment unless one or more of the following methods are used to collect the cleaning compounds and to minimize their evaporation to the atmosphere.

8.4.5.1 Use of an enclosed spray gun cleaning system that is kept closed when not in use.

8.4.5.2 Non-atomized discharge of solvent into a waste container that is kept closed when not in use.

8.4.5.3 Disassembly of the spray gun and cleaning in a vat that is kept closed when not in use.

8.4.5.4 Atomized spray into a waste container that is fitted with a device that captures atomized solvent emissions.

8.4.5.5 Any alternative technique that has been demonstrated to, and accepted by the Department as producing emissions that are equal to or less than the emissions from the techniques specified in 8.4.5.1 through 8.4.5.4 of this regulation. Emissions from any alternative technique shall be demonstrated pursuant to test protocols that are approved in advance by the Department.

8.4.6 Any owner or operator of a facility subject to 8.4 of this regulation shall:

8.4.6.1 Convey VOC-containing cleaning materials from one location to another in closed containers or pipes.

8.4.6.2 Handle and transfer all fresh and spent cleaning solvent and other VOC-containing material to or from any container, tank, vat, vessel, mixing vessel, or piping system, etc. in such a manner that minimizes spills and other losses.

8.4.6.3 Clean up spills of fresh and spent cleaning solvent and other VOC-containing material immediately.

8.4.7 Any owner or operator of a facility subject to 8.4 of this regulation shall minimize air circulation around cleaning operations and shall implement equipment practices that minimize emissions including keeping part cleaners covered when not in use, and maintaining cleaning equipment to repair solvent leaks.

8.5 Control Requirements. No owner or operator of a facility subject to 8.5 of this regulation shall use any liquid VOC containing material for any solvent cleaning operation that does not meet one of the requirements of 8.5.1 through 8.5.3.

8.5.1 The VOC content is equal to or less than 50 grams VOC per liter (0.42 1b/gal), as applied, or

8.5.2 The VOC composite vapor pressure is equal to or less than 8 millimeters of mercury (mmHg) at 20 degrees Celsius (20°C), as applied, or

8.5.3 The emissions of that material are controlled by an emission control system that:

8.5.3.1 Achieves an overall control efficiency of equal to or greater than 85 percent, by weight, or

8.5.3.2 Maintains a maximum outlet total organic carbon concentration of 20 parts per million by volume (ppmv) as carbon (C1) on a dry basis.

8.6 Test Methods and Procedures.

8.6.1 Any owner or operator subject to 8.5.1 of this regulation shall determine the VOC content of each cleaning solution using the test methods and procedures specified in Appendix A and Appendix B of this regulation, or using the manufacturer's product formulation data, and the following equation:

$$\text{VOC Content (in grams per liter of material)} = (WS - WW - Wes)/Vm \quad (8\text{-}1)$$

Where:
WS = Weight of volatile compounds in grams(g);
WW = Weight of water, in g;
Wes = Weight of exempt compounds in g;
Vm = Volume of material in liters

8.6.2 Any owner or operator subject to 8.5.2 of this regulation shall determine the VOC composite vapor pressure of each cleaning solution using the test methods and procedures specified in Appendix A and Appendix B of this regulation, or using the manufacturer's product formulation data, and the following equation:

$$PP_C = \sum_{i=1}^{n} \frac{\frac{(W_i)(VP_i)}{MW_i}}{\frac{W_w}{MW_w} + \frac{W_e}{MW_e} + \sum_{i=1}^{n} \frac{W_i}{MW_i}} \quad (8\text{-}2)$$

Where:
Wi = Weight of the ith VOC compound, in grams (g);
Ww = Weight of water, in g;
We = Weight of exempt compound, in g;
MWi = Molecular weight of the ith VOC compound, in grams per gram-mole
MWw = Molecular weight of water, in grams per gram-mole
MWe = Molecular weight of exempt compound, in grams per gram-mole;
PP_C= VOC composite partial pressure at 20°C, in mmHg
VPi = Vapor pressure of the ith VOC compound at 20°C, in mmHg

8.6.3 Any owner or operator subject to 8.5.3 of this regulation shall conduct an initial test to demonstrate the efficiency of each emission control system using the applicable test methods and procedures specified in Appendix A through Appendix E of this regulation. The cleaning operation shall operate at maximum operating conditions and flow rates during any emission testing.

8.7 Recordkeeping. Any owner or operator subject to 8.5 of this regulation shall maintain all of the information necessary for the Department to determine compliance with the applicable requirements of 8.5 of this regulation. Such information shall be made available to the Department upon verbal or written request, and shall be maintained for a minimum of five years from the date such record is created. Information sufficient to determine compliance shall include, but is not limited to the following:

8.7.1 Name and quantity of each cleaning solvent used,
8.7.2 VOC content or vapor pressure of each cleaning solvent, as applied,
8.7.3 Material Safety Data Sheets for all cleaning solvents used,
8.7.4 Documentation of air pollution control equipment efficiency or capture efficiency, if applicable,
8.7.5 Date and type of maintenance performed on air pollution control or capture equipment, if applicable, and
8.7.6 Quantity of non-compliant solvent used, in gallons, for each day, each week, and calendar year.

14 DE Reg. 902 (03/01/11)

9.0 Compliance, Permits, Enforceability
01/11/1993

9.1 Compliance with the provisions of this regulation is required immediately upon promulgation.

9.2 Permits. After the effective date of this regulation, no owner or operator shall construct, modify or operate any source subject to this regulation without first obtaining a permit for such construction, modification or operation pursuant to the provisions of 7 **DE Admin. Code** 1102.

9.3 Compliance Programs and Schedules. For sources as a result of this regulation that are required to make major process changes or major capital expenditures, as determined by the Department, an acceptable program to comply with this regulation shall be developed and submitted to the Department by the owner or operator of such source within 180 days of the effective date of the regulation. The program shall include the dates for ordering, receiving, installation and startup of necessary equipment. All such programs shall contain a schedule and timetable for compliance certification, including increments of progress which will require compliance with the applicable requirements as expeditiously as practicable, but not later than the date specified in the applicable requirement. [Note: For federal purposes and for federal enforcement, no such program approved by the Department shall be federally-approved pursuant to the Clean Air Act until the Administrator of the U.S. EPA determines that such program was approved in accordance with these requirements, or within the applicable provisions of the Federal Clean Air Act, and any such program approved by the Department shall cease to be federally approved upon a determination by the Administrator of the U.S. EPA that it was not issued in accordance with the applicable provisions of the Federal Clean Air Act].

9.4 Enforceability. For the purpose of federal enforceability of the provisions of this regulation, references to the Department shall also mean the Administrator of the U.S. EPA.

10.0 Aerospace Coatings

02/11/2003

10.1 Applicability

10.1.1 Except as provided for in 10.1.2 and 10.1.3 of this regulation, 10.0 of this regulation applies to any owner or operator of any aerospace manufacturing or rework facility that conducts any of the following operation or operations:

10.1.1.1 hand-wipe cleaning;

10.1.1.2 spray gun cleaning;

10.1.1.3 flush cleaning;

10.1.1.4 primer, topcoat, self-priming topcoat, and specialty coating application;

10.1.1.5 the depainting of the outer surface of aerospace vehicles (except for depainting parts or units normally removed during depainting);

10.1.1.6 Type I or Type II chemical milling maskant application; and

10.1.1.7 VOC handling and storage.

10.1.2 Except for the requirements in 10.3.8 of this regualtion, 10.0 of this regulation does not apply to the following operations in any aerospace manufacturing or rework facility:

10.1.2.1 Chemical milling;

10.1.2.2 Metal finishing;

10.1.2.3 Electrodeposition (except for the electrodeposition of paints); and

10.1.2.4 Composite processing operations (except for cleaning and coating of composite parts or components that become part of an Aerospace vehicle or component as well as composite tooling that comes in contact with such composite parts or components prior to cure).

10.1.3 The requirements of 10.0 of this regulation do not apply to aerospace manufacturing or rework facilities whose plant-wide, actual emissions from the operations in 10.1.1 of this regulation without control devices are less than 6.8 kilograms (kg) (15 pounds [lbs]) of volatile organic compounds (VOCs) per day.

10.1.4 Existing sources affected by 10.0 of this regulation shall comply with the provisions of 10.0 of this regulation on and after the effective date of 10.0 of this regulation, except for the requirements of 10.3.6.2 and 10.3.7 of this regulation. Existing sources affected by 10.0 of this regulation shall comply with the requirements of 10.3.6.2 and 10.3.7 of this regulation beginning as soon as practical, but no later than the date one year after the effective date of 10.0 of this regulation. New, modified, or reconstructed sources affected by 10.0 of this regulation shall comply with the provisions of 10.0 of this regulation on and after startup. Not withstanding 1.5 of this regulation, any owner or operator currently permitted under 7 **DE Admin. Code** 1102 or 1130, or both 1102 and 1130 to operate an *aerospace manufacturing or rework facility* shall submit to the Department an application to amend the current permit and to comply with the provisions of this Section, pursuant to 7 **DE Admin. Code** 1102 or 1130, or both 1102 and 1130, as applicable.

10.1.5 Any facility that becomes or is currently subject to the provisions of 10.0 of this regulation by exceeding the applicability threshold in 10.1.3 of this regulation shall remain subject to these provisions even if its emissions later fall below the applicability threshold.

10.1.6 Any facility that is currently subject to a state or federal rule promulgated pursuant to the Clean Air Act Amendments of 1977 by exceeding an applicability threshold is and shall remain subject to these provisions, even if its throughput or emissions later fall below the applicability threshold.

10.2 Definitions. As used in 10.0 of this regulation, all terms not defined herein shall have the meaning given them in the November 15, 1990 Clean Air Act Amendments (CAAA), or in 2.0 of this regulation of the State of Delaware "Regulations Governing the Control of Air Pollution."

"**Ablative coating**" means a specialty coating that chars when exposed to open flame or extreme temperatures, as would occur during the failure of an engine casing or during aerodynamic heating. The ablative char surface serves as an insulation barrier, protecting adjacent components from the heat or open flame.

"**Adhesion promoter**" means a very thin specialty coating applied to a substrate to promote wetting and form a chemical bond with the subsequently applied material.

"**Adhesive bonding**" means the joining together of two or more metal parts, such as the parts of a honeycomb core. The surfaces to be bonded are first coated with an adhesive bonding primer to promote adhesion and protect from subsequent corrosion. Structural adhesives are applied as either a thin film or as a paste, and can be oven cured or cured in an autoclave.

"**Adhesive bonding primer**" means a specialty coating that is applied in a thin film to aerospace components for the purpose of corrosion inhibition and increased adhesive bond strength by attachment. There are two categories of adhesive bonding primers: primers with a design cure at 250°F or below and primers with a design cure above 250°F.

"**Aerospace manufacturing or rework facility**" means a commercial, civil, or military facility that produces in any amount an aerospace vehicle or component, or a commercial, civil, or military facility that reworks (or repairs) any aerospace vehicle or component.

"**Aerospace vehicle or component**" means any fabricated part, processed part, assembly of parts, or completed unit of any aircraft including, but not limited to, airplanes, helicopters, missiles, rockets, and space vehicles.

"**Aircraft fluid system**" means those systems that handle hydraulic fluids, fuel, cooling fluids, or oils.

"**Aircraft transparency**" means the aircraft windshield, canopy, passenger windows, lenses and other components that are constructed of transparent materials.

"**Antichafe coating**" means a coating applied to areas of moving aerospace components that may rub during normal operations or installation.

"**Bearing coating**" means a specialty coating applied to an antifriction bearing, a bearing housing, or the area adjacent to such a bearing in order to facilitate bearing function or to protect base material from excessive wear. A material shall not be classified as a bearing coating if it can also be classified as a dry lubricative material or a solid film lubricant.

"**Bonding maskant**" means a temporary specialty coating used to protect selected areas of aerospace parts from strong acid or alkaline solutions during processing for bonding.

"**Brush coating**" means the application of a coating material to a substrate by means of a brush (this technique is commonly used for touch-up and maskant operations).

"**Caulking and smoothing compounds**" means semi-solid specialty coating materials which are applied by hand application methods and are used to aerodynamically smooth exterior vehicle surfaces or fill cavities such as bolt hole accesses. A material shall not be classified as a caulking and smoothing compound if it can also be classified as a sealant.

"**Chemical agent-resistant coating (CARC)**" means an exterior topcoat; specialty coating designed to withstand exposure to chemical warfare agents or the decontaminants used on these agents.

"**Chemical milling**" means a process used to reduce the thickness of selected areas of metal parts in order to reduce weight by submerging the metal parts in an etchant.

"**Chemical milling maskant**" means a coating that is applied directly to aluminum components to protect surface areas when chemically milling the component with a Type I or II etchant. Type I chemical milling maskants are used with a Type I etchant and Type II chemical milling maskants are used with a Type II etchant. This definition does not include bonding maskants, critical use and line sealer maskants, and seal coat maskants. Additionally, maskants that must be used with a combination of Type I or II etchants and any of the above types of maskants (i.e., bonding, critical use and line sealer, and seal coat) are not included.

“**Chemical milling maskant application**” means the use of spray equipment or a dip tank to apply a Chemical milling maskant, prior to chemically milling the component with a Type I or II etchant.

“**Cleaning operation**” means collectively spray gun, hand-wipe, and flush cleaning operations.

“**Cleaning solvent**” means a liquid VOC containing material used for hand-wipe, spray gun, or flush cleaning.

“**Clear coating**” means a transparent coating applied to any substrate.

“**Coating**” means a material that is applied to the surface of an aerospace vehicle or component to form a decorative, protective, or functional solid film, or the solid film itself.

“**Coating operation**” means the use of a spray booth, tank, or other enclosure or area, such as a hangar, for the application of a single type of coating (e.g., primer). The use of the same spray booth for the application of another type of coating (e.g., topcoat) constitutes a separate coating operation for which compliance determinations are performed separately.

“**Commercial exterior aerodynamic structure primer**” means a specialty coating primer used on aerodynamic components and structures that protrude from the fuselage, such as wings and attached components, control surfaces, horizontal stabilizers, vertical fins, wing-to-body fairings, antennae, and landing gear and doors, for the purpose of extended corrosion protection and enhanced adhesion.

“**Commercial interior adhesive**” means specialty coating materials used in the bonding of passenger cabin interior components that meet the FAA fireworthiness requirements.

“**Compatible substrate primer**” means a specialty coating that is either a compatible epoxy primer or an adhesive primer. Compatible epoxy primer is primer that is compatible with the filled elastomeric coating and is epoxy based. The compatible substrate primer is an epoxy-polyamide primer used to promote adhesion of elastomeric coatings such as impact-resistant coatings. Adhesive primer is a coating that (1) inhibits corrosion and serves as a primer applied to bare metal surfaces or prior to adhesive application, or (2) is applied to surfaces that can be expected to contain fuel. Fuel tank coatings are excluded from this category.

“**Composite processing operations**” include layup, thermal forming, debulking, curing, break-out, compression molding, and injection molding. Layup means the process of assembling the layers of the composite structure by positioning composite material in a mold and impregnating the material with a resin. Thermal forming means the process of forming the layup in a mold, which usually takes place in an autoclave. Debulking means the simultaneous application of low-level heat and pressure to the composite structure to force out excess resin, trapped air, vapor, and volatiles from between the layers of the composite structure. Curing means the process of changing the resin into a solid material through a polymerization reaction. Break-out means the removal of the composite structure from the mold or curing fixtures. Compression molding means the process of filling one half of molds with a molding compound, closing the mold, and applying heat and pressure until the material is cured. Injection molding means the use of a closed mold, where the molding compound is injected into the mold, maintained under pressure, and then cured by applying heat.

“**Corrosion prevention system**” means a coating system that provides corrosion protection by displacing water and penetrating mating surfaces, forming a protective barrier between the metal surface and moisture. Coatings containing oils or waxes are excluded from this category.

“**Critical use line and sealer maskant**” means a temporary specialty coating, not covered under other maskant categories, used to protect selected areas of aerospace parts from strong acid or alkaline solutions such as those used in anodizing, plating, chemical milling and processing of magnesium, titanium, or high-strength steel, high-precision aluminum chemical milling of deep cuts, and aluminum chemical milling of complex shapes. Materials used for repairs or to bridge gaps left by scribing operations (i.e., line sealer) are also included in this category.

“**Cryogenic flexible primer**” means a specialty coating primer designed to provide corrosion resistance, flexibility, and adhesion of subsequent coating systems when exposed to loads up to and surpassing the yield point of the substrate at cryogenic temperatures (-275°F and below).

“**Cryoprotective coating**” means a specialty coating that insulates cryogenic or subcooled surfaces to limit propellant boil-off, maintain structural integrity of metallic structures during ascent or re-entry, and prevent ice formation.

“**Cyanoacrylate adhesive**” means a fast-setting, single component specialty coating adhesive that cures at room temperature. Also known as “super glue.”

“**Depainting**” means the removal of any coating from the outer surface of an aerospace vehicle or component by either chemical or non-chemical means.

“**Depainting operation**” means the use of a chemical agent, media blasting, or any other technique to remove coatings from the outer surface of aerospace vehicles or components. The depainting operation includes washing of the aerospace vehicle or component to remove residual stripper and coating residue.

“**Dip coating**” means the application of a coating material to a substrate by dipping the part into a tank of the coating material.

“**Dry lubricative material**” means a specialty coating consisting of lauric acid, cetyl alcohol, waxes, or other noncross linked or resin-bound materials that act as a dry lubricant.

“**Electric or radiation-effect coating**” means a specialty coating or coating system engineered to interact, through absorption or reflection, with specific regions of the electromagnetic energy spectrum, such as the ultraviolet, visible, infrared, or microwave regions. Uses include, but are not limited to, lightning strike protection, electromagnetic pulse (EMP) protection, and radar avoidance. Coatings that have been designated as “classified” by the Department of Defense are exempt.

“**Electrodeposition**” means an additive process for metal substrates in which another metal layer is added to the substrate in order to enhance corrosion and wear resistance necessary for the successful performance of the component. The two types of electrodeposition typically used are electroplating and plasma arc spraying.

“**Electrostatic discharge and electromagnetic interference (EMI) coating**” means a specialty coating applied to space vehicles, missiles, aircraft radomes, and helicopter blades to disperse static energy or reduce electromagnetic interference.

“**Electrostatic spray**” means a method of applying a spray coating in which opposite electrical charges are applied to the substrate and the coating. The coating is attracted to the substrate by the electrostatic potential between them.

“**Elevated-temperature Skydrol-resistant commercial primer**” means a specialty coating primer applied primarily to commercial aircraft (or commercial aircraft adapted for military use) that must withstand immersion in phosphate-ester (PE) hydraulic fluid (Skydrol 500b or equivalent) at the elevated temperature of 150°F for 1,000 hours.

“**Epoxy polyamide topcoat**” means a specialty coating used where harder films are required or where engraving is accomplished in camouflage colors.

“**Etchant**” means a chemical used to mill a part or subassembly (e.g., sodium hydroxide for aluminum parts).

“**Exempt solvent**” means an organic compound that has been determined to have negligible photochemical reactivity, as specified, and is defined in 2.0 of this regulation under “exempt compounds.”

“**Fire-resistant (interior) coating**” means for civilian aircraft, fire-resistant interior coatings used on passenger cabin interior parts that are subject to the FAA fire worthiness requirements. For military aircraft, fire-resistant interior coatings mean coatings that are used on parts that are subject to the flammability requirements of MIL-STD-1630A and MIL-A-87721. For space applications, fireresistant interior coatings means coatings that are used on parts that are subject to the flammability requirements of SE-R-0006 and SSP 30233.

“**Flexible primer**” means a specialty coating primer that meets flexibility requirements such as those needed for adhesive bond primed fastener heads or on surfaces expected to contain fuel. The flexible coating is required because it provides a compatible, flexible substrate over bonded sheet rubber and rubber-type coatings as well as a flexible bridge between the fasteners, skin, and skin-to-skin joints on outer aircraft skins. This flexible bridge allows more topcoat flexibility around fasteners and decreases the chance of the topcoat cracking around the fasteners. The result is better corrosion resistance.

“**Flow coating**” means the application of a coating material to a substrate by pouring the coating over the suspended part.

“**Flush cleaning**” means the cleaning of an aerospace vehicle or component by passing solvent over, into, or through the vehicle or component. The solvent may simply be poured into the vehicle or component and then drained, or assisted by air or hydraulic pressure, or by pumping. Hand-wipe cleaning operations where wiping, scrubbing, mopping, or other hand action is used are not flush cleaning operations.

“Formulation” means a specific coating made by a specific manufacturer. Each different color of a specific coating is considered a separate formulation.

“**Fuel tank adhesive**” means a specialty coating adhesive used to bond components exposed to fuel which shall be compatible with fuel tank coatings.

“**Fuel tank coating**” means a specialty coating applied to fuel tank components for the purpose of corrosion or bacterial growth inhibition, and to assure sealant adhesion in extreme environmental conditions.

“**Hand-wipe cleaning operation**” means the removal of contaminants such as dirt, grease, oil, and coatings from aerospace vehicles or components by physically rubbing them with a material such as a rag, paper, or cotton swab that has been moistened with a cleaning solvent.

“**High temperature coating**” means a specialty coating designed to withstand temperatures of more than 350°F.

“**High volume low pressure (HVLP) spray equipment**” means spray equipment that is used to apply coatings using a spray gun that operates at equal to or less than 10.0 psig of atomized air pressure at the air cap.

“**Insulation covering**” means a specialty coating material that is applied to foam insulation to protect the insulation from mechanical or environmental damage.

“**Intermediate release coating**” means a thin specialty coating applied beneath topcoats to assist in removing the topcoat in depainting operations, which generally allows the use of less hazardous depainting methods.

“**Lacquer**” means a clear or pigmented specialty coating formulated with a nitrocellulose or synthetic resin to dry by evaporation without a chemical reaction. Lacquers are resoluble in their original solvent.

“**Leak**” means any visible leakage, including misting and clouding.

“**Limited access space**” means internal surfaces or passages of an aerospace vehicle or component that cannot be reached for the application of coatings without the aid of an airbrush or a spray gun extension.

“**Metal finishing**” means conversion coating, anodizing, desmutting, descaling, and any operation that chemically affect the surface layer of a part, and is used to prepare the surface of a part for better adhesion, improved surface hardness, and improved corrosion resistance.

“**Metalized epoxy coating**” means a specialty coating that contains relatively large quantities of metallic pigmentation for appearance or added protection.

“**Mold release**” means a specialty coating applied to a mold surface to prevent the molded piece from sticking to the mold as it is removed.

“**Non-chemical-based depainting equipment**” means any depainting equipment or technique that does not rely on a chemical stripper to depaint an aerospace vehicle or component (e.g., media blasting equipment).

“**Nonstructural adhesive**” means a specialty coating adhesive that bonds nonload bearing aerospace components in noncritical applications and is not covered in any other specialty adhesive categories.

“**Optical anti-reflective coating**” means a coating with a low reflectance in the infrared and invisible wavelength ranges that is used for anti-reflection on or near optical and laser hardware.

“**Part marking coating**” means a specialty coating or ink used to make identifying markings on materials, components, or assemblies. These markings may be either permanent or temporary.

“**Pretreatment coating**” means an organic specialty coating that contains at least 0.5% acids by weight and is applied directly to metal or composite surfaces to provide surface etching, corrosion resistance, adhesion, and ease of stripping.

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

“**Radome**” means the non-metallic protective housing for electromagnetic transmitters and receivers (e.g., radar, electronic countermeasures, etc.).

“**Rain erosion-resistant coating**” means a specialty coating or coating system used to protect the leading edges of parts such as flaps, stabilizers, radomes, engine inlet nacelles, etc. against erosion caused by rain impact during flight.

“**Research and development**” means an operation whose primary purpose is for research and development of new processes and products and that is conducted under the close supervision of technically trained personnel and is not involved in the manufacture of final or intermediate products for commercial purposes, except in a de minimis manner.

“**Rocket motor bonding adhesive**” means a specialty coating adhesive used in rocket motor bonding applications.

“**Rocket motor nozzle coating**” means a catalyzed epoxy specialty coating system used in elevated temperature applications on rocket motor nozzles.

“**Rubber-based adhesive**” means a quick setting, specialty coating contact cement that provides a strong, yet flexible bond between two mating surfaces that may be of dissimilar materials.

“**Scale inhibitor**” means a specialty coating that is applied to the surface of a part prior to thermal processing to inhibit the formation of scale.

“**Screen print ink**” means a specialty coating ink used in screen printing processes during fabrication of decorative laminates and decals.

“**Sealant**” means a specialty coating material used to prevent the intrusion of water, fuel, air, or other liquids or solids from certain areas of aerospace vehicles or components. There are two categories of sealants: extrudable/rollable/brushable sealants and sprayable sealants.

“**Seal coat maskant**” means a specialty coating overcoat applied over a maskant to improve abrasion and chemical resistance during production operations.

“**Self-priming topcoat**” means a coating that is applied directly to an Aerospace vehicle or component for purposes of corrosion protection, environmental protection, and functional fluid resistance and that is not subsequently topcoated. More than one layer of identical coating formulation may be applied to the aerospace vehicle or component. Self-priming topcoats that are defined as specialty coatings are not included under this definition.

“**Silicone insulation material**” means an insulating specialty coating material applied to exterior metal surfaces for protection from high temperatures caused by atmospheric friction or engine exhaust. These materials differ from ablative coatings in that they are not “sacrificial.”

“**Solids**” means the nonvolatile portion of the coating that after drying makes up the dry film.

“**Solid film lubricant**” means a very thin specialty coating consisting of a binder system containing as its main pigment material one or more of the following: molybdenum, graphite, polytetrafluoroethylene (PTFE), or other solids that act as a dry lubricant between faying (i.e., closely or tightly fitting) surfaces.

“**Space vehicle**” means a man-made device, either manned or unmanned, designed for operation prototypes, molds, jigs, tooling, hardware jackets, and test coupons. Also included is auxiliary equipment associated with test, transport, and storage that through contamination can compromise the space vehicle performance.

“**Specialty coating**” means a coating that, even though it meets the definition of a primer, topcoat, or self-priming topcoat, has additional performance criteria beyond those of primers, topcoats, and selfpriming topcoats for specific applications. These performance criteria may include, but are not limited to, temperature or fire resistance, substrate compatibility, antireflection, temporary protection or marking, sealing, adhesively joining substrates, or enhanced corrosion protection. A specialty coating is any coating listed in Table 10-1 of this regulation and defined in 10.2 of this regulation.

“**Specialized function coating**” means a specialty coating that fulfills extremely specific engineering requirements that are limited in application and are characterized by low volume usage. This category excludes coatings covered in other Specialty Coating categories.

“**Spray gun**” means a device that uses air pressure or air flow to atomize a coating or other material,

“**Stripper**” means a liquid that is applied to an aerospace vehicle or component to remove primer, topcoat, self-priming topcoat, or coating residue.

“**Structural autoclavable adhesive**” means a specialty coating adhesive used to bond load-carrying aerospace components that are cured by heat and pressure in an autoclave.

“**Structural nonautoclavable adhesive**” means a specialty coating adhesive cured under ambient conditions that is used to bond load-carrying aerospace components or other critical functions, such as nonstructural bonding in the proximity of engines.

“**Surface preparation**” means the removal of contaminants from the surface of an aerospace vehicle or component, or the activation or reactivation of the surface in preparation for the application of a coating.

“Temporary protective coating” means a specialty coating applied to provide scratch or corrosion protection during manufacturing, storage, or transportation. Two types include peelable protective coatings and alkaline removable coatings. These materials are not intended to protect against strong acid or alkaline solutions. Coatings that provide this type of protection from chemical processing are not included in this category.

“**Thermal control coating**” means a specialty coating formulated with specific thermal conductive or radiative properties to permit temperature control of the substrate.

“**Topcoat**” means a coating that is applied over a primer on an aerospace vehicle or component for appearance, identification, camouflage, or protection. Topcoats that are defined as specialty coatings are not included under this definition.

“**Touch-up and repair coating**” means a coating used to cover minor coating imperfections appearing after the main coating operation.

“**Touch-up and repair operation**” means that portion of the coating operation that is the incidental application of coating used to cover minor imperfections in the coating finish or to achieve complete coverage. This definition includes out-of-sequence or out-of-cycle coating. Touch-up and repairoperations are not to exceed an area of 4 square feet per aerospace vehicle.

“**Type II etchant**” or “**Type II chemical milling etchant**” means a Chemical milling etchant that is a strong sodium hydroxide solution containing amines (Type I etchants do not contain amines).

“**Volatile Organic Compound (VOC)**” means any compound defined as VOC in 2.0 of this regulation - Definitions.

"**VOC composite vapor pressure**" means the sum of the partial pressures of the compounds defined as VOCs and is determined by the following calculation:

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

(10-1)

where

W_i = Weight of the ith VOC compound, grams

W_w = Weight of water, grams

W_e = Weight of nonwater, non-VOC compound, grams

MW_i = Molecular weight of the ith VOC compound, g/g-mole

MW_w = Molecular weight of water, g/g-mole

MW_e = Molecular weight of exempt compound, g/g-mole

PP_c = VOC composite partial pressure at 20°C, mm Hg

VP_i = Vapor pressure of the ith VOC compound at 20°C, mm Hg

"**Wet fastener installation coating**" means a specialty coating primer or sealant applied by dipping, brushing, or daubing to fasteners that are installed before the coating is cured.

"**Wing coating**" means a corrosion-resistant specialty coating topcoat that is resilient enough to withstand the flexing of the wings.

10.3 Standards

10.3.1 Hand-Wipe Cleaning Operations

10.3.1.1 Except as exempted in 10.3.1.2 of this regulation, no person subject to 10.0 of this regulation shall cause or allow the use of any cleaning solvent in any hand-wipe cleaning operation that does not comply with one of the following limits:

10.3.1.1.1 VOC composite vapor pressure should be less than 45 millimeters (mm) mercury (Hg) (1.8 inches [in] Hg) at 20 degrees Celsius (°C) (68 degrees Fahrenheit [°F]).

10.3.1.1.2 Cleaning solvent shall be an aqueous cleaning solvent (i.e., a solvent in which water is at least 80% of the solvent, as applied).

10.3.1.2 The requirements of 10.3.1.1 of this regulation shall not apply to the following hand-wipe cleaning operations:

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

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

10.3.1.2.3 Cleaning and surface activation prior to adhesive bonding.

10.3.1.2.4 Cleaning of electronics and assemblies containing electronics.

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

10.3.1.2.6 Cleaning of fuel cells, fuel tanks, and limited-access spaces.

10.3.1.2.7 Surface cleaning of solar cells, coated optics, and thermal control surfaces.

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

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

10.3.1.2.10 Cleaning of aircraft transparencies.

10.3.1.2.11 Cleaning associated with research and development, quality control, and laboratory testing.

10.3.2 Spray Gun Cleaning Operations

10.3.2.1 No person subject to 10.0 of this regulation shall cause or allow the use of any *spray gun* cleaning techniques that does not comply with one of the following:

10.3.2.1.1 Use of an enclosed *spray gun* cleaning system that is kept closed when not in use.

10.3.2.1.2 Non-atomized discharge of solvent into a waste container that is kept closed when not in use.

10.3.2.1.3 Disassembly of the spray gun and placing the parts for cleaning in a vat that is kept closed when not in use.

10.3.2.1.4 Atomized spray into a waste container that is fitted with a device that captures atomized solvent emissions.

10.3.2.1.5 Any alternative technique that has been demonstrated to, and accepted by the Department as producing emissions that are equal to or less than the emissions from the techniques specified in 10.3.2.1.1 through 10.3.2.1.4 of this regulation. Emissions from any alternative technique shall be demonstrated pursuant to test protocols that are approved in advance by the Department.

10.3.2.2 Any enclosed *spray gun* cleaner shall be visually inspected for leaks at least once per month. Such inspection shall occur while the enclosed *spray gun* cleaner is in operation.

10.3.2.3 Leaks from any enclosed spray gun cleaner shall be repaired as soon as practicable, but no later than 15 days from when the leak is first discovered.

10.3.2.4 If any leak is not repaired by the 15th day after detection, the solvent shall be removed and the enclosed cleaner shall be shut down until the leak is repaired.

10.3.3 Flush Cleaning. Any cleaning solvents used during flush cleaning operations shall be handled pursuant to 10.3.8 of this regulation.

10.3.4 Primer, Topcoat, and Self-Priming Topcoat Application.

10.3.4.1 Except as provided for in 10.3.4.2, 10.4 and 10.5 of this regulation, no person subject to 10.0 of this regulation shall cause or allow the application of any primer, topcoat, or self-priming topcoat with a VOC content that does not comply with the following limits:

10.3.4.1.1 Primers shall have a VOC content equal to or less than 350 g/L (2.9 lb/gal), as applied, excluding water and exempt compounds.

10.3.4.1.2 Topcoats and self-priming topcoats shall have a VOC content equal to or less than 420 g/L (3.5 lb/gal), as applied, excluding water and exempt compounds.

10.3.4.2 The requirements of 10.3.4.1.2 of this regulation shall not apply to facilities that use less than 50 gallons per consecutive rolling 12-month period of a particular formulation of topcoat, or self-priming topcoat provided:

10.3.4.2.1 Each topcoat and self-priming topcoat shall have a VOC content equal to or less than 720 g/L (6.0 lb/gal), as applied, excluding water and exempt compounds.

10.3.4.2.2 A total of not more than 200 gallons per consecutive rolling 12-month period of all such high VOC coatings are used at the facility.

10.3.4.3 Except as provided for in 10.3.4.4 of this regulation, no person subject to 10.0 of this regulation shall cause or allow the use of any application technique to apply any primer, topcoat, or self-priming topcoat other than the following:

10.3.4.3.1 flow/curtain coat, roll coat, brush coat, dip coat, cotton-tip swab application, electrostatic spray, electrodeposition, or high volume low pressure (HVLP) spray guns;

10.3.4.3.2 Any alternate technique that has been demonstrated to and accepted by the Department as providing emissions that are less than or equal to the emissions from HVLP or electrostatic spray application techniques. Emissions from any alternate techniques shall be demonstrated pursuant to test protocols that are approved in advance by the Department. Such tests shall, at a minimum, compare the emission levels determined using an initial 90-day period of HVLP or electrostatic spray attraction techniques with the emission levels determined using the alternate technique for a period of time necessary to coat the equivalent amount of parts with the same coatings.

10.3.4.4 The equipment standards and application techniques in 10.3.4.3 of this regulation shall not apply to the following primer, topcoat and self-priming topcoat application operations:

10.3.4.4.1 The application of coatings in any limited access space.

10.3.4.4.2 The application of coatings that contain fillers that adversely affect atomization with HVLP spray guns and cannot be applied by any of the application techniques specified in 10.3.4.3 of this regulation.

10.3.4.4.3 The application of coatings that normally have a dried film thickness of less than 0.0005 inches and cannot be applied by any of the application techniques specified in 10.3.4.3 of this regulation.

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

10.3.4.4.5 Any touch-up and repair operation.

10.3.4.5 All application equipment shall be operated according to the manufacturer's specifications at all times, even if it is exempt from the equipment standards specified in 10.3.4.3 of this regulation.

10.3.5 Depainting Operation. No person subject to 10.0 of this regulation shall cause or allow the use of any stripper that does not comply with one of the following limits:

10.3.5.1 VOC composite vapor pressure shall be less than 10 mm Hg (0.4 in. Hg) at 20°C (68°F).

10.3.5.2 VOC content shall be less than 400 g/L (3.3 lb/gal), as applied, excluding water and exempt compounds.

10.3.6 Chemical Milling Maskant Application. Except as provided for in 10.4 or 10.5 of this regulation, no person subject to 10.0 of this regulation shall cause or allow the application of any chemical milling maskant with a VOC content that does not comply with the following emission limits:

10.3.6.1 For any Type I maskant, VOC content shall be equal to or less than 622 g/L (5.2 lbs/gal), as applied, excluding water and exempt compounds; or

10.3.6.2 For any Type II maskant, VOC content shall be equal to or less than 160 g/L (1.3 lbs/gal), as applied, excluding water and exempt compounds.

10.3.7 Specialty Coatings. Except as provided for in 10.4 or 10.5 of this regulation, no person subject to 10.0 of this regulation shall cause or allow the application of any specialty coating that has a VOC content, as applied, excluding water and exempt compounds, that is greater than the limits specified in Table 10-1 of this regulation:

Table 10-1. VOC Content Limits for Specialty Coatings (g/L)[a]

Coating Type	Limit	Coating Type	Limit
Ablative Coating	600	Flight-Test Coatings: Missile of Single Use Aircraft All other	 420 840
Adhesives:		Fuel-Tank Coating	720
Commercial Interior Adhesive	760	High-Temperature Coating	850
Cyanoacrylate Adhesive	1,020	Insulation Covering	740
Fuel Tank Adhesive	620	Intermediate Release Coating	750
Nonstructural Adhesive	360	Lacquer	830
Rocket Motor Bonding Adhesive	890	Maskants (excluding Type I and Type II):	
Rubber-based Adhesive	850	Bonding maskant	1,230
Structural Autoclavable Adhesive	60	Critical Use and Line Sealer Maskant	1,020
Structural Nonautoclavable Adhesive	850	Seal Coat Maskant	1,230
Adhesion Promoter	890	Metalized Epoxy Coating	740
Adhesive Bonding Primers: Cured at 250°F or below Cured above 250°F	 850 1,030	*Mold Release*	780
Antichafe Coating	660	Optical Anti-Reflective Coating	750
Bearing Coating	620	Part Marking Coating	850
Caulking and Smoothing Compounds	850	Pretreatment Coating	780

Chemical Agent-Resistant Coating	550	Rain Erosion-Resistant Coating	850
Clear Coating	720	Rocket Motor Nozzle Coating	660
Commercial Exterior Aerodynamic Structure Primer	650	Scale Inhibitor	880
Compatible Substrate Primer	780	Screen Print Ink	840
Corrosion Prevention Compound	710	*Sealants*: Extrudable/Rollable/Brushable Sealant Sprayable Sealant	 280 600
Cryogenic Flexible Primer	645	Silicone Insulation Material	850
Cryoprotective Coating	600	Solid Film Lubricant	880
Dry Lubricative Material	880	Specialized Function Coating	890
Electric or Radiation-Effect Coating	800	Temporary Protective Coating	320
Electrostatic Discharge and Electromagnetic Interference (EMI) Coating	800	Thermal Control Coating	800
Elevated-Temperature Skydrol-Resistant Commercial Primer	740	Wet Fastener Installation Coating	675
Epoxy Polyamide Topcoat	660	Wing Coating	850
Fire-Resistant (interior) Coating	800		
Flexible Primer	640		

[a] *Coating* limits expressed in terms of mass (grams) of VOC per volume (liters) of *coating* less water and less exempt solvent. To convert from g/L to lbs/gallon multiply by 0.00835.

10.3.8 VOC Handling and Storage.

10.3.8.1 Except as provided in 10.3.8.2 of this regulation, any person subject to 10.0 of this regulation shall use good house keeping measures when handling any VOC and any VOC-containing material at the facility. Such measures shall include:

10.3.8.1.1 Handling and transferring all fresh and spent cleaning solvent and other VOC-containing material to or from any container, tank, vat, vessel, or piping system, etc. in such a manner that minimizes losses.

10.3.8.1.2 All fresh and spent solvents and VOC-containing material shall be stored in closed containers at all times except during filling or emptying.

10.3.8.1.3 All solvent-laden cloths, papers, or other absorbent materials shall be placed in closed containers immediately after use.

10.3.8.2 The requirements in 10.3.8.1 of this regulation shall not apply to wastes that are determined to be hazardous wastes under the Resource Conservation and Recovery Act of 1976 (PL 94-580) (RCRA), as implemented by 40 Code of Federal Regulations (CFR) Parts 260 and 261, and that are subject to RCRA requirements, as implemented in 40 CFR Parts 262 through 268.

10.4 Daily-Weighted Average Limitations. As an alternative to complying with the individual limits specified in 10.3.4.1.1, 10.3.4.1.2, 10.3.6.1, 10.3.6.2 and 10.3.7 of this regulation, coatings in any primer, topcoat, chemical milling maskant, or specialty coating application operation shall not be applied at the facility whose daily-weighted average VOC content, calculated in accordance with the procedure specified in **Appendix C** of this regulation and the provisions listed below, exceeds the applicable emission limits in 10.3.4.1.1, 10.3.4.1.2, 10.3.6.1, 10.3.6.2 and 10.3.7 of this regulation, as applicable.

10.4.1 Averaging between primers, topcoats, self-priming topcoats, chemical milling maskants or specialty coatings is prohibited.

10.4.2 Averaging between coatings used in operations where air emissions are not captured and controlled and coatings used in operations where air emissions are captured and controlled is prohibited.

10.5 Control Devices.

10.5.1 As an alternative to complying with the individual limits specified in 10.3.4.1.1, 10.3.4.1.2, 10.3.6.1, 10.3.6.2 and 10.3.7 of this regulation, any person subject to 10.0 of this regulation shall, for any primer, topcoat, self-priming topcoat, chemical milling maskant, or specialty coating application operation:

10.5.1.1 Install, test, calibrate, operate, maintain, and monitor according to the manufacturer's specifications, as approved by the Department, an air pollution control device consisting of a capture and control system on that operation; and

10.5.1.2 Demonstrate that the overall emission reduction efficiency achieved is equal to or greater than 81 weight %.

10.5.2 The procedures in **Appendix D** and **Appendix E** of this regulation shall be used to demonstrate compliance with 10.5.1.2 of this regulation. The method in **Appendix I** of this regulation may be used to determine an alternative multi-day rolling period when calculating the efficiency of any carbon absorption system.

10.6 Test Methods.

10.6.1 The VOC composite vapor pressure specified in 10.3.1.1.1 and 10.3.5.1 of this regulation shall be determined either by using ASTM Method E 260-91, manufacturer's supplied data, or standard engineering reference text values.

10.6.2 The water content specified in 10.3.1.1.2 of this regulation shall be determined using the test methods found in **Appendix A** and **Appendix B** of this regulation.

10.6.3 The VOC content specified in 10.3.4.1.1 and 10.3.4.1.2 of this regulation shall be determined by using the test method found in **Appendix A** and **Appendix B** of this regulation.

10.7 Recordkeeping. Any person subject to 10.0 of this regulation shall maintain at the facility for a minimum period of 5 years from the information's date of record, all of the following information. Such information shall be immediately submitted to the Department upon written or verbal request.

10.7.1 For any person subject to the requirements of 10.3.1 of this regulation (i.e., hand-wipe cleaning operations):

10.7.1.1 Identification of each hand-wipe cleaning solvent used at the facility;

10.7.1.2 The composite vapor pressure of each hand-wipe cleaning solvent complying with 10.3.1.1.1 of this regulation, and all supporting documentation, to include any test reports or calculations.

10.7.1.3 The water content of each hand-wipe cleaning solvent complying with 10.3.1.1.2 of this regulation, and all supporting documentation, to include any test reports or calculations.

10.7.1.4 Identification of each hand-wipe cleaning solvent used at the facility pursuant to 10.3.1.2 of this regulation, and a list of the parts, assemblies, or subassemblies cleaned with each such hand-wipe cleaning solvent.

10.7.2 For any person subject to 10.3.2 of this regulation (i.e., spray gun cleaning):

10.7.2.1 A description of each method used to clean spray guns.

10.7.2.2 Records of the inspections conducted pursuant to 10.3.2.2 of this regulation.

10.7.2.3 For any leak found pursuant to 10.3.2.2 of this regulation, records indicating the source of the leak, the date the leak was discovered, and the date the leak was repaired.

10.7.3 For any person subject to 10.3.4 of this regulation (i.e., primer, topcoat, and self-priming topcoat application):

10.7.3.1 For each coating applied pursuant to 10.3.4.2 of this regulation.

10.7.3.1.1 Not later than the 5th day of each month, identification of each coating used at the facility pursuant to 10.3.4.2 of this regulation during the preceding month.

10.7.3.1.2 The volume used of each coating identified in 10.7.3.1.1 of this regulation.

10.7.3.1.3 The summation of the volumes recorded pursuant to 10.7.3.1.2 of this regulation for the preceding 12 months.

10.7.3.1.4 The records required by 4.5 of this regulation.

10.7.3.2 A description of the proper operation of all coating application equipment used at the facility.

10.7.3.3 Documentation associated with any alternate coating application techniques approved pursuant to 10.3.4.3.2 of this regulation.

10.7.4 For any person subject to 10.3.4, 10.3.6 and 10.3.8 of this regulation (i.e., primer, topcoat, self-priming topcoat, chemical milling maskant, and specialty coating application):

10.7.4.1 Identification of the control strategy employed (i.e., the combination of complying coatings, daily-weighted averaging, and control devices used at the facility).

10.7.4.2 Where complying coatings are used, the records required by 4.3 of this regulation.

10.7.4.3 Where daily-weighted averaging pursuant to 10.4 of this regulation is used, the records required by 4.4 of this regulation.

10.7.4.4 Where a control device or devices pursuant to 10.5 of this regulation is used, the records required by 4.5 of this regulation.

10.7.5 For any person subject to 10.3.5 of this regulation:

10.7.5.1 If complying with 10.3.5.1 of this regulation, the name, VOC composite vapor pressure, and method and supporting documentation used to determine the VOC composite vapor pressure of each stripper used at the facility.

10.7.5.2 If complying with 10.3.5.2 of this regulation, the name, VOC content, and method and supporting documentation used to determine the VOC content of each stripper used at the facility.

10.7.5.3 A description of any non-chemical-based depainting equipment used at the facility, to include the name and type of equipment or technique.

10.7.5.4 Records and a description of all malfunctions of non-chemical-based depainting equipment used at the facility, to include the dates and alternative depainting method or methods used.

10.7.5.5 A list of any parts, assemblies, or subassemblies normally removed during depainting operations.

10.7.6 For any person subject to 10.3.8 of this regulation, a description of the procedures used to ensure that containers are kept closed when not in use and that solvents and other VOC-containing materials are stored in closed containers.

10.8 Reporting. Notification of any non-compliance with any requirement of this Section shall be reported to the Department in accordance with 4.0 and 5.0 of this regulation, as applicable and any other applicable Federal or State reporting requirements.

11.0 Mobile Equipment Repair and Refinishing.

10/11/2010

11.1 Applicability

11.1.1 Except as provided for in 11.1.2 of this regulation, the provisions of 11.0 of this regulation apply to any person who supplies, sells, offers for sale, blends, repackages for sale, manufacturers, distributes, uses, applies or specifies the use of application of any coating or cleaning solvent for the purpose of protection or beautification, to mobile equipment or mobile equipment components. Except as provided in 11.1.5 of this regulation, any person subject to 11.0 of this regulation shall comply with the provisions of this regulation on and after 10/11/2010.

11.1.2 The provisions of 11.0 of this regulation shall not apply to any person who supplies, sells, offers for sale, blends, repackages for sale, manufacturers, distributes, uses, applies or specifies the use or application of any coating or cleaning solvent:

11.1.2.1 where the use or application of that coating or cleaning solvent is at a facility subject to the requirements of Section 13.0 of this regulation, Automobile and Light-Duty Truck Coating Operations,

11.1.2.2 where the use or application of that coating or cleaning solvent is by a person who does not receive compensation for such use or application,

11.1.2.3 that is an aerosol coating product,

11.1.2.4 where the use or application of that coating or cleaning solvent is not within the State of Delaware,

11.1.2.5 where the coating or cleaning solvent is shipped to other manufacturers for reformulation or repackaging, or

11.1.2.6 that is packaged in 0.5 fluid ounce or smaller containers that are intended to be used to repair tiny surface imperfections.

11.1.3 Any person who is currently subject to a state or federal rule promulgated pursuant to the Clean Air Act Amendments of 1977 by exceeding an applicability threshold is and shall remain subject to those provisions.

11.1.4 Compliance with the requirements of 11.0 of this regulation are in addition to all other state and federal requirements, to include the requirements of 40 CFR 59, Subpart B, “National Volatile Organic Compound Emission Standards for Automobile Refinish Coatings”.

11.1.5 Transition period for existing permitted sources. Any person subject to 11.0 of this regulation that has been issued a permit pursuant to 7 **DE Admin. Code** 1102 or 1130 containing all applicable conditions of 11.0 of that regulation, as that regulation existed on November 11, 2001, shall comply with those permit conditions until December 31, 2011. On and after January 1, 2012, every such person shall comply with the provisions of 11.0 of this regulation.

11.2 Definitions. As used in 11.0 of this regulation, all terms not defined herein shall have the meaning given them in the November 15, 1990 Clean Air Act Amendments (CAAA), or in 2.0 of this regulation.

"**Airless Spray**" means a spray coating method in which the coating is atomized by forcing it through a small nozzle at high pressure. The coating is not mixed with air before exiting from the nozzle opening.

"**As supplied**" means the VOC and solids content of a coating or coating component as sold and delivered to the end user.

"**Automotive coating**" means a coating or coating component used or recommended for use in motor vehicle or mobile equipment refinishing, service, maintenance, repair, restoration, or modification, except metal plating activities. A reference to automotive refinishing or automobile coating included on the container, on a label affixed to the container or in sales, advertising, technical or product literature constitutes a recommendation for use in motor vehicle or mobile equipment refinishing and recoating.

"**Automotive coating component**" means a portion of a coating, including a reducer or thinner, toner, hardener, or additive, which is recommended by a person to distributors or end-users for use in an automotive coating, or which is supplied for or used in an automotive coating. Raw materials used to produce the components are not considered automotive coating components.

"**Automotive pretreatment coating**" means a coating that contains a minimum of 0.5% acid by weight and not more than 16% solids by weight necessary to provide surface etching and is labeled and formulated for application directly to bare metal surfaces to provide corrosion resistance and adhesion.

"**Automotive primer**" means a coating, which may be pigmented, labeled and formulated for application to a substrate to provide one or more of; a bond between the substrate and subsequent coats; corrosion resistance; a smooth substrate surface; and, resistance to penetration of subsequent coats and on which a subsequent coating is applied.

"**Automotive refinishing facility**" means a shop, business, location, or parcel of land where motor vehicles or mobile equipment or their associated parts and components are coated, including autobody collision repair shops, but not including the original equipment manufacturing plant where new motor vehicles or new mobile equipment is assembled.

"**Cavity wax**" means a coating applied into the cavities of the vehicle primarily for the purpose of enhancing corrosion protection.

"**Cleaning operation**" means the removal of loosely held uncured adhesives, inks, coatings, or contaminants, including, but not limited to, dirt, soil, or grease from motor vehicles, mobile equipment, associated parts and components, substrates, products, tools, machinery, equipment, or general work areas.

"**Cleaning solvent**" means a fluid containing VOC used to perform surface preparation, or cleaning of surface coating equipment. Cleaning solvent does not include thinners, reducers or other solvents that may be used to adjust the solvent content of coatings.

"**Clear coating**" means a coating that contains no pigments and is labeled and formulated for application over a color coating or clear coating. A clear coating may contain talc or silica which are not considered pigments for the purposes of this regulation.

"**Coating**" means, for the purposes of this regulation, a material applied to a substrate for decorative, protective, or functional purposes.

"**Color coating**" means a pigmented coating, excluding adhesion promoters, primers, and multicolor coatings, that requires a subsequent clear coating and which is applied over a primer, adhesion promoter, or color coating. Color coating includes metallic/iridescent coatings.

"**Coating solids**" means the nonvolatile portion of the coating that makes up the dry film.

"**Deadener**" means a coating applied to selected vehicle surfaces primarily for the purpose of reducing the sound of road noise in the passenger compartment.

"**Electrostatic spray**" means the application of charged atomized paint droplets that are deposited by electrostatic attraction.

"**Gasket/sealing material**" means a fluid applied to coat a gasket or replace and perform the same function as a gasket including room temperature vulcanization (RTV) seal material.

"**Graphic arts operation**" means the application of logos, letters, numbers, or graphics to a painted surface by brush, roller, or airbrush.

"**High Volume Low Pressure" or "(HVLP)**" means a method of spraying a coating, that improves the transfer efficiency while maintaining the air pressure between 0.1 and 10 pounds per square inch gauge (psig).

"**Low-solids coating**" means a coating containing 0.12 kilogram or less of solids per liter (one pound or less solids per gallon) of coating material.

"**Lubricating wax/compound**" means a protective lubricating material applied to vehicle hubs and hinges.

"**Metallic/iridescent color coating**" means a coating that contains more than five grams per liter (0.042 pounds per gallon) of metal or iridescent particles as applied, where the particles are visible in the dried film.

"**Mobile equipment**" means any equipment that is physically capable of being driven or drawn upon a highway including, but not limited to, the following types of equipment: automobiles; trucks, truck cabs, truck bodies; buses; motorcycles; ground support vehicles, used in support of aircraft activities at airports; construction vehicles (such as mobile cranes, bulldozers, concrete mixers); farming equipment (such as wheel tractors, plows, and pesticide sprayers); hauling equipment (such as truck trailers, utility bodies, and camper shells); and miscellaneous equipment (such as street cleaners and golf carts).

"**Multicolor coating**" means a coating that exhibits more than one color in the dried film after a single application, is packaged in a single container, hides surface defects on areas of heavy use, and is applied over a primer or adhesion promoter.

"**Other automotive coating type**" means, for the purposes of this regulation, an automotive coating that does not meet the definitions for the specified automotive coating categories in Table 11-1.

"**Sealer**" means a high viscosity material with a primary purpose to fill body joints completely so there is no intrusion of water, gases or corrosive materials into the passenger area of the body compartment. Sealer is also referred to as sealant or caulk.

"**Single-stage coating**" means a pigmented coating, excluding automotive primers and multicolor coatings, labeled and formulated for application without a subsequent clear coat and includes single-stage metallic/ iridescent coatings.

"**Solvent**" means a fluid containing VOC added to a coating, including, but not limited to, reducers and thinners.

"**Spot repair**" means repair of an area of less than one panel in size on a motor vehicle, piece of mobile equipment, or associated parts or components. There are several coating operations unique to spot repair that utilize a uniform finish solvent and in some cases a blend of such solvent with appropriate film forming solids. As the blend required and the appropriate VOC content may vary depending upon the nature and extent of the spot repair, no VOC limits are specified for this operation which is limited to spot repair.

"**Temporary protective coating**" means a coating labeled and formulated for the purpose of temporarily protecting areas from overspray or mechanical damage.

"**Truck bed liner coating**" means a coating, excluding clear, color, multi color and single-stage coatings, labeled and formulated for application to a cargo bed, after the application of topcoat, to protect it from surface abrasion and provide additional durability and chip resistance.

"**Trunk interior coating**" means a coating applied to the trunk interior to provide chip protection.

"**Underbody coating**" means a coating labeled and formulated for application to wheel wells, the inside of door panels or fenders, the underside of a trunk or hood, or the underside of the motor vehicle.

11.3 Standards

11.3.1 Except as exempted in 11.3.3 of this regulation, no person subject to the requirements of 11.0 of this regulation shall supply, sell, offer for sale, blend, repackage for sale, manufacture, distribute, use, apply or specify the use or application of an automotive coating unless that person meets the requirements of either 11.3.1.1 or 11.3.1.2.

11.3.1.1 The VOC content of the coating, calculated in accordance with equation 11-1, is less than or equal to the limits listed in Table 11-1 of this regulation. If, on the container of an automotive coating, or a label or sticker affixed to the container or in sales, advertising, technical or product literature any representation is made that indicates that the coating meets the definition of or is recommended for use for more than one of the coating categories listed in Table 11-1, then the lowest applicable VOC content limit shall apply.

$$\text{VOC coating regulatory content} = \frac{(Wv - Ww - Wec)}{(Vm - Vw - Vec)} \quad \text{(Equation 11-1)}$$

Where:
VOC coating regulatory content = VOC content in grams per liter (g/l)
Wv = Weight of total volatiles in grams (g)
Ww = Weight of water in grams (g)
Wec = Weight of exempt compounds in grams (g)
Vm = Volume of material (coating, including water and exempt compounds) in liters (l)
Vw = Volume of water in liters (l)
Vec = Volume of exempt compounds in liters (l)

Table 11-1: Allowable VOC Content

Coating Category	VOC REGULATORY – AS APPLIED	
	lb/gal	gm/l
Adhesion promoter	4.5	540
Automotive pretreatment coating	5.5	660
Automotive primer	2.1	250
Cavity wax	5.4	650
Clear coating	2.1	250
Color coating	3.5	420
Deadener	5.4	650
Gasket/gasket sealing material	1.7	200
Lubricating wax/compound	5.8	700
Multicolor coating	5.7	680
Sealer	5.4	650
Single-stage coating	2.8	340
Temporary protective coating	0.5	60
Truck bed liner coating	1.7	200
Trunk interior coating	5.4	650
Underbody coating	3.6	430
All other coating types	2.1	250

11.3.1.2 Emissions capture and control equipment is installed and operated that achieves an emission reduction efficiency in accordance with 11.4 of this regulation.

11.3.2 Except as exempted in 11.3.3 or provided for in 11.3.2.1 and 11.3.2.2 of this regulation, no person subject to the requirements of 11.0 of this regulation shall supply, sell, offer for sale, blend, repackage for sale, manufacture, distribute, use, apply or specify the use or application of a cleaning solvent with a VOC content, calculated in accordance with equation 11-2 of this regulation, that is greater than 25 grams per liter.

11.3.2.1 Special cleaning solvent for use in specific and difficult cleaning tasks associated with surface preparation with a VOC content no greater than 350 g/l may be used at a volume equal to 2.5% of the preceding years annual coating usage up to a maximum of 40 gallons per year.

11.3.2.2 VOC content (or actual)= $\frac{(Wv - Ww - Wec)}{Vm}$ (Equation 11-2)

Where:
VOC content = VOC content (or actual) in grams per liter (g/l)
Wv = Weight of total volatiles in grams (g)
Ww = Weight of water in grams (g)
Wec= Weight of exempt compounds in grams (g)
Vm = Volume of material (coating or cleaning solvent, as applicable, including water and exempt compounds) in liters (l)

11.3.3 Any product manufactured prior to January 1, 2012 is exempt from the requirements of 11.3.1 and 11.3.2 of this regulation, provided that product complies with requirements of 11.6.2 of this regulation.

11.3.4 Except as exempted in 11.3.5 of this regulation, any person who uses or applies automotive coatings subject to 11.3 of this regulation shall use only the following application techniques:

11.3.4.1 Any non-atomized application technique (e.g., Flow/curtain coating, Dip coating, Roller coating, Brush coating, Cotton-tipped swab application coating, etc.);

11.3.4.2 High Volume Low Pressure (HVLP) spraying;

11.3.4.3 Electrostatic spray;

11.3.4.4 Airless spray;

11.3.4.5 Any other coating application technique that the person has demonstrated and the Department has determined achieves a transfer efficiency equivalent to HVLP or electrostatic spray.

11.3.5 The following are exempt from the requirements of 11.3.4 of this regulation:

11.3.5.1 The use of airbrush application methods for graphics, stenciling, lettering, and other identification markings;

11.3.5.2 The applications of coatings to cover finish imperfections equal to or less than one inch in diameter.

11.3.5.3 A coating use of less than one fluid ounce.

11.3.5.4 Underbody and truck bed liner coatings.

11.3.6 Any person who uses or applies automotive coatings or cleaning solvents subject to 11.3 of this regulation shall implement the following work practice standards.

11.3.6.1 Spray guns shall be cleaned by one or a combination of the following methods, using cleaning solvent or non-VOC containing solutions:

11.3.6.1.1 Use of an enclosed spray gun cleaning system that is kept closed when not in use. The active and passive solvent losses from the use of the system shall be determined in accordance with the requirements of 11.7.4 of this regulation.

11.3.6.1.2 The unatomized discharge of cleaning solvent into a paint waste container that is kept closed when not in use.

11.3.6.1.3 The disassembly of the spray gun and cleaning in a vat that is kept closed when not in use.

11.3.6.1.4 The atomized spray into a paint waste container that is fitted with a device designed to capture atomized cleaning solvent emissions.

11.3.6.2 Fresh and used automotive coatings, solvent, and cleaning solvents shall be stored in vaportight, non-absorbent, non-leaking containers. The containers shall be kept closed at all times except when filling or emptying.

11.3.6.3 Cloth and paper, or other absorbent applicators, moistened with automotive coatings, solvents, or cleaning solvents shall be stored in closed, vapor tight, non-absorbent, non-leaking containers.

11.3.6.4 Handling and transfer procedures shall minimize spills during the transfer of automotive coatings, solvents and cleaning solvents

11.3.6.5 Any person who uses or applies automotive coatings, solvents or cleaning solvents subject to 11.0 of this regulation shall be trained in the proper use and handling of automotive coatings, solvents, cleaning solvents, and waste products in order to minimize the emission of air contaminants.

11.3.6.5.1 Proof of training shall be maintained on the facility premises.

11.3.6.5.2 Acceptable forms of training include equipment or paint manufacturer's seminars, classes, workshops, or any other training approved by the Department.

11.4 Control Devices

11.4.1 Any person subject to 11.3.1.2 of this regulation shall determine the emission reduction efficiency needed to comply and demonstrate compliance as follows:

11.4.1.1 Determine for each day the overall emission reduction efficiency needed to demonstrate compliance. The overall emission reduction needed for a day is the lesser of the value calculated according to the procedure in 3.3 of **Appendix C** of this regulation for that day, or at least 85%.

11.4.1.2 Demonstrate each day that the overall emission reduction efficiency achieved for that day, as determined in **Appendix D** of this regulation, is greater than or equal to the overall emission reduction efficiency required for that day.

11.4.2 Any person subject to 11.3.1.2 of this regulation shall ensure that:

11.4.2.1 A capture system and control device are operated at all times that the coating facility is in operation, and the owner or operator demonstrates compliance with 11.0 of this regulation through the applicable coating analysis and capture system and control device efficiency test methods specified in **Appendix B**, **Appendix D** and **Appendix E** of this regulation and in accordance with the capture efficiency test methods in **Appendix D** of this regulation.

11.4.2.2 The control device is equipped with the applicable monitoring equipment specified in 2.2 of **Appendix D** of this regulation, and the monitoring equipment is installed, calibrated, operated, and maintained according to the vendor's specifications at all times the control device is in use.

11.5 Compliance Procedures, Recordkeeping, and Reporting Requirements Applicable to Any Person Who Uses or Applies Automotive Coatings or Cleaning Solvents. Any person who uses or applies automotive coatings or cleaning solvents subject to 11.3 of this regulation shall maintain and have available at all times, on site, the information specified in 11.5.1, 11.5.2, and 11.5.3 of this regulation:

11.5.1 For each automotive coating and cleaning solvent used or applied, a list that includes the following information:

11.5.1.1 The product name and manufacturer.

11.5.1.2 Whether the product is an automotive coating or cleaning solvent.

11.5.1.3 The method or methods employed to use or apply the product (e.g., HVLP spray, shop rag, etc.).

11.5.1.4 For any automotive coating, the applicable coating category or categories listed in Table 11-1 of this regulation.

11.5.1.5 The mix ratio specific to the automotive coating.

11.5.1.6 The VOC regulatory content, as applied, for each ready to spray or ready to apply automotive coating and copies of data sheets documenting how the as applied values were determined.

11.5.1.7 The VOC regulatory content as supplied and copies of current manufacturer specification sheets, product data sheets, material safety data sheets, technical data sheets, or air quality data sheets documenting the as supplied value.

11.5.2 For each automotive coating or cleaning solvent purchased, purchase records identifying the following;

11.5.2.1 The date the product was purchased.

11.5.2.2 The product name and the manufacturer.

11.5.2.2 For any coating, the applicable coating category listed in Table 11-1 of this regulation.

11.5.2.3 The volume purchased.

11.5.3 For any person subject to the requirements of 11.3.4 of this regulation:

11.5.3.1 A written description of each application method used at the facility.

11.5.3.2 For any spray equipment used, the manufacturer's published technical material on the design of the equipment, or other documentation that demonstrates it is HVLP, electrostatic, or airless spray, as defined in 11.0 of this regulation.

11.5.3.3 For any coating application technique complying with 11.3.4.5 of this regulation:

11.5.3.3.1 Written determination of the transfer efficiency in accordance with the test methods in 11.7.3 of this regulation.

11.5.3.3.2 Written documentation that the alternative spray coating application method has been approved by the Department.

11.6 Compliance Procedures, Recordkeeping, and Reporting Requirements Applicable to Any Person Who Blends, Repackages for Sale, Manufactures, Supplies, Sells, or Offers for sale Automotive Coatings or Cleaning Solvents. Any person who supplies, sells, offers for sale, blends, repackages for sale, manufactures, or distributes automotive coating or cleaning solvent subject to this regulation shall:

11.6.1 For each automotive coating product, include the following information on product data sheets or an equivalent medium:

11.6.1.1 The VOC regulatory content, as supplied, expressed in grams per liter, calculated in accordance with the requirements of 11.3.1.1 of this regulation.

11.6.1.2 The weight percent of volatiles, water, and exempt compounds.

11.6.1.3 The volume percent of water and exempt compounds.

11.6.1.4 The density of the material (in grams per liter).

11.6.2 For each automotive coating product, include the following information on all containers or on a label affixed to the container, or on the package:

11.6.2.1 The applicable coating category listed in Table 11-1 of this regulation.

11.6.2.2 The VOC content of the coating, as supplied, calculated in accordance with the requirements of 11.3.1.1 of this regulation and expressed in grams per liter.

11.6.2.3 The month and year on which the automotive coating was manufactured, or a code indicating that date.

11.6.2.3.1 The product date or date-code must be displayed on each automotive coating container, label or package no later than 30 days before the automotive coating is supplied, sold, offered for sale or distributed in Delaware.

11.6.2.3.2 The date or date-code information shall be located on the automotive coating container, label or package so that it is readily observable without irreversibly disassembling a part of the container or packaging. Information may be displayed on the bottom of a container as long as it is clearly legible without removing any product packaging.

11.6.2.3.3 A person may not erase, alter, deface or otherwise remove or make illegible a date or code indicating the month and year of manufacture from a regulated product container without the express authorization of the manufacturer.

11.6.2.3.4 Except as provided for in 11.6.2.3.5 of this regulation, any person using a date-code to comply with 11.6.2.3 of this regulation shall comply with 11.6.2.3.4.1 and 11.6.2.3.4.2 of this regulation.

11.6.2.3.4.1 No later than 30 days before the automotive coating is supplied, sold, offered for sale or distributed in Delaware, submit to the Department an explanation of the code.

11.6.2.3.4.2 Before products displaying any modified code are supplied, sold, offered for sale or distributed in Delaware, submit to the Department an explanation of the modified code.

11.6.2.3.4.3 Date code explanations for codes indicating the month and year of manufacture are public information and may not be claimed as confidential.

11.6.2.3.5 The requirements of 11.6.2.3.4 of this regulation shall not apply to any date-code that is represented separately from other codes on the automotive coating container, label or package so that it is easily recognizable, and that is expressed as follows:

YY DDD

where,

YY = represents the year the coating was manufactured

DDD = represents the Julian date

11.6.3 For each cleaning solvent, include on the container, or on a label affixed to the container, the VOC content for that cleaning solvent, as supplied, expressed in grams per liter, calculated in accordance with the requirements of 11.3.2 of this regulation.

11.7 Test Methods. These methods are in addition to methods included in **Appendix A**, **Appendix B**, **Appendix D**, and **Appendix E** of this regulation. The following test methods are incorporated by reference herein, and shall be used to test automotive coatings, automotive coating components and cleaning solvents subject to this regulation. A source is in violation of this regulation if a measurement by one or more of the listed applicable test methods exceeds the standards of this regulation.

11.7.1 Acid content. Measurement of acid content of coatings shall be determined by using ASTM International D1613-03, Standard Test Method for Acidity in Volatile Solvents and Chemical Intermediates Used in Paint, Varnish, Lacquer, and Related Products, ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA, 19428-2959 USA.

11.7.2 Metallic content. The metallic content of a coating shall be determined by South Coast Air Quality Management District (SCAQMD) Method 318-95, Determination of Weight Percent Elemental Metal in Coatings by X-ray, SCAQMD, 21865 Copley Drive, Diamond Bar, CA, 91765 USA.

11.7.3 Spray equipment transfer efficiency. Spray equipment transfer efficiency shall be determined by using the South Coast Air Quality Management District (SCAQMD) Test Procedure, Spray Equipment Transfer Efficiency Test Procedure for Equipment User, May 24, 1989, SCAQMD, 21865 Copley Drive, Diamond Bar, CA, 91765 USA.

11.7.4 Spray gun cleaning system. The active and passive solvent losses from the use of an enclosed spray gun cleaning system or equivalent cleaning system, shall be determined using South Coast Air Quality Management District (SCAQMD) Method, General Test Method for Determining Solvent Losses from Spray Gun Cleaning Systems, October 3, 1989, SCAQMD, 21865 Copley Drive, Diamond Bar, CA, 91765 USA.

11.7.4.1 The test solvent for this determination shall be a lacquer thinner with a minimum vapor pressure of 105 mm of mercury at 20^0C.

11.7.4.2 The minimum test temperature shall be 15^0C.

11.7.5 Alternative test methods. The use of other test methods which are determined to be at least equivalent and approved by the Department may be used in place of the test methods specified in 11.7 of this regulation.

14 DE Reg. 319 (10/01/10)

12.0 Surface Coating of Plastic Parts.

10/11/2011

12.1 Applicability

12.1.1 The provisions of 12.0 of this regulation apply to any plastic parts or products coating unit. Except as provided in 12.1.2 of this regulation, every owner or operator of any plastic parts or products coating unit shall comply with the provisions of 12.0 of this regulation on and after 04/11//2010.

12.1.2 Transition period for existing permitted sources. Every owner or operator of any plastic parts or products coating unit that has a permit issued pursuant to 7 **DE Admin. Code** 1102 or 1130 containing all applicable

conditions of 12.0 of this regulation, as that regulation existed on November 29, 1994, shall comply with those permit conditions until December 31, 2010. On and after January 1, 2011, every such owner or operator of any plastic parts or products coating unit shall comply with the provisions of 12.0 of this regulation.

12.1.3 If a metal component permanently attached to a plastic part is coated in a spray booth or on a process line where plastic parts or products are being coated, the requirements of 12.0 of this regulation apply to the coating of both the plastic part and the attached metal component.

12.1.4 The provisions of 12.0 of this regulation do not apply to the following plastic parts or products:

12.1.4.1 Parts covered by other sections of this regulation.

12.1.4.2 Exterior parts of completely assembled marine vessels.

12.1.4.3 Internal electrical parts of business and commercial machines, including, but not limited to, medical and entertainment equipment.

12.1.5 Except as provided in 12.1.6 of this regulation, the provisions of 12.0 of this regulation do not apply to plastic parts or products coating facilities whose actual emissions, without control devices, from all plastic parts or products coating units, including emissions from related cleaning activities, are less than 6.8 kilograms (kg) (15 pounds [lb]) of volatile organic compounds (VOCs) per day.

12.1.6 An owner operator of a facility whose emissions are below the applicability threshold in 12.1.5 of this regulation shall comply with the certification, recordkeeping, and reporting requirements of 12.7.1 of this regulation.

12.1.7 Any facility that becomes or is currently subject to the provisions of 12.0 of this regulation by exceeding the applicability threshold in 12.1.5 of this regulation shall remain subject to these provisions even if its emissions later fall below the applicability threshold.

12.1.8 Any facility that is currently subject to a state or federal rule promulgated pursuant to the Clean Air Act Amendments of 1977 by exceeding an applicability threshold is and shall remain subject to these provisions, even if its throughput or emissions later fall below the applicability threshold.

12.2 Definitions. As used in 12.0 of this regulation, all terms not defined herein shall have the meaning given them in the November 15, 1990 Clean Air Act Amendments (CAAA), or in 2.0 of this regulation.

"**Basecoat/clearcoat**" means a two-step topcoat system in which a highly pigmented, often metallic, basecoat is followed by a clearcoat, resulting in a finish with high-gloss characteristics. It is often used on automotive plastic parts.

"**Black coating**" means a coating which meets a maximum lightness of 23 units, and has a saturation of less than 2.8, where saturation equals the square root of $A^2 + B^2$. These criteria are based on Cielab color space, 0/45 geometry. For spherical geometry, specular included, the maximum lightness is 33 units.

"**Business machine**" means a device that uses electronic or mechanical methods to process information, perform calculations, print or copy information or convert sound into electrical impulses for transmission, including devices listed in standard industrial classification numbers 3572, 3573, 3574,3579, and 3661 and photocopy machines, a subcategory of standard industrial classification number 3861.

"**Commercial machine**" means a device that is used in commercial activities, including, but not limited to, medical, laboratory and entertainment equipment.

"**Electric dissipating coating**" means a coating that rapidly dissipates a high-voltage electric charge.

"**Electrostatic preparation coating**" means a coating that is applied to a plastic part solely to provide conductivity for the subsequent application of a prime, a topcoat, or other coating through the use of electrostatic application methods. An electrostatic prep coat is clearly identified as an electrostatic prep coat on its accompanying material safety data sheet.

"**EMI/RFI Electromagnetic interference/radio frequency interference shielding coating**" means a coating that is used in a plastic business or commercial machine housing to attenuate electromagnetic and radio frequency interference signals that would otherwise pass through the plastic housing.

"**Flexible primer**" means any coating that is required to comply with engineering specifications for impact resistance, mandrel bend, or elongation as defined by the original equipment manufacturer.

"**Fog coat**" means a coating that is applied to a plastic part for the purpose of color matching without masking a molded-in texture. A fog coat shall not be applied at a thickness of more than 0.5 mils of coating solids.

"**Gloss reducer**" means a coating that is applied to a plastic part solely to reduce the shine of the part. A gloss reducer shall not be applied at a thickness of more than 0.5 mils of coating solids.

"**High-bake coating**" means a coating that is designed to cure at temperatures above 90 degrees Celsius (°C) (194 degrees Fahrenheit [°F]).

“**Higher-solids coating**” means a coating that contains greater amounts of pigment and binder than a conventional coating. Solids are the non-solvent, non-water ingredients in the coating. A higher-solids coating usually contains more than 60% solids by volume.

“**Low-bake coating**” means a coating that is designed to cure at temperatures lower than 90°C (194°F).

"**Mask coating**" means thin film coating applied through a template to coat a small portion of a substrate.

"**Military specification coating**" means a coating which has a formulation approved by a United States military agency for use on military equipment.

“**Nonflexible primer**” means a paint that cannot withstand dimensional changes.

"**Optical coating**" means a coating applied to an optical lens.

“**Plastic part or product**” means a piece made from a substance that has been formed from resin through the application of pressure or heat. Plastic parts or products include automotive or other transportation equipment including, but not limited to, parts or products for automobiles, trucks (light-, medium and heavy-duty), large and small farm machinery, motorcycles, recreational vehicles, construction equipment, vans, buses, lawnmowers and other motorized mobile equipment; business and commercial machines, including, but not limited to, computers, copy machines, typewriters, medical equipment, laboratory equipment and entertainment equipment; and commercial and industrial machinery, sporting goods, toys, lawn and garden equipment and other industrial and household products.

"**Red coating**" means a coating which meets all of the following criteria: yellow limit, the hue of hostaperm scarlet; blue limit, the hue of monastral red-violet, lightness limit for metallics, 35% aluminum flake; lightness limit for solids, 50% titanium dioxide white; solid reds, hue angle of -11 to 38 degrees and maximum lightness of 23 to 45 units; metallic reds, hue angle of -16 to 35 degrees and maximum lightness of 28 to 45 units. These criteria are based on Cielab color space, 0/45 geometry. For spherical geometry, specula included, the upper limit is 49 units. The maximum lightness varies as the hue moves from violet to orange. This is a natural consequence of the strength of the colorants, and real colors show this effect.

“**Solids content**” means the non-solvent, non-water ingredients in the coating, which consist of pigments and binders, that do not evaporate and have the potential to form a cured (dry) film. The solids content can be expressed in terms of volume percent or weight percent.

“**Specialty coating**” means a coating that is used for unusual job performance requirements, usually in small amounts. These products include but are not limited to adhesion primers, resist coatings, soft coatings, reflective coatings, electrostatic prep coatings, headlamp lens coatings, ink pad printing coatings, stencil coatings, texture coatings (automotive), vacuum metalizing coatings, and gloss flatteners.

"**Texture coat**" means a coating that is applied to a plastic part which, in its finished form, consists of discrete raised spots of the coating.

"**Translucent coating**" means a coating which contains binders and pigment, and is formulated to form a colored, but not opaque, film.

12.3 Standards

12.3.1 Except as provided in 12.4 of this regulation, no owner or operator of a plastic parts or products coating unit subject to 12.0 of this regulation shall cause or allow the application of any coating to plastic parts or products unless:

12.3.1.1 The VOC content of the coating is less than or equal to the limits listed in Table 12-1 of this regulation, or

12.3.1.2 For a plastic parts or products coating unit that applies multiple coatings, which are subject to the same numerical emission limitation in Table 12-1 of this regulation, the daily-weighted average VOC content, calculated in accordance with the procedure specified in **Appendix C** of this regulation, is less than or equal to the limit in Table 12-1 of this regulation corresponding to the category of coating used, or

12.3.1.3 Control equipment is installed and operated that achieves an emission reduction efficiency in accordance with 12.5 of this regulation. The requirements of 12.3.2 shall not apply to any plastic parts or products coating unit that achieves an emission reduction efficiency of 95% or greater.

12.3.2 Except as provided in 12.3.1.3 and 12.4 of this regulation, no owner or operator of a plastic parts or products coating unit subject to 12.0 of this regulation shall apply a coating to plastic parts or products unless the coating is applied with equipment properly operated and maintained according to the manufacturer's suggested guidelines and using one or more of the following coating application methods:

12.3.2.1 Electrostatic spray

12.3.2.2 Flow coating

12.3.2.3 Dip coating, including electrodeposition

12.3.2.4 Roll coating

12.3.2.5 High-volume, low-pressure (HVLP) spray

12.3.2.6 Hand application

12.3.2.7 An alternative method demonstrated to be capable of achieving a transfer efficiency equal to or better than HVLP spray and approved by the Department and by the EPA.

Table 12-1 Plastic Parts Coating VOC Content Limits

Table 12-1 coating VOC content limits are expressed as mass (kilogram [kg] or pound [lb]) per volume (liter [l] or gallon [gal]) of coating less water and exempt compounds, as applied.

Coating Category	kg VOC/l coating	lb VOC/gal coating
General		
One component coating	0.28	2.3
Multi component coating	0.42	3.5
Electric dissipating coatings and shock-free Coatings	0.36	3.0
Extreme performance	0.42 (2pack)	3.5 (2pack)
Metallic	0.42	3.5
Military specification	0.34 (1pack)	2.8 (1pack)
	0.42 (2 pack)	3.5 (2pack)
Mold-seal	0.76	6.3
Multicolored coatings	0.68	5.7
Optical coatings	0.80	6.7
Vacuum-metalizing	0.80	6.7
Business Machine Parts		
Primers	0.14	1.2
Topcoat	0.28	2.3
Fog Coat	0.26	2.2
Touchup and repair	0.28	2.3
Clearcoats	0.28	2.3
EMI/RFI Coatings	0.48	4.0
Soft Coatings	0.52	4.3
Plating Resist Coatings	0.71	5.9
Plating Sensitizer Coatings	0.85	7.1
High bake coatings		
Flexible Primer	0.46	3.8
Non-flexible primer	0.42	3.5
Base coats	0.52	4.3
Clear coat	0.48	4.0
Non-basecoat/clear coat	0.52	4.3
Interior colorcoat	0.49	4.1
Exterior colorcoat	0.55	4.6
Low bake/air dried coatings - exterior		
Primers	0.58	4.8
Basecoat	0.60	5.0
Clearcoats	0.54	4.5
Non-basecoat/clearcoat	0.60	5.0
Red and black colorcoats	0.67	5.6
All other colorcoats	0.61	5.1

Low bake/air dried coatings - interior primers	0.42	3.5
colorcoats	0.38	3.2
Touchup and Repair coatings	0.62	5.2
Auto Specialty		
Vacuum metalizing basecoats	0.66	5.5
Texture coatings	0.66	5.5
Reflective argent coatings	0.71	5.9
Soft specialty coatings	0.71	5.9
Air bag cover coatings	0.71	5.9
Gloss Flatteners	0.77	6.4
Vacuum metalizing topcoats	0.77	6.4
Texture topcoats	0.77	6.4
Stencil Coatings	0.81	6.8
Adhesion primers	0.81	6.8
Ink pad printing coatings	0.81	6.8
Electrostatic prep coats	0.81	6.8
Resist coatings	0.81	6.8
Headlamp lens coatings	0.89	7.4

* General refers to those parts or products which are not Business Machine Parts or Automotive/ Transportation Parts.

12.4 Specific Exemptions

12.4.1 The requirements of 12.3.1 of this regulation shall not apply to the following coatings and coating operations related to general plastic parts and products:

12.4.1.1 Touch-up and repair coatings,

12.4.1.2 Stencil coatings,

12.4.1.3 Clear or translucent coatings,

12.4.1.4 Coatings applied at a paint manufacturing facility while conducting performance tests on the coatings,

12.4.1.5 Any individual coating category used in volumes less than 50 gallons in any one year, if substitute compliant coatings are not available, provided that the total usage of all such coatings does not exceed 200 gallons per year, per facility,

12.4.1.6 Reflective coating applied to highway cones,

12.4.1.7 Mask coatings that are less than 0.5 millimeter thick (dried) and the area coated is less than 25 square inches,

12.4.1.8 EMI/RFI shielding coatings, and

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

12.4.2 The requirements of 12.3.2 shall not apply, for general plastic parts and products coatings, to air brush operations using 5-gallons or less per year of coating.

12.4.3 The requirements of 12.3.1 and 12.3.2 of this regulation shall not apply to the following types of coatings:

12.4.3.1 Aerosol coating product, and

12.4.3.2 Powder coatings.

12.5 Control Devices

12.5.1 An owner or operator of a plastic part or products coating unit subject to 12.3.1.3 of this regulation shall determine the emission reduction efficiency needed to comply and demonstrate compliance as follows:

12.5.1.1 Determine for each day the overall emission reduction efficiency needed to demonstrate compliance. The overall emission reduction needed for a day is the lesser of the value calculated according to the procedure in 3.3 of **Appendix C** of this regulation for that day, or 95%.

12.5.1.2 Demonstrate each day that the overall emission reduction efficiency achieved for that day, as determined in **Appendix D** of this regulation, is greater than or equal to the overall emission reduction efficiency required for that day.

12.5.2 An owner or operator of a plastic parts or products coating unit subject to 12.3.1.3 of this regulation shall ensure that:

12.5.2.1 A capture system and a control device are operated at all times the unit is in operation, and the owner or operator demonstrates compliance with 12.0 of this regulation through the applicable coating analysis and capture system and control device efficiency test methods specified in **Appendix B**, **Appendix D**, and **Appendix E** of this regulation and in accordance with the capture efficiency test methods in **Appendix D** of this regulation.

12.5.2.2 The control device is equipped with the applicable monitoring equipment specified in 2.0 of **Appendix D** of this regulation, and the monitoring equipment is installed, calibrated, operated, and maintained according to the vendor's specifications at all times the control device is in use.

12.6 Test Methods. The test methods found in **Appendices A** through **D** of this regulation shall be used to determine compliance with 12.0 of this regulation.

12.6.1 The metal particle content of metallic coatings shall be determined by the California South Coast Air Quality Management District (SCAQMD) Method 318 "Determination of Weight Percent of Elemental Metal in Coatings by X-Ray Diffraction Method" contained in the SCAQMD "Laboratory Methods of Analysis of Enforcement Samples" (for coatings containing aluminum) or by SCAQMD Method 311 "Analysis of Percent Metal in Metallic Coatings by Spectrographic Method" contained in the SCAQMD "Laboratory Method of Analysis of Enforcement Samples" (for coatings containing metals other than aluminum).

12.7 Compliance Certification, Recordkeeping, and Reporting Requirements.

12.7.1 An owner or operator of a plastic parts or products coating unit exempt from the emission limits listed in 12.3 of this regulation shall comply with the certification, recordkeeping, and reporting requirements listed in 4.2 of this regulation.

12.7.2 An owner or operator of a plastic parts or products coating unit subject to 12.0 of this regulation and complying with 12.3.1 of this regulation by the use of compliant coatings shall comply with the certification, recordkeeping, and reporting requirements in 4.3 of this regulation.

12.7.3 An owner or operator of a plastic parts or products coating unit subject to 12.0 of this regulation and complying with 12.3.1 of this regulation by the use of daily-weighted averaging shall comply with the certification, recordkeeping, and reporting requirements in 4.4 of this regulation.

12.7.4 An owner or operator of a plastic parts or products coating unit subject to 12.0 of this regulation and complying with 12.3.1 of this regulation by the use of control devices shall comply with the certification, reporting, and recordkeeping requirements listed in 4.5 of this regulation.

12.7.5 An owner or operator of a plastic parts coating unit subject to 12.3.2 of this regulation shall maintain at the facility a copy of the equipment manufacturer's suggested operating and maintenance guidelines, and provide a copy to the Department upon request.

13 DE Reg. 1344 (04/01/10)
15 DE Reg. 532 (10/01/11)

13.0 Automobile and Light-Duty Truck Coating Operations

03/11/11

13.1 Applicability

13.1.1 The provisions of 13.0 of this regulation apply to the following coating operations in an automobile or light-duty truck assembly plant: each prime coat operation, each electro-deposition (EDP) prime coat operation, each primer surfacer operation, each topcoat operation, each combined primer surfacer and topcoat operation, each final repair operation and each miscellaneous motor vehicle materials operation.

13.1.2 The requirements in 13.3.1**,** 13.6 and 13.9 of this regulation also apply to heavy-duty trucks that use EDP to apply prime coat.

13.1.3 Anti-chip coatings, as applied to automobile and light-duty truck components such as, but not limited to, rocker panels, the bottom edge of doors and fenders, and the leading edge of the hood or roof, are considered primer surfacers.

13.1.4 Application to metal parts of underbody anti-chip coatings (e.g., underbody plastisol) and coatings other than prime, primer-surfacer, topcoat, final repair and miscellaneous motor vehicle materials shall be subject to the requirements of 22.0 of this regulation (Miscellaneous Metal Parts).

13.1.5 The requirements in 13.3 of this regulation do not apply to automobile and light-duty truck assembly plants whose plant-wide, actual emissions without control devices are less than 6.8 kilograms (kg) (15 pounds [lb]) of volatile organic compounds (VOCs) per day.

13.1.6 An owner or operator of a facility whose emissions are below the applicability threshold in 13.1.5 of this regulation shall comply with the certification, recordkeeping, and reporting requirements in 4.2 of this regulation.

13.1.7 Any facility that becomes or is currently subject to all of the provisions of 13.0 of this regulation by exceeding the applicability threshold in 13.1.5 of this regulation will remain subject to these provisions even if its emissions later fall below the applicability threshold.

13.1.8 Any facility that is currently subject to a state or federal rule promulgated pursuant to the Clean Air Act Amendments of 1977 by exceeding an applicability threshold is and will remain subject to these provisions, even if its throughput or emissions later fall below the applicability threshold.

13.1.9 Transition period for existing permitted sources. Every owner or operator of any automobile or light-duty truck assembly plant that has a permit issued pursuant to 7 **DE Admin. Code** 1102 or 1130 containing all applicable conditions of 13.0 of this regulation, as that regulation existed on January 11, 1993, shall comply with those permit conditions for up to one year after the effective date of this revision of 13.0 of this regulation. On and after the date one year after the effective date of this revision of 13.0 of this regulation, every such owner or operator shall comply with the provisions of 13.0 of this regulation.

13.2 Definitions. As used in 13.0 of this regulation, all terms not defined herein shall have the meaning given them in this regulation or in the Clean Air Act Amendments (CAAA) of November 15, 1990, or in 2.0 of this regulation.

"**Adhesive**" means any chemical substance that is applied for the purpose of bonding two surfaces together other than by mechanical means.

"**Application area**" means the area where a coating is applied by dipping or spraying.

"**Automobile**" means a motor vehicle capable of carrying no more than 12 passengers.

"**Automobile and light-duty truck adhesive**" means an adhesive, including glass bonding adhesive, used at an automobile or light-duty truck assembly coating facility, applied for the purpose of bonding two vehicle surfaces together without regard to the substrates involved.

"**Automobile and light-duty truck bedliner**" means a multi-component coating, used at an automobile or light-duty truck assembly coating facility, applied to a cargo bed after the application of topcoat and outside of the topcoat operation to provide additional durability and chip resistance.

"**Automobile and light-duty truck body**" means the exterior and interior surfaces of an automobile or light-duty truck including, but not limited to, hoods, fenders, cargo boxes, doors, grill opening panels, engine compartment, all or portions of the passenger compartment, and trunk interior.

"**Automobile and light-duty truck cavity wax**" means a coating, used at an automobile or light-duty truck assembly coating facility, applied into the cavities of the vehicle primarily for the purpose of enhancing corrosion protection.

"**Automobile and light-duty truck deadener**" means a coating, used at an automobile or light-duty truck assembly coating facility, applied to selected vehicle surfaces primarily for the purpose of reducing the sound of road noise in the passenger compartment.

"**Automobile and light-duty truck gasket/gasket sealing material**" means a fluid, used at an automobile or light-duty truck assembly coating facility, applied to coat a gasket or replace and perform the same function as a gasket. Automobile and light-duty truck gasket/gasket sealing material includes room temperature vulcanization (RTV) seal material.

"**Automobile and light-duty truck glass bonding primer**" means a primer, used at an automobile or light-duty truck assembly coating facility, applied to windshield or other glass, or to body openings, to prepare the glass or body opening for the application of glass bonding adhesives or the installation of adhesive bonded glass. Automobile and light-duty truck glass bonding primer includes glass bonding/cleaning primers that perform both functions (cleaning and priming of the windshield and other glass, or body openings) prior to the application of adhesive or the installation of adhesive bonded glass.

"**Automobile and light-duty truck lubricating wax/compound**" means a protective lubricating material, used at an automobile or light-duty truck assembly coating facility, applied to vehicle hubs and hinges.

"**Automobile and light-duty truck sealer**" means a high viscosity material, used at an automobile or light-duty truck assembly coating facility, generally, but not always, applied in the paint shop after the body has received an electrodeposition primer coating and before the application of subsequent coatings (e.g. primer-surfacer). The primary purpose of the automobile and light-duty truck sealer is to fill body joints completely so that there is no intrusion of water, gases or corrosive materials into the passenger area of the compartment. Such materials are also referred to as sealant or caulk.

"**Automobile and light-duty truck trunk interior coating**" means a coating, used at an automobile or light-duty truck assembly coating facility outside of the primer-surfacer and topcoat operations, applied to the trunk interior to provide chip protection.

"**Automobile and light-duty truck underbody coating**" means a coating, used at an automobile or light-duty truck assembly coating facility, applied to the undercarriage or firewall to prevent corrosion and/or provide chip protection.

"**Automobile and light-duty truck weatherstrip adhesive**" means an adhesive, used at an automobile or light-duty truck assembly coating facility, applied to weatherstripping materials for the purpose of bonding the weatherstrip material to the surface of the vehicle.

"**Electro-deposition (EDP)**" means a process of applying a protective, corrosion resistant waterborne prime coat by which the automobile or truck body is submerged in a tank filled with coating material and an electrical field is used to effect the deposition of the coating material on the body. Also referred to as E-Coat, Uni-Prime, and ELPO Primer.

"**EDP prime coat operation**" means the application area or areas, flashoff area or areas, and oven or ovens that are used to apply and dry or cure the EDP prime coat on components of automobile and truck bodies on a single assembly line.

"**Final repair operation**" means the operations performed and coating applied to completely assembled motor vehicles or to parts that are not yet on a completely assembled vehicle to correct damage or imperfections in the coating. The curing of the coatings applied in these operations is accomplished at a lower temperature than used for curing primer-surfacer and topcoat. This lower temperature cure avoids the need to send parts that are not yet on a completely assembled vehicle through the same type of curing process used for primer-surfacer and topcoat and is necessary to protect heat sensitive components on completely assembled vehicles.

"**In-line Repair**" means the operation performed and coating used to correct damage or imperfections in the topcoat on parts that are on a completely assembled vehicle. The curing of the coatings applied in these operations is accomplished at essentially the same temperature as that used for curing the previously applied topcoat. Also referred to as high bake repair or high bake reprocess. In-line repair is considered part of the topcoat operation.

"**Light-duty truck**" means any motor vehicle rated at 3,864 kg (8,500 lb) gross weight or less designed primarily to transport property.

"**Prime coat operation**" means the application area or areas, flashoff area or areas, and oven or ovens that are used to apply and dry or cure the prime coat on components of automobile and light-duty truck bodies on a single assembly line.

"**Primer-surfacer**" means an intermediate protective coating applied over the electrodeposition primer and under the topcoat. Primer-surfacer provides adhesion, protection and appearance properties to the total finish. Primer-surfacer may also be called guide coat or surfacer. Primer-surfacer operations may include other coatings (e.g., anti-chip, lower-body anti-chip, chip resistant edge primer, spot primer, blackout, deadener, interior color, basecoat replacement coating, etc) that are applied in the same spray booth.

"**Primer-surfacer operation**" means the application area or areas, flashoff area or areas, and oven or ovens that are used to apply and dry or cure primer surfacer between the prime coat and the topcoat operations on components of automobile and light-duty truck bodies on a single assembly line.

"**Primer-surfacer and topcoat protocol**" means the EPA document "Protocol for Determining the Daily Volatile Organic Compound Emission Rate of Automobile and Light-Duty Truck Primer-Surfacer and Topcoat Operations", EPA 453/R-08-002, September 2008.

"**Solids turnover ratio (R_T)**" means the ratio of total volume of coating solids that is added to the EDP system in a calendar month divided by the total volume design capacity of the EDP system.

"**Topcoat**" means the final coating applied to provide the final color and/or a protective finish. The topcoat may be a monocoat color or basecoat/clearcoat system. In-line repair and two-tone are part of topcoat. Topcoat operations may include other coatings (e.g., blackout, interior color, etc.) that are applied in the same spray booth.

"**Topcoat operation**" means the application area or areas, flashoff area or areas, and oven or ovens used to apply and dry or cure topcoat on components of automobile and light-duty truck bodies on a single assembly line.

"**Volume design capacity**" means for the EDP system the total liquid volume that is contained in the EDP system (tanks, pumps, recirculating lines, filters, etc.) at the system's designed liquid operating level. The EDP system volume design capacity is designated L_E.

13.3 Standards

13.3.1 No owner or operator of an EDP prime coat operation subject to 13.0 of this regulation shall cause or allow on any day the application of any coating on that operation with VOC content, as applied, that exceeds either of the following:

13.3.1.1 0.084 kg/l (0.7 lb/gal) of coating solids from any EDP prime coat operation when the solids turnover ratio (R_T) is 0.16 or greater. R_T shall be calculated as follows:

$$R_T = \frac{T_V}{L_E}$$

(13-1)

where:

T_V =Total volume of coating solids that is added to the EDP system in a calendar month (liters).

L_E = Volume design capacity of the EDP system (liters).

13.3.1.2 0.084 x 350 (0.160-R_T) kg VOC/l of applied coating solids from any EDP prime coat operation when R_T, calculated according to **Equation 13-1** of this regulation, is greater than or equal to 0.040 and less than 0.160.

13.3.1.3 When R_T, calculated according to **Equation 13-1** of this regulation, is less than 0.040 for any EDP prime coat operation, there is no emission limit.

13.3.2 No owner or operator of an automobile or light-duty truck primer surface operation subject to 13.0 of this regulation shall cause or allow VOC emissions which do not comply with 1.44 kg VOC/liter of deposited solids (12.0 lb VOC/gal deposited solids) on a daily weighted average basis as determined by 13.7.2 of this regulation.

13.3.3 No owner or operator of an automobile or light-duty truck topcoating operation subject to 13.0 of this regulation shall cause or allow VOC emissions that do not comply with 1.44 kg VOC/liter of deposited solids (12.0 lb VOC/gal deposited solids) on a daily weighted average basis as determined by 13.7.2 of this regulation.

13.3.4 No owner or operator of an automobile or light-duty truck prime coat operation or final repair operation subject to 13.0 of this regulation shall cause or allow the application of any coating on that operation with VOC content, as applied, that does not comply with one of the following:

13.3.4.1 0.14 kilograms per liter (kg/l) (1.2 pounds per gallon [lb/gal]) of coating, excluding water and exempt compounds, as applied, from any prime coat operation.

13.3.4.2 0.58 kg/l) (4.8 lb/gal) of coating, excluding water and exempt compounds, as applied, from any final repair operation.

13.3.4.3 4.10 kg/l) (34.2 lb/gal) of solids deposited from any final repair operation.

13.3.5 No owner or operator of an automobile or light-duty truck combined primer-surfacer and topcoat operation subject to 13.0 of this regulation shall cause of allow VOC emissions that do not comply with 1.44 kg VOC/ liter of deposited solids (12.0 lb VOC/gal deposited solids) on a daily weighted average basis as determined by 13.7.2 of this regulation.

13.3.6 Additional VOC content limits for miscellaneous motor vehicle materials used at automotive and light-duty truck assembly facilities (grams of VOC per liter of coating excluding water and exempt compounds, as applied) are shown in Table 13-1 of this regulation.

Table 13-1

Coating Category	VOC REGULATORY AS APPLIED (g/l)
Automobile and light-duty truck adhesive	250
Automotive and light-duty truck bedliner	200
Automotive and light-duty truck cavity wax	650
Automotive and light-duty truck deadener	650

Automotive and light-duty truck gasket/gasket sealing material	200
Automotive and light-duty truck glass bonding primer	900
Automotive and light-duty truck lubricating wax/compound	700
Automotive and light-duty truck sealer	650
Automotive and light-duty truck trunk interior coating	650
Automotive and light-duty truck underbody coating	430
Automotive and light-duty truck weatherstrip adhesive	750

13.3.7 The VOC emission limits in 13.3 of this regulation do not apply to materials supplied in containers with a net volume of 16 ounces or less or a net weight of one pound or less.

13.3.8 As an alternative to compliance with the emission limits of this regulation, an owner or operator may meet the requirements of 13.4 or 13.5 of this regulation.

13.4 Daily-weighted average limitation. No owner or operator subject to 13.0 of this regulation shall apply, during any day, coatings in any non-electro-deposition (non-EDP) prime coat, final repair, or miscellaneous motor vehicle materials operation whose daily-weighted average VOC content, calculated in accordance with the procedure specified in **Appendix C** of this regulation, exceeds the applicable emission limits in 13.3.4, and 13.3.6 of this regulation.

13.5 Control devices

13.5.1 An owner or operator subject to 13.0 of this regulation may comply with the applicable emission limits for any coating operation by:

13.5.1.1 Installing and operating a capture system on that operation.

13.5.1.2 Installing and operating a control device on that operation.

13.5.1.3 Determining for each day the overall emission reduction efficiency needed to demonstrate compliance. The overall emission reduction needed for a day is the lesser of the value calculated according to the procedure in 3.1 and 3.2 of **Appendix C** of this regulation for that day or 95%.

13.5.1.4 Demonstrating each day that the overall emission reduction efficiency achieved for that day, as determined in **Appendix D** of this regulation, is greater than or equal to the overall emission reduction efficiency required for that day.

13.5.2 An owner or operator subject to 13.0 of this regulation shall ensure that:

13.5.2.1 A capture system and control device are operated at all times the coating operation is in use, and the owner or operator demonstrates compliance with 13.0 of this regulation through the applicable coating analysis and capture system and control device efficiency test methods specified in **Appendix B**, **Appendix D** and **Appendix E** of this regulation and in accordance with the capture efficiency test methods in **Appendix D** of this regulation.

13.5.2.2 The control device is equipped with the applicable monitoring equipment specified in **Appendix D** of this regulation, and the monitoring equipment is installed, calibrated, operated, and maintained according to the vendor's specifications at all times the control device is in use.

13.6 Compliance procedures for EDP prime coat operations

13.6.1 The owner or operator of an EDP prime coat operation subject to 13.0 of this regulation shall use the procedures in 40 CFR 60.393(c)(1) (July 1, 2009) to determine compliance if a capture system and a control device are not used to comply with the emission limits in 13.3.1.1 or 13.3.1.2 of this regulation.

13.6.2 The owner or operator of an EDP prime coat operation subject to 13.0 of this regulation shall use the procedures in 40 CFR 60.393(c)(2) (July 1, 2009) to determine compliance if a capture system and a control device that destroys VOC (e.g., incinerator) are used to comply with the emission limits in 13.3.1.1 or 13.3.1.2 of this regulation.

13.6.3 The owner or operator of an EDP prime coat operation subject to 13.0 of this regulation shall use the procedures in 40 CFR 60.393(c)(3) (July 1, 2009) to determine compliance if a capture system and a control device that recovers the VOC (e.g., carbon adsorber) are used to comply with the emission limits in 13.3.1.1 or 13.3.1.2 of this regulation.

13.7 Test methods

13.7.1 The test methods found in **Appendix A** through **Appendix D** of this regulation shall be used to determine compliance with 13.3.4.1 13.3.4.2, 13.3.6 and 13.3.8 of this regulation.

13.7.2 An owner or operator shall use the primer-surfacer and topcoat protocol to determine compliance with 13.3.2, 13.3.3 and 13.3.5 of this regulation. This protocol "Protocol for Determining the Daily Volatile Organic compound Emission Rate of Automobile and Light-duty Truck Primer-Surfacer and Topcoat Operations" EPA453/R-08-002, September 2008 can be found at www.epa.gov/ttn/oarpg/t1/ctg/autotruck_primer_topcoat_protocol_093008.pdf.

13.8 Recordkeeping and reporting for non-EDP prime coat, final repair and miscellaneous motor vehicle materials coating operations.

13.8.1 An owner or operator of an automobile or light-duty truck coating operation that is exempt from the emission limitations in 13.3.4.1, 13.3.4.2 and 13.3.6 of this regulation shall comply with the certification, recordkeeping, and reporting requirements in 4.2 of this regulation.

13.8.2 An owner or operator of an automobile or light-duty truck coating operation subject to 13.0 of this regulation and complying with 13.3.4.1, 13.3.4.2 and 13.3.6 of this regulation by the use of complying coatings shall comply with the certification, recordkeeping, and reporting requirements in 4.3 of this regulation.

13.8.3 An owner or operator of an automobile or light-duty truck coating operation subject to 13.0 of this regulation and complying with 13.3.4.1, 13.3.4.2 and 13.3.6 of this regulation by daily-weighted averaging shall comply with the certification, recordkeeping, and reporting requirements in 4.4 of this regulation.

13.8.4 An owner or operator of an automobile or light-duty truck coating operation subject 13.0 of this regulation and complying with 13.3.4.1, 13.3.4.2 and 13.3.6 of this regulation by the use of control devices shall comply with the testing, reporting, and recordkeeping requirements in 4.5 of this regulation.

13.9 Recordkeeping and reporting for EDP prime coat operations. An owner or operator of an EDP prime coat operation subject to 13.0 of this regulation and complying with the requirements in 13.3.1.1, 13.3.1.2 and 13.3.1.3 of this regulation shall comply with the following:

13.9.1 Certification. By November 15, 1993 or upon startup of a new EDP prime coat operation, the owner or operator shall certify to the Department that the coating operation is and will be in compliance with the requirements in 13.3.1.1 or 13.3.1.2 of this regulation on and after November 15, 1993, or on and after the initial startup date. Such certification shall include:

13.9.1.1 The name and location of the facility.

13.9.1.2 The address and telephone number of the person responsible for the facility.

13.9.1.3 Identification of subject sources.

13.9.1.4 A copy of the calculations performed to determine R_T and the calculations performed pursuant to 13.6 of this regulation to demonstrate compliance for the EDP prime coat operation for the month prior to submittal of the certification.

13.9.2 Recordkeeping. On and after November 15, 1993 or on and after the initial startup date of a new EDP prime coat operation, the owner or operator shall collect and record the following information for each EDP prime coat operation. These records shall be maintained at the facility for at least five years and shall be made available to the Department upon verbal or written request:

13.9.2.1 For each day, the total daily volume of coating solids that is added to the EDP system.

13.9.2.2 For each month, calculation of R_T using the equation in 13.3.1.1 of this regulation.

13.9.2.3 For each month, the calculations used in the compliance determinations specified in 13.6 of this regulation.

13.9.3 Reporting. On and after November 15, 1993, the owner or operator of an EDP prime coat operation subject to 13.0 of this regulation shall notify the Department in either of the following instances:

13.9.3.1 Any record showing noncompliance with the appropriate emission limit for the EDP prime coat operation.

13.9.3.2 At least 30 calendar days before changing the method of compliance from one of the procedures in 13.6 of this regulation to another of the procedures in 13.6 of this regulation, the owner or operator shall comply with the certification requirements in 13.9.1 of this regulation.

13.10 Reporting and recordkeeping for topcoat and primer surfacer operations.

13.10.1 An owner or operator of an automobile or light-duty truck coating operation subject to 13.0 of this regulation and complying with 13.2.1, 13.3.3 or 13.3.5 of this regulation shall comply with the following:

13.10.1.1 Certification. At least 120 days prior to the initial compliance date, the owner or operator of a coating operation subject to the topcoat and primer surfacer limit in 13.3.2, 13.3.3 or 13.3.5 of this regulation shall submit to the Department a detailed proposal specifying the method of demonstrating how the compliance test will be conducted according to 13.7.2 of this regulation. The proposal shall include a comprehensive plan (including a rationale) for determining the

transfer efficiency at each booth through the use of in-plant or pilot testing; the selection of coatings to be tested (for the purpose of determining transfer efficiency), including the rationale for coating groupings; and a method for tracking coating usage during the transfer efficiency test. Upon approval by the Department, the owner or operator may proceed with the compliance demonstration.

13.10.1.2 Recordkeeping

13.10.1.2.1 The owner or operator shall maintain at the facility for a period of 5 years all test results, data, and calculations used to determine VOC emissions from each topcoat and each primer surfacer operation according to the topcoat protocol.

13.10.1.2.2 If control devices are used to control emissions from an automobile or light-duty truck topcoat or primer surfacer operation, the owner or operator shall maintain records according to 4.5.2.6 through 4.5.2.11 of this regulation.

13.10.1.2.3 Reporting. Any instance of noncompliance with the emission limit in 13.3.2, 13.3.3 or 13.3.5 of this regulation shall be reported to the Department within 45 calendar days.

14 DE Reg. 902 (03/01/11)

14.0 Can Coating

01/11/1993

14.1 Applicability

14.1.1 The provisions of 14.0 of this regulation apply to any can coating unit used to apply the following coatings: sheet base coat, exterior base coat, interior body spray coat, overvarnish, side seam spray coat, exterior end coat, and end sealing compound coat.

14.1.2 The emission limits of 14.0 of this regulation do not apply to can coating units within any facility whose actual emissions without control devices from all can coating units within the facility are less than 6.8 kilograms (kg) (15 pounds [lb]) of volatile organic compounds (VOCs) per day.

14.1.3 An owner or operator of a facility whose emissions are below the applicability threshold in 14.1.2 of this regulation shall comply with the certification, recordkeeping, and reporting requirements of 14.7.1 of this regulation.

14.1.4 Any facility that becomes or is currently subject to the provisions of 14.0 of this regulation by exceeding the applicability threshold in 14.1.2 of this regulation will remain subject to these provisions, even if its emissions later fall below the applicability threshold.

14.1.5 Any facility that is currently subject to a state or federal rule promulgated pursuant to the Clean Air Act Amendments of 1977 by exceeding an applicability threshold is and will remain subject to these provisions, even if its throughput or emissions have fallen or later fall below the applicability threshold.

14.2 Definitions. As used in 14.0 of this regulation, all terms not defined herein shall have the meaning given them in the November 15, 1990 Clean Air Act Amendments (CAAA), or in 2.0 of this regulation.

"**Can**" means any cylindrical single-walled container, with or without a top, cover, spout, or handle, that is manufactured from metal sheets thinner than 29 gauge (0.0141 in.) and into which solid or liquid materials may be packaged.

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

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

"**Exterior base coat**" means a coating applied to the exterior of a two-piece can body to provide protection to the metal or to provide background for any lithographic or printing operation.

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

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

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

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

"**Three-piece can**" means a can that is made by rolling a rectangular sheet of metal into a cylinder that is soldered, welded, or cemented at the seam and attaching two ends.

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

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

14.3 Standards

14.3.1 No owner or operator of a can coating unit subject to 14.0 of this regulation shall cause or allow the application of any coating on that unit with VOC content, as applied, that exceeds the limits in 14.3.1.1 through 14.3.1.6 of this regulation.

		kg/L [a]	lb/gal [a]
14.3.1.1	Sheet basecoat and sheet overvarnish	0.34	2.8
14.3.1.2	Exterior basecoat and overvarnish (two-piece can)	0.34	2.8
14.3.1.3	Interior body spray coat	0.51	4.2
14.3.1.4	Two-piece can exterior end coat	0.51	4.2
14.3.1.5	Side seam spray coat	0.66	5.5
14.3.1.6	End-sealing compound coat	0.44	3.7

[a] VOC content values are expressed in units of mass of VOC (kg, lb) per volume of coating (liter [L], gallon [gal]), excluding water and exempt compounds, as applied.

14.3.2 As an alternative to compliance with the emission limits in 14.3.1 of this regulation, an owner or operator of a can coating unit may comply with the requirements of 14.0 of this regulation by meeting the requirements of 14.4 or 14.5 of this regulation.

14.4 Daily-weighted average limitations

14.4.1 No owner or operator of a can coating unit subject to 14.0 of this regulation shall apply, during any day, coatings on that unit whose daily-weighted average VOC content, calculated in accordance with the procedure specified in **Appendix C** of this regulation, exceeds the emission limits in 14.3.1 of this regulation.

14.4.2 Notwithstanding any other provision of this regulation, an owner or operator may use the compliance program described in the December 8, 1980, FEDERAL REGISTER (45 FR 80024). This program allows a daily weighted average of coatings between can coating units without a requirement to submit a FIP or SIP revision and without the requirement to meet the provisions of the Emissions Trading Policy Statement (51 FR 43815, December 4, 1986).

14.5 Control devices

14.5.1 An owner or operator of a can coating unit subject to 14.0 of this regulation may comply with 14.3.2 of this regulation by:

14.5.1.1 Installing and operating a capture system on that unit.

14.5.1.2 Installing and operating a control device on that unit.

14.5.1.3 Determining for each day the overall emission reduction efficiency needed to demonstrate compliance. The overall emission reduction needed for a day is the lesser of the value calculated according to the procedure in 3.0 of **Appendix C** of this regulation for that day or 95%.

14.5.1.4 Demonstrating each day that the overall emission reduction efficiency achieved for that day, as determined in 3.0 of **Appendix D** of this regulation, is greater than or equal to the overall emission reduction efficiency required for that day.

14.5.2 An owner or operator of a can coating unit subject to 14.0 of this regulation shall ensure that:

14.5.2.1 A capture system and control device are operated at all times that the unit is in operation, and the owner or operator demonstrates compliance with 14.0 of this regulation through the applicable coating analysis and capture system and control device efficiency test methods specified in **Appendix B**, **Appendix D** and **Appendix E** of this regulation and in accordance with the capture efficiency test methods in **Appendix D** of this regulation.

14.5.2.2 The control device is equipped with the applicable monitoring equipment specified in 2.0 of **Appendix D** of this regulation, and the monitoring equipment is installed, calibrated, operated, and maintained according to the vendor's specifications at all times the control device is in use.

14.6 Test methods. The test methods found in **Appendix A** through **Appendix D** of this regulation shall be used to determine compliance with 14.0 of this regulation.

14.7 Recordkeeping and reporting

14.7.1 An owner or operator of a can coating unit that is exempt from the emission limitations in 14.3 of this regulation shall comply with the certification, recordkeeping, and reporting requirements in 4.2 of this regulation.

14.7.2 An owner or operator of a can coating unit subject to 14.0 of this regulation and complying with 14.3 of this regulation by using complying coatings shall comply with the certification, recordkeeping, and reporting requirements in 4.3 of this regulation.

14.7.3 An owner or operator of a can coating unit subject to 14.0 of this regulation and complying with 14.4 of this regulation by daily-weighted averaging shall comply with the certification, recordkeeping, and reporting requirements in 4.4 of this regulation.

14.7.4 An owner or operator of a can coating unit subject to 14.0 of this regulation and complying with 14.5 of this regulation by using control devices shall comply with the testing, reporting, and recordkeeping requirements in 4.5 of this regulation.

15.0 Coil Coating

01/11/1993

15.1 Applicability

15.1.1 The provisions of 15.0 of this regulation apply to any coil coating unit.

15.1.2 The provisions of 15.0 of this regulation do not apply to any coil coating unit within a facility whose actual emissions without control devices from all coil coating units within the facility are less than 6.8 kilograms (kg) (15 pounds [lb]) of volatile organic compounds (VOCs) per day.

15.1.3 An owner or operator of a facility whose emissions are below the applicability threshold in 15.1.2 of regulation shall comply with the certification, recordkeeping, and reporting requirements of 15.7 of this regulation.

15.1.4 Any facility that becomes or is currently subject to the provisions of 15.0 of this regulation by exceeding the applicability threshold in 15.1.2 of this regulation will remain subject to these provisions even if its emissions later fall below the applicability threshold.

15.1.5 Any facility that is currently subject to a state or federal rule promulgated pursuant to the Clean Air Act Amendments of 1977 by exceeding an applicability threshold is and will remain subject to these provisions, even if its throughput or emissions have fallen or later fall below the applicability threshold.

15.2 Definitions. As used in 15.0 of this regulation, all terms not defined herein shall have the meaning given them in the November 15, 1990 Clean Air Act Amendments (CAAA), or in 2.0 of this regulation.

"**Coil**" means any continuous metal strip with thickness of 0.15 millimeter (mm) (0.006 inch [in.]) or more that is packaged in a roll or coil.

"**Coil coating line**" means a web coating line where coating is applied to coil.

"**Coil coating unit**" means a coating application station and its associated flashoff area, drying area, or drying oven wherein coating is applied and dried or cured on a coil coating line. A coil coating line may include more than one coil coating unit.

15.3 Standards

15.3.1 No owner or operator of a coil coating unit subject to 15.0 of this regulation shall cause or allow the application of any coating on that unit with VOC content in excess of 0.31 kilograms per liter (kg/L) (2.6 pounds per gallon [lb/gal]) of coating, excluding water and exempt compounds, as applied.

15.3.2 As an alternative to compliance with the emission limit in 15.3.1 of this regulation, an owner or operator of a coil coating unit may meet the requirements of 15.4 or 15.5 of this regulation.

15.4 Daily-weighted average limitation. No owner or operator of a coil coating unit subject to 15.0 of this regulation shall apply, during any day, coatings on that unit whose daily-weighted average VOC content, calculated in accordance with the procedure specified in **Appendix C** of this regulation, exceeds the emission limit in 15.3.1 of this regulation.

15.5 Control devices

15.5.1 An owner or operator of a coil coating unit subject to 15.0 of this regulation may comply with 15.0 of this regulation by:

15.5.1.1 Installing and operating a capture system on that unit.

15.5.1.2 Installing and operating a control device on that unit.

15.5.1.3 Determining for each day the overall emission reduction efficiency needed to demonstrate compliance. The overall emission reduction needed for a day is the lesser of the value calculated according to the procedure in 3.0 of **Appendix C** of this regulation for that day or 95%.

15.5.1.4 Demonstrating each day that the overall emission reduction efficiency achieved for that day, as determined in 3.0 of **Appendix D** of this regulation, is greater than or equal to the overall emission reduction efficiency required for that day.

15.5.2 An owner or operator of a coil coating unit subject to 15.0 of this regulation shall ensure that:

15.5.2.1 A capture system and control device are operated at all times the coating unit is in operation, and the owner or operator demonstrates compliance with 15.0 of this regulation through the applicable coating analysis and capture system and control device efficiency test methods specified in **Appendix B**, **Appendix D** and **Appendix E** of this regulation and in accordance with the capture efficiency test methods in **Appendix D** of this regulation.

15.5.2.2 The control device is equipped with the applicable monitoring equipment specified in 2.0 of **Appendix D** of this regulation, and the monitoring equipment is installed, calibrated, operated, and maintained according to the vendor's specifications at all times the control device is in use.

15.6 Test methods. The test methods found in **Appendix A** through **Appendix D** of this regulation shall be used to determine compliance with 15.0 of this regulation.

15.7 Recordkeeping and reporting

15.7.1 An owner or operator of a coil coating unit that is exempt from the emission limitations in 15.3 of this regulation shall comply with the certification, recordkeeping, and reporting requirements in 4.2 of this regulation.

15.7.2 An owner or operator of a coil coating unit subject to 15.0 of this regulation and complying with 15.3 of this regulation by the use of complying coatings shall comply with the certification, recordkeeping, and reporting requirements in 4.3 of this regulation.

15.7.3 An owner or operator of a coil coating unit subject to 15.0 of this regulation and complying with 15.4 of this regulation by daily-weighted averaging shall comply with the certification, recordkeeping, and reporting requirements in 4.4 of this regulation.

15.7.4 An owner or operator of a coil coating unit subject to 15.0 of this regulation and complying with 15.5 of this regulation by the use of control devices shall comply with the testing, reporting, and recordkeeping requirements in 4.5 of this regulation.

16.0 Paper, Film, and Foil Coating

03/11/11

16.1 Applicability

16.1.1 The provisions of 16.0 of this regulation apply to any paper, film, or foil coating unit.

16.1.2 The provisions of 16.0 of this regulation do not apply to any paper, film, or foil coating unit within a facility whose actual emissions (including related cleaning activities) without control devices from all paper, film, or foil coating units within the facility are less than 6.8 kilograms (kg) (15 pounds [lb]) of volatile organic compounds (VOCs) per day.

16.1.3 An owner or operator of a facility whose emissions are below the applicability threshold in 16.1.2 of this regulation shall comply with the certification, recordkeeping, and reporting requirements of 16.7.1 of this regulation.

16.1.4 Any facility that becomes or is currently subject to the provisions of 16.0 of this regulation by exceeding the applicability threshold in 16.1.2 of this regulation will remain subject to these provisions even if its emissions later fall below the applicability threshold.

16.1.5 Any facility that is currently subject to a state or federal rule promulgated pursuant to the Clean Air Act Amendments of 1977 by exceeding an applicability threshold is and will remain subject to these provisions, even if its throughput or emissions have fallen or later fall below the applicability threshold.

16.1.6 The provisions of 16.0 of this regulation does not apply to any coating unit in-line with any offset lithographic, screen, letterpress, flexographic, rotogravure, or digital printing operation. Such coating units may be subject to 37.0 or 47.0 of this regulation, whichever is applicable.

16.1.7 Transition period for existing permitted sources. Every owner or operator of any paper coating unit that is subject to a permit issued pursuant to 7 **DE Admin. Code** 1102 or 1130 containing all applicable conditions of 16.0 of this regulation, as that regulation existed on January 11, 1993, shall comply with those permit conditions for up to one year after the effective date of this revision of 16.0 of this regulation. On and after the date one year after the effective date of this revision of 16.0 of this regulation, every such owner or operator of any paper coating unit shall comply with the provisions of 16.0 of this regulation.

16.2 Definitions. As used in 16.0 of this regulation, all terms not defined herein shall have the meaning given them in the November 15, 1990 Clean Air Act Amendments (CAAA), or in 2.0 of this regulation.

"**Coating**" means a material being applied, or an action of applying such a material, onto or impregnated into a substrate for decorative, protective, or functional purpose.

"**Paper, film, or foil coating line**" means a series of coating applicators, flash-off areas, and any associated curing/drying equipment between one or more unwind/feed stations and one or more rewind/cutting stations to apply a coating onto a continuous strip of substrate (a web). Printing presses are not considered coating lines. Products produced on a paper, film, or foil coating line include, but are not limited to, adhesive tapes and labels, book covers, post cards, office copier paper, drafting paper, and pressure sensitive tapes and labels. Coating lines include, but are not limited to, application by impregnation or saturation or by the use of roll, knife, or rotogravure coating. A coating line may include more than one coating unit.

"**Paper, film, or foil coating unit**" means any coating unit applying a coating to paper, film, or foil substrates used in the manufacturing of several major product types for the following industry sectors: pressure sensitive tape and labels (including fabric coated for use in pressure sensitive tapes and labels); photographic film; industrial and decorative laminates; abrasive products (including fabric coated for use in abrasive products) and flexible packaging (including coating of non-woven polymer substrates for use in flexible packaging). Paper, film, or foil coating unit also includes a coating unit applying a coating during miscellaneous coating operations for several products including: corrugated and solid fiber boxes; die-cut paper paperboard, and cardboard; converted paper and paperboard not elsewhere classified; folding paperboard boxes, including sanitary boxes; manifold business forms and related products; plastic aseptic packaging; and carbon paper and inked ribbons.

16.3 Standards. No owner or operator of any paper, film, or foil coating unit shall operate the coating unit unless the owner or operator meets the applicable requirements listed under 16.3.1, 16.3.2, 16.3.3, and 16.3.4 of this regulation.

16.3.1 Except as specified in 16.3.2 of this regulation, no application of any coating on that unit with VOC content in excess of 0.40 kilogram VOC per kilogram of solid applied (kg/kg) (0.40 pound of VOC per pound of solid [lb/lb]).

16.3.2 For pressure sensitive tape and label surface coating, no application of any coating on that unit with VOC content in excess of 0.20 kilogram VOC per kilogram of solid applied (kg/kg) (0.20 pound of VOC per pound of solid [lb/lb]).

16.3.3 As an alternative to compliance with the emission limit in 16.3.1 or 16.3.2 of this regulation, an owner or operator of a paper, film, or foil coating unit may meet the requirements of 16.4 or 16.5 of this regulation.

16.3.4 When handling cleaning materials, an owner or operator of a paper, film, or foil coating unit shall comply with 8.0 of this regulation.

16.4 Daily-weighted average limitation. No owner or operator of a paper, film, or foil coating unit subject to 16.0 of this regulation shall apply, during any day, coatings on that unit whose daily-weighted average VOC content, calculated in accordance with the procedure specified in **Appendix C** of this regulation, exceeds the emission limit in 16.3.1 or 16.3.2 of this regulation, whichever is applicable.

16.5 Control devices

16.5.1 An owner or operator of a paper, film, or foil coating unit subject to 16.0 of this regulation may comply with 16.0 of this regulation by:

16.5.1.1 Installing and operating a capture system on that unit.

16.5.1.2 Installing and operating a control device on that unit.

16.5.1.3 Determining for each day the overall emission reduction efficiency needed to demonstrate compliance. The overall emission reduction needed for a day is the lesser of the value calculated according to the procedure in 3.0 of **Appendix C** of this regulation for that day or 95%. If the calculated efficiency is less than 90%, use 90% as the needed efficiency.

16.5.1.4 Demonstrating each day that the overall emission reduction efficiency achieved for that day, as determined in 3.0 of **Appendix D** of this regulation, is greater than or equal to the overall emission reduction efficiency needed for that day as determined in 16.5.1.3 of this regulation.

16.5.2 An owner or operator of a paper, film, or foil coating unit subject to 16.0 of this regulation shall ensure that:

16.5.2.1 A capture system and control device are operated at all times the coating unit is in operation, and the owner or operator demonstrates compliance with 16.0 of this regulation through the applicable coating analysis and capture system and control device efficiency test methods specified in **Appendix B**, **Appendix D** and **Appendix E** of this regulation and in accordance with the capture efficiency test methods in **Appendix D** of this regulation.

16.5.2.2 The control device is equipped with the applicable monitoring equipment specified in 2.0 of **Appendix D** of this regulation, and the monitoring equipment is installed, calibrated, operated, and maintained according to the vendor's specifications at all times the control device is in use.

16.6 Test methods. The test methods found in **Appendix A** through **Appendix D** of this regulation shall be used to determine compliance with 16.0 of this regulation.

16.7 Recordkeeping and reporting

16.7.1 An owner or operator of a paper, film, or foil coating unit that is exempt from the emission limitations in 16.3 of this regulation shall comply with the certification requirements in 4.2 of this regulation within six months after March 11, 2011, and with the recordkeeping and reporting requirements in 4.2 of this regulation on and after March 11, 2011.

16.7.2 An owner or operator of a paper, film, or foil coating unit subject to 16.0 of this regulation and complying with 16.3 of this regulation by the use of complying coatings shall comply with the certification requirements in 4.3 of this regulation within six months after March 11, 2011, and with the recordkeeping and reporting requirements in 4.3 of this regulation on and after March 11, 2011.

16.7.3 An owner or operator of a paper, film, or foil coating unit subject to 16.0 of this regulation and complying with 16.4 of this regulation by daily-weighted averaging shall comply with the certification, recordkeeping, and reporting requirements in 4.4 of this regulation.

16.7.4 An owner or operator of a paper, film, or foil coating unit subject to 16.0 of this regulation and complying with 16.5 of this regulation by the use of control devices shall comply with the testing requirements in 4.5 of this regulation within six months after March 11, 2011, and with the reporting and recordkeeping requirements in 4.5 of this regulation on and after March 11, 2011.

14 DE Reg. 902 (03/01/11)

17.0 Fabric Coating

01/11/1993

17.1 Applicability

17.1.1 The provisions of 17.0 of this regulation apply to any fabric coating unit.

17.1.2 The provisions of 17.0 of this regulation do not apply to any fabric coating unit within a facility whose actual emissions without control devices from all fabric coating units within the facility are less than 6.8 kilograms (kg) (15 pounds [lb]) of volatile organic compounds (VOCs) per day.

17.1.3 An owner or operator of a facility whose emissions are below the applicability threshold in 17.1.2 of this regulation shall comply with the certification, recordkeeping, and reporting requirements of 17.7.1 of this regulation.

17.1.4 Any facility that becomes or is currently subject to the provisions of 17.0 of this regulation by exceeding the applicability threshold in 17.1.2 of this regulation will remain subject to these provisions even if its emissions later fall below the applicability threshold.

17.1.5 Any facility that is currently subject to a state or federal rule promulgated pursuant to the Clean Air Act Amendments of 1977 by exceeding an applicability threshold is and will remain subject to these provisions, even if its throughput or emissions have fallen or later fall below the applicability threshold.

17.2 Definitions. As used in 17.0 of this regulation, all terms not defined herein shall have the meaning given them in the November 15, 1990 Clean Air Act Amendments (CAAA), or in 2.0 of this regulation.

"**Fabric coating line**" means a web coating line where coating is applied to fabric. A fabric printing line is not considered a fabric coating line.

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

17.3 Standards

17.3.1 No owner or operator of a fabric coating unit subject to 17.0 of this regulation shall cause or allow the application of any coating on that unit with VOC content in excess of 0.35 kilogram per liter (kg/L) (2.9 pounds per gallon [lb/gal]) of coating, excluding water and exempt compounds, as applied.

17.3.2 As an alternative to compliance with the emission limit in 17.3.1 of this regulation, an owner or operator of a fabric coating unit subject to 17.0 of this regulation may meet the requirements of 17.4 or 17.5 of this regulation.

17.4 Daily-weighted average limitation. No owner or operator of a fabric coating unit subject to 17.0 of this regulation shall apply, during any day, coatings on that unit whose daily-weighted average VOC content, calculated in accordance with the procedure specified in **Appendix C** of this regulation, exceeds the emission limit in 17.3.1 of this regulation.

17.5 Control devices

17.5.1 An owner or operator of a fabric coating unit subject to 17.0 of this regulation may comply with 17.0 of this regulation by:

17.5.1.1 Installing and operating a capture system on that unit.

17.5.1.2 Installing and operating a control device on that unit.

17.5.1.3 Determining for each day the overall emission reduction efficiency needed to demonstrate compliance. The overall emission reduction needed for a day is the lesser of the value calculated according to the procedure in 3.0 of **Appendix C** of this regulation for that day or 95%.

17.5.1.4 Demonstrating each day that the overall emission reduction efficiency achieved for that day, as determined in 3.0 of **Appendix D** of this regulation, is greater than or equal to the overall emission reduction efficiency required for that day.

17.5.2 An owner or operator of a fabric coating unit subject to 17.0 of this regulation shall ensure that:

17.5.2.1 A capture system and control device are operated at all times the coating unit is in operation, and the owner or operator demonstrates compliance with 17.0 of this regulation through the applicable coating analysis and capture system and control device efficiency test methods specified in **Appendix B**, **Appendix D** and **Appendix E** of this regulation and in accordance with the capture efficiency test methods in **Appendix D** of this regulation.

17.5.2.2 The control device is equipped with the applicable monitoring equipment specified in 2.0 of **Appendix D** of this regulation, and the monitoring equipment is installed, calibrated, operated, and maintained according to the vendor's specifications at all times the control device is in use.

17.6 Test methods. The test methods found in **Appendix A** through **Appendix D** of this regulation shall be used to determine compliance with 17.0 of this regulation.

17.7 Recordkeeping and reporting

17.7.1 An owner or operator of a fabric coating unit that is exempt from the emission limitations in 17.3 of this regulation shall comply with the certification, recordkeeping, and reporting requirements in 4.2 of this regulation.

17.7.2 An owner or operator of a fabric coating unit subject to 17.0 of this regulation and complying with 17.3 of this regulation by the use of complying coatings shall comply with the certification, recordkeeping, and reporting requirements in 4.3 of this regulation.

17.7.3 An owner or operator of a fabric coating unit subject to 17.0 of this regulation and complying with 17.4 of this regulation by daily-weighted averaging shall comply with the certification, recordkeeping, and reporting requirements in 4.4 of this regulation.

17.7.4 An owner or operator of a fabric coating unit subject to 17.0 of this regulation and complying with 17.5 of this regulation by the use of control devices shall comply with the testing, reporting, and recordkeeping requirements in 4.5 of this regulation.

18.0 Vinyl Coating

01/11/1993

18.1 Applicability

18.1.1 The provisions of 18.0 of this regulation apply to any vinyl coating line.

18.1.2 The provisions of 18.0 of this regulation do not apply to:

18.1.2.1 Application of vinyl plastisol to fabric to form the substrate that is subsequently coated.

18.1.2.2 Any vinyl coating line within a facility whose actual emissions without control devices from all vinyl coating lines within the facility are less than 6.8 kilograms (kg) (15 pounds [lb]) of volatile organic compounds (VOCs) per day.

18.1.3 An owner or operator of a facility whose emissions are below the applicability threshold in 18.1.2.2 of this regulation shall comply with the certification, recordkeeping, and reporting requirements of 18.7.1 of this regulation.

18.1.4 Any facility that becomes or is currently subject to the provisions of 18.0 of this regulation by exceeding the applicability threshold in 18.1.2.2 of this regulation will remain subject to these provisions even if its emissions later fall below the applicability threshold.

18.1.5 Any facility that is currently subject to a state or federal rule promulgated pursuant to the Clean Air Act Amendments of 1977 by exceeding an applicability threshold is and will remain subject to these provisions, even if its throughput or emissions have fallen or later fall below the applicability threshold.

18.2 Definitions. As used in 18.0 of this regulation, all terms not defined herein shall have the meaning given them in the November 15, 1990 Clean Air Act Amendments (CAAA), or in 2.0 of this regulation.

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

18.3 Standards

18.3.1 No owner or operator of a vinyl coating line subject to 18.0 of this regulation shall cause or allow the application of any coating on that line with VOC content in excess of 0.45 kilograms per liter (kg/L) (3.8 pounds per gallon [lb/gal]) of coating, excluding water and exempt compounds, as applied.

18.3.2 As an alternative to compliance with the emission limit in 18.3.1 of this regulation, an owner or operator of a vinyl coating line subject to 18.0 of this regulation may meet the requirements of 18.4 or 18.5 of this regulation.

18.4 Daily-weighted average limitation. No owner or operator of a vinyl coating line subject to 18.0 of this regulation shall apply, during any day, coatings on any such line whose daily-weighted average VOC content, calculated in accordance with the procedure specified in **Appendix C** of this regulation, exceeds the emission limit in 18.3.1 of this regulation.

18.5 Control devices

18.5.1 An owner or operator of a vinyl coating line subject to 18.0 of this regulation may comply with 18.0 of this regulation by:

18.5.1.1 Installing and operating a capture system on that line.

18.5.1.2 Installing and operating a control device on that line.

18.5.1.3 Determining for each day the overall emission reduction efficiency needed to demonstrate compliance. The overall emission reduction needed for a day is the lesser of the value calculated according to the procedure in 3.0 of **Appendix C** of this regulation for that day or 95% .

18.5.1.4 Demonstrating each day that the overall emission reduction efficiency achieved for that day, as determined in 3.0 of **Appendix D** of this regulation, is greater than or equal to the overall emission reduction efficiency required for that day.

18.5.2 An owner or operator of a vinyl coating line subject to 18.0 of this regulation shall ensure that:

18.5.2.1 A capture system and control device are operated at all times that the line is in operation, and the owner or operator demonstrates compliance with 18.0 of this regulation through the applicable coating analysis and capture system and control device efficiency test methods specified in **Appendix B**, **Appendix D** and **Appendix E** of this regulation and in accordance with the capture efficiency test methods in **Appendix D** of this regulation.

18.5.2.2 The control device is equipped with the applicable monitoring equipment specified in 2.0 of **Appendix D** of this regulation, and the monitoring equipment is installed, calibrated, operated, and maintained according to the vendor's specifications at all times the control device is in use.

18.6 Test methods. The test methods found in **Appendix A** through **Appendix D** of this regulation shall be used to determine compliance with 18.0 of this regulation.

18.7 Recordkeeping and reporting

18.7.1 An owner or operator of a vinyl coating line that is exempt from the emission limitations in 18.3 of this regulation shall comply with the certification, recordkeeping, and reporting requirements in 4.2 of this regulation.

18.7.2 An owner or operator of a vinyl coating line subject to 18.0 of this regulation and complying with 18.3 of this regulation by the use of complying coatings shall comply with the certification, recordkeeping, and reporting requirements in 4.3 of this regulation.

18.7.3 An owner or operator of a vinyl coating line subject to 18.0 of this regulation and complying with 18.4 of this regulation by daily-weighted averaging shall comply with the certification, recordkeeping, and reporting requirements in 4.4 of this regulation.

18.7.4 An owner or operator of a vinyl coating line subject to 18.0 of this regulation and complying with 18.5 of this regulation by the use of control devices shall comply with the testing, reporting, and recordkeeping requirements in 4.5 of this regulation.

19.0 Coating of Metal Furniture

10/11/2011

19.1 Applicability

19.1.1 The provisions of 19.0 of this regulation apply to any metal furniture coating unit. Except as provided in 19.1.2 of this regulation, every owner or operator of any metal furniture coating unit shall comply with the provisions of 19.0 of this regulation on and after 4/11/2010.

19.1.2 Transition period for existing permitted sources. Every owner or operator of any metal furniture coating unit that has a permit issued pursuant to 7 **DE Admin. Code** 1102 or 1130 containing all applicable conditions of 19.0 of this regulation, as that regulation existed on January 11, 1993, shall comply with those permit conditions until December 31, 2010. On and after January 1, 2011 every such owner or operator of any metal furniture coating unit shall comply with the provisions of 19.0 of this regulation.

19.1.3 Except as provided in 19.1.4 of this regulation, the provisions of 19.0 of this regulation do not apply to any metal furniture coating unit within a facility whose actual emissions without control devices from all metal furniture coating units within the facility, including emissions from related cleaning activities, are less than 6.8 kilograms (kg) (15 pounds [lb]) of volatile organic compounds (VOCs) per day.

19.1.4 An owner or operator of a facility whose emissions are below the applicability threshold in 19.1.3 of this regulation shall comply with the certification, recordkeeping, and reporting requirements of 19.7.1 of this regulation.

19.1.5 Any facility that becomes or is currently subject to the provisions of 19.0 of this regulation by exceeding the applicability threshold in 19.1.3 of this regulation shall remain subject to these provisions, even if emissions later fall below the applicability threshold.

19.1.6 Any facility that is currently subject to a state or federal rule promulgated pursuant to the Clean Air Act Amendments of 1977 by exceeding an applicability threshold is and shall remain subject to these provisions, even if throughput or emissions later fall below the applicability threshold.

19.2 Definitions. As used in 19.0 of this regulation, all terms not defined herein shall have the meaning given them in the November 15, 1990 Clean Air Act Amendments, or in 2.0 of this regulation.

"**Metal furniture**" means any furniture piece made of metal or any metal part that will be assembled with other metal, wood, fabric, plastic, or glass parts to form a furniture piece including, but not limited to, tables, chairs, waste baskets, beds, desks, lockers, benches, shelving, file cabinets, fixtures, lamps, lighting units, and room dividers.

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

19.3 Standards

19.3.1 Except as provided in 19.4.1 of this regulation, no owner or operator of a metal furniture coating unit subject to 19.0 of this regulation shall cause or allow the application of any coating to metal furniture unless:

19.3.1.1 The VOC content of the coating is less than or equal to the limits listed in Table 19-1 of this regulation, or

Table 19-1 Metal Furniture Coating VOC Content Limits

VOC content limits are expressed as mass (either kilogram [kg] or pound [lb]) per volume (either liter [l] or gallon [gal]) of coating less water and exempt compounds, as applied.

	Baked		Air Dried	
Coating Category	kg VOC/l coating	lb VOC/gal coating	kg VOC/l coating	lb VOC/gal coating
General, one-component	0.275	2.3	0.275	2.3
General, multi-component	0.275	2.3	0.340	2.8
Extreme high-gloss	0.360	3.0	0.340	2.8
Extreme performance	0.360	3.0	0.420	3.5
Heat-resistant	0.360	3.0	0.420	3.5
Metallic	0.420	3.5	0.420	3.5
Pretreatment	0.420	3.5	0.420	3.5
Solar-absorbent	0.360	3.0	0.420	3.5

19.3.1.2 For a metal furniture coating unit that applies multiple coatings, which are subject to the same numerical emission limitation in Table 19-1 of this regulation, the daily-weighted average VOC content, calculated in accordance with the procedure specified in Appendix C of this regulation, is less than or equal to the limit in Table 19-1 of this regulation corresponding to the category of coating used, or

19.3.1.3 Control equipment is installed and operated that achieves an emission reduction efficiency in accordance with 19.5 of this regulation. The requirements of 19.3.2 of this regulation shall not apply to any metal furniture coating unit that achieves an emission reduction efficiency of 95% or greater.

19.3.2 Except as provided in 19.3.1.3 and 19.4 of this regulation, no owner or operator of a metal furniture coating unit subject to 19.0 of this regulation shall apply a coating to metal furniture unless the coating is applied with equipment properly operating and maintained according to the manufacturer's suggested guidelines and using one or more of the following coating application methods:

19.3.2.1 Electrostatic spray

19.3.2.2 Flow coating

19.3.2.3 Dip coating, including electrodeposition

19.3.2.4 Roll coating

19.3.2.5 High-volume, low-pressure (HVLP) spray

19.3.2.6 Hand application

19.3.2.7 An alternative method that is demonstrated to be capable of achieving a transfer efficiency equal to or better than HVLP spray and approved by the Department and by the EPA.

19.4 Specific Exemptions

19.4.1 The requirements of 19.3.1 and 19.3.2 of this regulation shall not apply for the following types of coatings:

19.4.1.1 Stencil coatings

19.4.1.2 Safety-indicating coatings

19.4.1.3 Solid film lubricants

19.4.1.4 Electric-insulating and thermal-conducting coatings

19.4.1.5 Aerosol coating product

19.4.1.6 Powder coatings

19.4.2 The requirements of 19.3.2 of this regulation shall not apply to touch-up and repair coatings.

19.5 Control Devices

19.5.1 An owner or operator of a metal furniture coating unit subject to 19.3.1.3 of this regulation shall determine the emission reduction efficiency needed to comply and demonstrate compliance as follows:

19.5.1.1 Determine for each day the overall emission reduction efficiency needed to demonstrate compliance. The overall emission reduction needed for a day is the lesser of the value calculated according to the procedure in 3.3 of **Appendix C** of this regulation for that day or 95%.

19.5.1.2 Determine each day that the overall emission reduction efficiency achieved for that day, as determined in **Appendix D** of this regulation, is greater than or equal to the overall emission reduction efficiency required for that day.

19.5.2 An owner or operator of a metal furniture coating unit subject to 19.3.1.3 of this regulation shall ensure that:

19.5.2.1 A capture system and control device are operated at all times that the unit is in operation, and the owner or operator demonstrates compliance with 19.0 of this regulation through the applicable coating analysis and capture system and control device efficiency test methods specified in **Appendix B**, **Appendix D** and **Appendix E** of this regulation and in accordance with the capture efficiency test methods in **Appendix D** of this regulation.

19.5.2.2 The control device is equipped with the applicable monitoring equipment specified in 2.0 of **Appendix D** of this regulation, and the monitoring equipment is installed, calibrated, operated, and maintained according to the vendor's specifications at all times the control device is in use.

19.6 Test Methods. The test methods found in **Appendix A** through **Appendix D** of this regulation shall be used to determine compliance with 19.0 of this regulation.

19.6.1 The acid content of pretreatment coatings and etching fillers shall be determined by ASTM International Method D 1613 -06.

19.6.2 The metal particle content of metallic coatings shall be determined by the California South Coast Air Quality Management District (SCAQMD) Method 318 "Determination of Weight Percent of Elemental Metal in Coatings by X-Ray Diffraction Method" contained in the SCAQMD "Laboratory Methods of Analysis of Enforcement Samples" (for coatings containing aluminum) or by SCAQMD Method 311 "Analysis of Percent Metal in Metallic Coatings by Spectrographic Method" contained in the SCAQMD "Laboratory Method of Analysis of Enforcement Samples" (for coatings containing metals other than aluminum).

19.7 Compliance Certification, Recordkeeping and Reporting Requirements

19.7.1 An owner or operator of a metal furniture coating unit exempt from the requirements of 19.3 of this regulation shall comply with the certification, recordkeeping, and reporting requirements in 4.2 of this regulation.

19.7.2 An owner or operator of a metal furniture coating unit subject to 19.0 of this regulation and complying with 19.3.1.1 of this regulation by the use of compliant coatings shall comply with the certification, recordkeeping, and reporting requirements in 4.3 of this regulation.

19.7.3 An owner or operator of a metal furniture coating unit subject to 19.0 of this regulation and complying with 19.3.1.2 of this regulation by daily-weighted averaging shall comply with the certification, recordkeeping, and reporting requirements in 4.4 of this regulation.

19.7.4 An owner or operator of a metal furniture coating unit subject to 19.0 of this regulation and complying with 19.3.1.3 of this regulation by the use of control devices shall comply with the testing, reporting, and recordkeeping requirements in 4.5 of this regulation.

19.7.5 An owner or operator of a metal furniture coating unit subject to 19.3.2 of this regulation shall maintain at the facility a copy of the equipment manufacturer's suggested operating and maintenance guidelines, and provide a copy to the Department upon request.

13 DE Reg. 1344 (04/01/10)
15 DE Reg. 532 (10/01/11)

20.0 Coating of Large Appliances

10/11/2011

20.1 Applicability

20.1.1 The provisions of 20.0 of this regulation apply to any large appliance coating unit. Except as provided for in 20.1.2 of this regulation, every owner or operator of any large appliance coating unit shall comply with the provisions of 20.0 of this regulation on and after 04/11/2010.

20.1.2 Transition period for existing permitted sources. Every owner or operator of any large appliance coating unit that has a permit issued pursuant to 7 **DE Admin. Code** 1102 or 1130 containing all applicable conditions of 20.0 of this regulation, as that regulation existed on January 11, 1993, shall comply with those permit conditions until December 31, 2010. On and after January 1, 2011 every such owner or operator of any large appliance coating unit shall comply with the provisions of 20.0 of this regulation.

20.1.3 Except as provided for in 20.1.4 of this regulation, the provisions of 20.0 of this regulation do not apply to any large appliance coating unit within a facility whose actual emissions without control devices from all large appliance coating units within the facility, including related cleaning activities, are less than 6.8 kilograms (kg) (15 pounds [lb]) of volatile organic compounds (VOCs) per day.

20.1.4 An owner or operator of a facility whose emissions are below the applicability threshold in 20.1.3 of this regulation shall comply with the certification, recordkeeping, and reporting requirements of 20.7.1 of this regulation.

20.1.5 Any facility that becomes or is currently subject to the provisions of 20.0 of this regulation by exceeding the applicability threshold in 20.1.3 of this regulation shall remain subject to these provisions even if its emissions later fall below the applicability thresholds.

20.1.6 Any facility that is currently subject to a state or federal rule promulgated pursuant to the Clean Air Act Amendments of 1977 by exceeding an applicability threshold is and shall remain subject to these provisions, even if throughput or emissions later fall below the applicability threshold.

20.2 Definitions. As used in 20.0 of this regulation, all terms not defined herein shall have the meaning given them in the November 15, 1990 Clean Air Act Amendments (CAAA), or in 2.0 of this regulation.

"**Large appliance**" means any residential or commercial washer, dryer, range, oven, microwave oven, refrigerator, freezer, water heater, dishwasher, trash compactor, air conditioner, or other similar products under North American Industry Classification System code 33522.

"**Large appliance coating unit**" means a coating unit in which any protective, decorative, or functional coating is applied onto the surface of component metal parts (including, but not limited to, doors, cases, lids, panels, and interior parts) of large appliances.

20.3 Standards

20.3.1 Except as provided in 20.4.1 of this regulation, no owner or operator of a large appliance coating unit subject to 20.0 of this regulation shall cause or allow the application of any coating to large appliances unless:

20.3.1.1 The VOC content of the coating is less than or equal to the limits listed in Table 20-1 of this regulation, or

Table 20-1 Large Appliance Coating VOC Content Limits
VOC content limits are expressed as mass (either kilogram [kg] or pound [lb]) per volume (either liter [l] or gallon [gal]) of coating less water and exempt compounds, as applied.

	Baked		Air Dried	
	kg VOC/l	lb VOC/gal	kg VOC/l	lb VOC/gal
Coating Category	**coating**	**coating**	**coating**	**coating**
General, one-component	0.275	2.3	0.275	2.3
General, multi-component	0.275	2.3	0.340	2.8
Extreme high-gloss	0.360	3.0	0.340	2.8
Extreme performance	0.360	3.0	0.420	3.5
Heat-resistant	0.360	3.0	0.420	3.5
Metallic	0.420	3.5	0.420	3.5
Pretreatment	0.420	3.5	0.420	3.5
Solar-absorbent	0.360	3.0	0.420	3.5

20.3.1.2 For a large appliance coating unit that applies multiple coatings, which are subject to the same numerical emission limitation in Table 20-1 of this regulation, the daily-weighted average VOC content, calculated in accordance with the procedure specified in Appendix C of this regulation, is less than or equal to the limit in Table 20-1 of this regulation corresponding to the category of coating used, or

20.3.1.3 Control equipment is installed and operated that achieves an emission reduction efficiency in accordance with 20.5 of this regulation. The requirements of 20.3.2 of this regulation shall not apply to any large appliance coating unit that achieves an emission reduction efficiency of 95% or greater.

20.3.2 Except as provided in 20.3.1.3 and 20.4 of this regulation, no owner or operator of a large appliance coating unit subject to 20.0 of this regulation shall apply a coating to large appliances unless the coating is applied with equipment properly operating and maintained according to the manufacturer's suggested guidelines and using one or more of the following coating application methods:

20.3.2.1 Electrostatic spray

20.3.2.2 Flow coating

20.3.2.3 Dip coating, including electrodeposition

20.3.2.4 Roll coating

20.3.2.5 High-volume, low-pressure (HVLP) spray

20.3.2.6 Hand application

20.3.2.7 An alternative method that is demonstrated to be capable of achieving a transfer efficiency equal to or better than HVLP spray and approved by the Department and by the EPA.

20.4 Specific Exemptions

20.4.1 The requirements of 20.3.1 and 20.3.2 of this regulation do not apply for the following types of coatings:

20.4.1.1 Stencil coatings

20.4.1.2 Safety-indicating coatings

20.4.1.3 Solid film lubricants

20.4.1.4 Electric-insulating and thermal-conducting coatings

20.4.1.5 Aerosol coating product

20.4.1.6 Powder coatings

20.4.2 The requirements of 20.3.2 of this regulation do not apply to touch-up and repair coatings.

20.5 Control Devices

20.5.1 An owner or operator of a large appliance coating unit subject to 20.3.1.3 of this regulation shall determine the emission reduction efficiency needed to comply and demonstrate compliance as follows:

20.5.1.1 Determine for each day the overall emission reduction efficiency needed to demonstrate compliance. The overall emission reduction needed for a day is the lesser of the value calculated according to the procedure in 3.3 of **Appendix C** of this regulation for that day or 95%.

20.5.1.2 Demonstrate each day that the overall emission reduction efficiency achieved for that day, as determined in **Appendix D** of this regulation, is greater than or equal to the overall emission reduction efficiency required for that day.

20.5.2 An owner or operator of a large appliance coating unit subject to 20.3.1.3 of this regulation shall ensure that:

20.5.2.1 A capture system and control device are operated at all times that the unit is in operation, and the owner or operator demonstrates compliance with 20.0 of this regulation through the applicable coating analysis and capture system and control device efficiency test methods specified in **Appendix B**, **Appendix D** and **Appendix E** of this regulation and in accordance with the capture efficiency test methods in **Appendix D** of this regulation.

20.5.2.2 The control device is equipped with the applicable monitoring equipment specified in 2.0 of **Appendix D** of this regulation, and the monitoring equipment is installed, calibrated, operated, and maintained according to the vendor's specifications at all times the control device is in use.

20.6 Test Methods. The test methods found in **Appendix A** through **Appendix D** of this regulation shall be used to determine compliance with 20.0 of this regulation.

20.6.1 The acid content of pretreatment coatings and etching fillers shall be determined by ASTM International Method D 1613 -06.

20.6.2 The metal particle content of metallic coatings shall be determined by the California South Coast Air Quality Management District (SCAQMD) Method 318 “Determination of Weight Percent of Elemental Metal in Coatings by X-Ray Diffraction Method” contained in the SCAQMD “Laboratory Methods of Analysis of Enforcement Samples” (for coatings containing aluminum) or by SCAQMD Method 311 “Analysis of Percent Metal in Metallic Coatings by Spectrographic Method” contained in the SCAQMD “Laboratory Method of Analysis of Enforcement Samples” (for coatings containing metals other than aluminum).

20.7 Compliance Certification, Recordkeeping and Reporting

20.7.1 An owner or operator of a large appliance coating unit exempt from the requirements of 20.3 of this regulation shall comply with the certification, recordkeeping, and reporting requirements in 4.2 of this regulation.

20.7.2 An owner or operator of a large appliance coating unit subject to 20.0 of this regulation and complying with 20.3.1.1 of this regulation by the use of compliance coatings shall comply with the certification, recordkeeping, and reporting requirements in 4.3 of this regulation.

20.7.3 An owner or operator of a large appliance coating unit subject to 20.0 of this regulation and complying with 20.3.1.2 of this regulation by daily-weighted averaging shall comply with the certification, recordkeeping, and reporting requirements in 4.4 of this regulation.

20.7.4 An owner or operator of a large appliance coating unit subject to 20.0 of this regulation and complying with 20.3.1.3 of this regulation by the use of control devices shall comply with the testing, reporting, and recordkeeping requirements in 4.5 of this regulation.

20.7.5 An owner or operator of a large appliance coating unit subject to 20.3.2 of this regulation shall maintain at the facility a copy of the equipment manufacturer’s suggested operating and maintenance guidelines, and provide a copy to the Department upon request.

13 DE Reg. 1344 (04/01/10)
15 DE Reg. 532 (10/01/11)

21.0 Coating of Magnet Wire

11/29/1994

21.1 Applicability

21.1.1 The provisions of 21.0 of this regulation apply to any magnet wire coating unit.

21.1.2 The provisions of 21.0 of this regulation do not apply to any magnet wire coating unit within a facility whose emissions without control devices from all magnet wire coating units within the facility are less than 6.8 kilograms (kg) (15 pounds [lb]) of volatile organic compounds (VOCs) per day.

21.1.3 An owner or operator of a facility whose emissions are below the applicability threshold in 21.1.2 of this regulation shall comply with the certification, recordkeeping, and reporting requirements of 21.7.1 of this regulation.

21.1.4 Any facility that becomes or is currently subject to the provisions of 21.0 of this regulation by exceeding the applicability threshold in 21.1.2 of this regulation will remain subject to these provisions even if its emissions later fall below the applicability threshold.

21.1.5 Any facility that is currently subject to a state or federal rule promulgated pursuant to the Clean Air Act Amendments of 1977 by exceeding an applicability threshold is and will remain subject to these provisions, even if its throughput or emissions have fallen or later fall below the applicability threshold.

21.2 Definitions. As used in 21.0 of this regulation, all terms not defined herein shall have the meaning given them in the November 15, 1990 Clean Air Act Amendments (CAAA), or in 2.0 of this regulation.

"**Magnet wire coating unit**" means a coating unit in which an electrically insulating varnish or enamel is applied onto the surface of wire for use in electrical machinery.

21.3 Standards

21.3.1 No owner or operator of a magnet wire coating unit subject to 21.0 of this regulation shall cause or allow the use of any coating with VOC content in excess of 0.20 kilograms per liter (kg/L) (1.7 pounds per gallon [lb/gal]) of coating, excluding water and exempt compounds, as applied.

21.3.2 As an alternative to compliance with the emission limit in 21.3.1 of this regulation, an owner or operator of a magnet wire coating unit subject to 21.0 of this regulation may meet the requirements of 21.4 or 21.5 of this regulation.

21.4 Daily-weighted average limitation. No owner or operator of a magnet wire coating unit subject to 21.0 of this regulation shall apply, during any day, coatings on that unit whose daily-weighted average VOC content, calculated in accordance with the procedure specified in **Appendix C** of this regulation, exceeds the emission limit in 21.3.1 of this regulation.

21.5 Control devices

21.5.1 An owner or operator of a magnet wire coating unit subject to 21.0 of this regulation may comply with 21.0 of this regulation by:

21.5.1.1 Installing and operating a capture system on that unit.

21.5.1.2 Installing and operating a control device on that unit.

21.5.1.3 Determining for each day the overall emission reduction efficiency needed to demonstrate compliance. The overall emission reduction needed for a day is the lesser of the value calculated according to the procedure in 3.0 of **Appendix C** of this regulation for that day or 95%.

21.5.1.4 Demonstrating each day that the overall emission reduction efficiency achieved for that day, as determined in 3.0 of **Appendix D** of this regulation, is greater than or equal to the overall emission reduction efficiency required for that day.

21.5.2 An owner or operator of a magnet wire coating unit subject to 21.0 of this regulation shall ensure that:

21.5.2.1 A capture system and control device are operated at all times that the unit is in operation, and the owner or operator demonstrates compliance with 21.0 of this regulation through the applicable coating analysis and capture system and control device efficiency test methods specified in **Appendix B**, **Appendix D** and **Appendix E** of this regulation and in accordance with the capture efficiency test methods in **Appendix D** of this regulation.

21.5.2.2 The control device is equipped with the applicable monitoring equipment specified in 2.0 of **Appendix D** of this regulation, and the monitoring equipment is installed, calibrated, operated, and maintained according to the vendor's specifications at all times the control device is in use.

21.6 Test methods. The test methods found in **Appendix A** through **Appendix D** of this regulation shall be used to determine compliance with 21.0 of this regulation.

21.7 Recordkeeping and reporting

21.7.1 An owner or operator of a magnet wire coating unit that is exempt from the emission limitations in 21.3 of this regulation shall comply with the certification, recordkeeping, and reporting requirements in 4.2 of this regulation.

21.7.2 An owner or operator of a magnet wire coating unit subject to 21.0 of this regulation and complying with 21.3 of this regulation by the use of complying coatings shall comply with the certification, recordkeeping, and reporting requirements in 4.3 of this regulation.

21.7.3 An owner or operator of a magnet wire coating unit subject to 21.0 of this regulation and complying with 21.4 of this regulation by daily-weighted averaging shall comply with the certification, recordkeeping, and reporting requirements in 4.4 of this regulation.

21.7.4 An owner or operator of a magnet wire coating unit subject to 21.0 of this regulation and complying with 21.5 of this regulation by the use of control devices shall comply with the testing, reporting, and recordkeeping requirements in 4.5 of this regulation.

22.0 Coating of Miscellaneous Metal Parts

22.1 Applicability

22.1.1 The provisions of 22.0 of this regulation apply to any miscellaneous metal parts and products coating unit. Except as provided in 22.1.2 of this regulation, every owner or operator of any miscellaneous metal parts and products coating unit shall comply with the provisions of 22.0 of this regulation on and after 04/11/2010.

22.1.2 Transition period for existing permitted sources. Every owner or operator of any miscellaneous metal parts and products coating unit that has a permit issued pursuant to 7 **DE Admin. Code** 1102 or 1130 containing all applicable conditions of 22.0 of this regulation, as that regulation existed on January 11, 1993, shall comply with those permit conditions until December 31, 2010. On and after January 1, 2011, every such owner or operator of any miscellaneous metal parts and products coating unit shall comply with the provisions of 22.0 of this regulation.

22.1.3 The provisions of 22.0 of this regulation do not apply to the following miscellaneous metal parts and products:

22.1.3.1 Parts covered by other sections of this regulation.

22.1.3.2 Exterior parts of completely assembled marine vessels.

22.1.4 Except as provided in 22.1.5 of this regulation, the provisions of 22.0 of this regulation do not apply to metal parts and products coating facilities whose actual emissions, without control devices, from all miscellaneous metal part and products coating units, including emissions from related cleaning activities, are less than 6.8 kilograms (kg) (15 pounds [lb]) of volatile organic compounds (VOCs) per day.

22.1.5 An owner or operator of a facility whose emissions are below the applicability threshold in 22.1.4 of this regulation shall comply with the certification, recordkeeping, and reporting requirements of 22.7.1 of this regulation.

22.1.6 Any facility that becomes or is currently subject to the provisions of 22.0 of this regulation by exceeding the applicability threshold in 22.1.4 of this regulation shall remain subject to these provisions even if its emissions later fall below the applicability threshold.

22.1.7 Any facility that is currently subject to a state or federal rule promulgated pursuant to the Clean Air Act Amendments of 1977 by exceeding an applicability threshold is and shall remain subject to these provisions, even if emissions later fall below the applicability threshold.

22.2 Definitions. As used in 22.0 of this regulation, all terms not defined herein shall have the meaning given them in the November 15, 1990 Clean Air Act Amendments (CAAA), or in 2.0 of this regulation.

"Camouflage coating" means a coating used principally by the military to conceal equipment from detection.

"**Drum**" means any cylindrical metal shipping container larger than 12 gallons capacity, but no larger than 110 gallon capacity.

"Electric-insulating varnish" means a non-convertible-type coating applied to electric motors, components of electric motors, or power transformers, to provide electrical, mechanical and environmental protection or resistance.

"Etching filler" means a coating that contains less than 23% solids by weight and at least 0.5 percent acid by weight and is used instead of applying a pretreatment coating followed by a primer.

"High-performance architectural coating" means a coating used to protect architectural subsections and which meets the requirements of the Architectural Aluminum Manufacturer Associations publication number AAMA 2604-05 (Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels) or 2605-05 (Voluntary Specification Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels).

"High-temperature coating" means a coating that is certified to withstand a temperature of 1000^0 F for 24 hours.

"Military specification coating" means a coating which has a formulation approved by a United States military agency for use on military equipment.

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

"**Miscellaneous parts and products**" means any metal part or metal product, even if attached to or combined with a nonmetal part or product. Miscellaneous metal parts and products include, but are not limited to:

1. Large farm machinery (harvesting, fertilizing and planting machines, tractors, combines, etc.).
2. Small farm machinery (lawn and garden tractors, lawn mowers, rototillers, etc.).
3. Small appliances (fans, mixers, blenders, crock pots, dehumidifiers, vacuum cleaners, etc.).

4. Commercial machinery (office equipment, computers and auxiliary equipment, typewriters, calculators, vending machines, etc.).

5. Industrial machinery (pumps, compressors, conveyor components, fans, blowers, transformers, etc.).

6. Fabricated metal products (metal covered doors, frames, etc.).

7. Any other metal part or product that is within one of the following Standard Industrial Classification Codes: Major Group 33 (primary metal industries), Major Group 34 (fabricated metal products), Major Group 35 (nonelectric machinery), Major Group 36 (electrical machinery), Major Group 37 (transportation equipment), Major Group 38. (miscellaneous instruments), and Major Group 39 (miscellaneous manufacturing industries).

"**Pail**" means any cylindrical metal shipping container of 1- to 12-gallon capacity and constructed of 29-gauge and heavier material.

"Pan-backing coating" means a coating applied to the surface of pots, pans, or other cooking implements that are exposed directly to a flame or other heating elements.

"Prefabricated architectural component coating" means a coating applied to metal parts and products which is to be used as an architectural structure.

"Silicone-release coating" means a coating which contains silicone resin and is intended to prevent food from sticking to metal surfaces such as baking pans.

22.3 Standards

22.3.1 Except as provided for in 22.4, no owner or operator of a miscellaneous metal parts and products coating unit subject to 22.0 of this regulation shall cause or allow the application of any coating to miscellaneous metal parts and products unless:

22.3.1.1 The VOC content of the coating is less than or equal to the limits listed in Table 22-1 of this regulation, or

22.3.1.2 For a miscellaneous metal parts and products coating unit that applies multiple coatings, which are subject to the same numerical emission limitation in Table 22-1 of this regulation, the daily-weighted average VOC content, calculated in accordance with the procedure specified in **Appendix C** of this regulation, is less than or equal to the limit in Table 22-1 of this regulation corresponding to the category of coating used, or

22.3.1.3 Control equipment is installed and operated that achieves an emission reduction efficiency in accordance with 22.5 of this regulation. The requirements of 22.3.2 shall not apply to any metal parts and products coating unit that achieves an emission reduction efficiency of 95% or greater.

22.3.2 Except as provided in 22.3.1.3 and 22.4, no owner or operator of a miscellaneous metal parts and products coating unit subject to 22.0 of this regulation shall apply a coating to miscellaneous metal parts and products unless the coating is applied with equipment properly operated and maintained according to the manufacturer's suggested guidelines and using one or more of the following coating application methods:

22.3.2.1 Electrostatic spray

22.3.2.2 Flow coating

22.3.2.3 Dip coating, including electrodeposition

22.3.2.4 Roll coating

22.3.2.5 High-volume, low-pressure (HVLP) spray

22.3.2.6 Hand application

22.3.2.7 An alternative method that is demonstrated to be capable of achieving a transfer efficiency equal to or better than HVLP spray and approved by the Department and by the EPA.

Table 22 – 1 Metal Parts and Products Coating VOC Content Limits
coating VOC content limits are expressed as mass (kilogram [kg] or pound [lb]) per volume (liter [l] or gallon [gal]) of coating less water and exempt compounds, as applied

	Air Dried		**Baked**	
	kg VOC/l	**lb VOC/gal**	**kg VOC/l**	**lb VOC/gal**
Coating Category	**coating**	**coating**	**coating**	**coating**
General One Component	0.34	2.8	0.28	2.3
General Multi Component	0.34	2.8	0.28	2.3

Camouflage	0.42	3.5	0.36	3.0
Electric Insulating Varnish	0.42	3.5	0.36	3.0
Electric Insulating and Thermal Conducting Coatings	0.42	3.5	0.36	3.0
Etching Filler	0.42	3.5	0.36	3.0
Extreme High Gloss	0.42	3.5	0.36	3.0
Extreme Performance	0.42	3.5	0.36	3.0
Heat Resistant	0.42	3.5	0.36	3.0
High Performance Architectural	0.42	3.5	0.36	3.0
High Temperature	0.42	3.5	0.36	3.0
Magnetic Data Storage Disc Coatings	0.42	3.5	0.36	3.0
Metallic	0.42	3.5	0.36	3.0
Military Specification	0.34	2.8	0.28	2.3
Mold Seal	0.42	3.5	0.36	3.0
Pan Backing	0.42	3.5	0.36	3.0
Prefabricated Architectural Multi Component	0.42	3.5	0.28	2.3
Prefabricated Architectural One Component	0.42	3.5	0.28	2.3
Pretreatment Coatings	0.42	3.5	0.36	3.0
Repair and Touch Up	0.42	3.5	0.36	3.0
Safety Indicating Coatings	0.42	3.5	0.36	3.0
Silicone Release	0.42	3.5	0.42	3.5
Solar Absorbent	0.42	3.5	0.36	3.0
Solid-Film Lubricant	0.42	3.5	0.36	3.0
Stencil Coatings	0.42	3.5	0.36	3.0
Vacuum Metalizing	0.42	3.5	0.42	3.5
Drum Coating, New, Exterior	0.34	2.8	0.34	2.8
Drum Coating, New, Interior	0.42	3.5	0.42	3.5
Drum Coating, Reconditioned, Exterior	0.42	3.5	0.36	3.0
Drum Coating, Reconditioned, Interior	0.50	4.2	0.50	4.2

22.4 Specific Exemptions

22.4.1 The requirements of 22.3.1 and 22.3.2 of this regulation shall not apply to the following coatings and coating operations:

22.4.1.1 Plastic extruded onto metal parts to form a coating,

22.4.1.2 Aerosol coating product, and

22.4.1.3 Powder coatings.

22.4.2 The requirements of 22.3.2 of this regulation shall not apply to the following coatings and coating operations:

22.4.2.1 Texture coatings, and

22.4.2.2 Repair and Touch up coatings.

22.5 Control Devices

22.5.1 An owner or operator of a miscellaneous metal parts and products coating unit subject to 22.3.1.3 of this regulation shall determine the emission efficiency needed to comply and demonstrate compliance as follows:

22.5.1.1 Determine for each day the overall emission reduction efficiency needed to demonstrate compliance. The overall emission reduction needed for a day is the lesser of the value calculated according to the procedure in 3.3 of **Appendix C** of this regulation for that day or 95%.

22.5.1.2 Demonstrate each day that the overall emission reduction efficiency achieved for that day, as determined in **Appendix D** of this regulation, is greater than or equal to the overall emission reduction efficiency required for that day.

22.5.2 An owner or operator of a miscellaneous metal parts and products coating unit subject to 22.3.1.3 of this regulation shall ensure that:

22.5.2.1 A capture system and control device are operated at all times that the unit is in operation, and the owner or operator demonstrates compliance with 22.0 of this regulation through the applicable coating analysis and capture system and control device efficiency test methods specified in **Appendix B**, **Appendix D** and **Appendix E** of this regulation and in accordance with the capture efficiency test methods in **Appendix D** of this regulation.

22.5.2.2 The control device is equipped with the applicable monitoring equipment specified in 2.0 of **Appendix D** of this regulation, and the monitoring equipment is installed, calibrated, operated, and maintained according to the vendor's specifications at all times the control device is in use.

22.6 Test methods. The test methods found in **Appendix A** through **Appendix D** of this regulation shall be used to determine compliance with 22.0 of this regulation.

22.6.1 The acid content of pretreatment coatings and etching fillers shall be determined by the ASTM International Method D-1613 -06.

22.6.2 The metal particle content of metallic coatings shall be determined by the California South Coast Air Quality Management District (SCAQMD) Method 318 “Determination of Weight Percent of Elemental Metal in Coatings by X-Ray Diffraction Method” contained in the SCAQMD “Laboratory Methods of Analysis of Enforcement Samples” (for coatings containing aluminum) or by SCAQMD Method 311 “Analysis of Percent Metal in Metallic Coatings by Spectrographic Method” contained in the SCAQMD “Laboratory Method of Analysis of Enforcement Samples” (for coatings containing metals other than aluminum).

22.7 Compliance Certification, Recordkeeping and Reporting Requirements.

22.7.1 An owner or operator of a miscellaneous metal parts and products coating unit exempt from the emission requirements in 22.3 of this regulation shall comply with the certification, recordkeeping, and reporting requirements in 4.2 of this regulation.

22.7.2 An owner or operator of a miscellaneous metal parts and products coating unit subject to 22.0 of this regulation and complying with 22.3.1.1 of this regulation by the use of compliant coatings shall comply with the certification, recordkeeping, and reporting requirements in 4.3 of this regulation.

22.7.3 An owner or operator of a miscellaneous metal parts and products coating unit subject to 22.0 of this regulation and complying with 22.3.1.2 of this regulation through the use of daily-weighted averaging shall comply with the certification, recordkeeping, and reporting requirements in 4.4 of this regulation.

22.7.4 An owner or operator of a miscellaneous metal parts and products coating unit subject to 22.0 of this regulation and complying with 22.3.1.3 of this regulation by the use of control devices shall comply with the testing, certification, reporting, and recordkeeping requirements in 4.5 of this regulation.

22.7.5 An owner or operator of a metal parts coating unit subject to 22.3.2 of this regulation shall maintain at the facility a copy of the equipment manufacturer’s suggested operating and maintenance guidelines, and provide a copy to the Department upon request.

13 DE Reg. 1344 (04/01/10)
14 DE Reg. 1206 (05/01/11)
15 DE Reg. 532 (10/01/11)

23.0 Coating of Flat Wood Paneling

03/11/11

23.1.1 The provisions of 23.0 of this regulation apply to any flat wood paneling coating line, except as specified in 23.1.2 of this regulation.

23.1.2 The provisions of 23.0 of this regulation do not apply to any flat wood paneling coating line within any facility whose actual emissions without control devices from all flat wood paneling coating lines within the facility are less than 6.8 kilograms (kg) (15 pounds [lb]) of volatile organic compounds (VOCs) per day.

23.1.3 An owner or operator of a facility whose emissions are below the applicability threshold in 23.1.2 of this regulation shall comply with the certification, recordkeeping, and reporting requirements of 23.7.1 of this regulation.

23.1.4 Any facility that becomes or is currently subject to the provisions of 23.0 of this regulation by exceeding the applicability threshold in 23.1.2 of this regulation will remain subject to these provisions even if its emissions later fall below the applicability threshold.

23.1.5 Any facility that is currently subject to a state or federal rule promulgated pursuant to the Clean Air Act Amendments of 1977 by exceeding an applicability threshold is and will remain subject to these provisions, even if its throughput or emissions have fallen or later fall below the applicability threshold.

23.2 Definitions. As used in 23.0 of this regulation, all terms not defined herein shall have the meaning given them in the November 15, 1990 Clean Air Act Amendments (CAAA), or in 2.0 of this regulation.

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

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

"**Exterior siding**" means wood panels with a flat surface made of solid wood, hardboard, or waferboard and are intended for use in commercial or residential construction, generally as a covering for an outside wall.

"**Flat wood paneling coating line**" means a coating line used to apply and dry or cure coatings applied to one of the following flat wood paneling product categories: printed interior panels made of hardwood plywood and thin particle board (i.e., less than or equal to 0.64 centimeter (cm) (0.25 inch [in.]) in thickness); natural finish hardwood plywood panels; and hardwood paneling with Class II finishes.

"**Hardboard**" is a panel manufactured primarily from inter-felted ligno-cellulosic fibers that are consolidated under heat and pressure in a hot press.

"**Hardwood plywood**" is plywood whose surface layer is a veneer of hardwood.

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

"**Printed interior panels**" means panels whose grain or natural surface is obscured by fillers and basecoats upon which a simulated grain or decorative pattern is printed.

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

"**Tileboard**" means paneling that meets the specifications for Class I hardboard given by the standard ANSI/AHA A135.4-1995 as approved by the American National Standards Institute. The standard specifies requirements and test methods for water absorption, thickness swelling, modulus of rupture, tensile strength, surface finish, dimensions, squareness, edge straightness, and moisture content for five classes of hardboard. Tileboard is also known as Class I hardboard or tempered hardboard.

23.3 Standards

23.3.1 No owner or operator of a flat wood paneling coating line subject to 23.0 of this regulation shall cause or allow, on any day, VOC emissions from the coating of any one of the following flat wood paneling product categories in excess of the emission limits in Table 23-1 of this regulation:

Table 23-1. VOC Emission Limits from Flat Wood Paneling Coatings.

Flat Wood Paneling Product Category	VOC Content Limits in Coatings, Inks, or Adhesives Being Applied	
	lb/gal	g/L
Printed interior panels made of hardwood, plywood, or thin particleboard	2.1*	250
Natural finish hardwood plywood panels	2.1	250
Class II finishes on hardboard panels	2.1	250
Tileboard	2.1	250
Exterior siding	2.1	250

*This limit of 2.1 lb/gal is equivalent to 5.0 lb VOC per 1,000 ft^2 coating area.

23.3.2 As an alternative to compliance with the emission limits in 23.3.1 of this regulation, an owner or operator of a flat wood paneling coating line may meet the requirements of 23.5 of this regulation.

23.4 Work Practice Standards. No owner or operator of a flat wood paneling coating line subject to 23.0 of this regulation shall perform coating operation of any flat wood paneling category in Table 23-1 of this regulation unless the owner or operator meets the work practice requirements of 8.0 of this regulation.

23.5 Control devices

23.5.1 An owner or operator of a flat wood paneling coating line subject to 23.0 of this regulation may comply with 23.0 of this regulation by:

23.5.1.1 Installing and operating a capture system on that line.

23.5.1.2 Installing and operating a control device on that line.

23.5.1.3 Determining for each day the overall emission reduction efficiency needed to demonstrate compliance. The overall emission reduction needed for a day is the greater of:

23.5.1.3.1 lesser of the value calculated according to the procedure in 23.6.2 of this regulation for that day or 95%, or

23.5.1.3.2 90%.

23.5.1.4 Demonstrating each day that the overall emission reduction efficiency achieved for that day, as determined in **3.0**of **Appendix D** of this regulation, is greater than or equal to the overall emission reduction efficiency needed for that day as determined in 23.5.1.3 of this regulation.

23.5.2 An owner or operator of a flat wood paneling coating line subject to 23.0 of this regulation shall ensure that:

23.5.2.1 A capture system and control device are operated at all times that the line is in operation, and the owner or operator demonstrates compliance with 23.0 of this regulation through the applicable coating analysis and capture system and control device efficiency test methods specified in **Appendix B**, **Appendix D** and **Appendix E** of this regulation and in accordance with the capture efficiency test methods in **Appendix D** of this regulation.

23.5.2.2 The control device is equipped with the applicable monitoring equipment specified in 2.0 of **Appendix D** of this regulation, and the monitoring equipment is installed, calibrated, operated, and maintained according to the vendor's specifications at all times the control device is in use.

23.6 Test Methods and Efficiency of Control System

23.6.1 The test methods specified in 23.6, **Appendix A**, **Appendix B** and **Appendix D** of this regulation shall be used to determine compliance.

23.6.2 The required overall emission reduction efficiency of the control system for the day shall be calculated according to the following equation:

$$E = \left[\frac{(VOC_a - S)}{VOC_a} \right] \times 100$$

(23-1)

where:

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

VOC_a = The maximum VOC content of the coatings, as applied, used each day on a coating line in units of lb VOC/gal of coating material applied (or kg VOC/L of coating material applied), as determined by the applicable test methods and procedures specified in **Appendix B** of this regulation.

S = applicable VOC emission limitation in Table 23-1 of this regulation in terms of lb VOC/gal of coating material applied (or kg VOC/L of coating material applied).

23.7 Recordkeeping and reporting

23.7.1 Requirements for coating sources exempt from emission limitations. An owner or operator of a flat wood paneling coating line that is exempt from the emission limitations of 23.3 of this regulation because combined VOC emissions on any day from all flat wood paneling coating lines at the facility are below the applicability threshold specified in 23.1.2 of this regulation, before the application of capture systems and control devices, shall comply with the following:

23.7.1.1 Certification. Within six months after March11, 2011, the owner or operator of a facility specified in 23.7.1 of this regulation shall certify to the Department that the facility is exempt by providing the following:

23.7.1.1.1 The name and location of the facility.

23.7.1.1.2 The address and telephone number of the person responsible for the facility.

23.7.1.1.3 A declaration that the facility is exempt from the emission limitations of 23.3 of this regulation because combined VOC emissions on any day from all flat wood paneling coating lines at the facility are below the applicability threshold before the application of capture systems and control devices. The following equation shall be used to calculate total VOC emissions for that day:

$$T = \sum_{i=1}^{n} C_i D_i a$$

(23-2)

where:

T = Total VOC emissions from coating lines at the facility for each category of flat wood paneling (as specified in 23.3.1 of this regulation) before the application of capture systems and control devices in units of kg VOC/day (lb VOC/day).

n = Number of different coatings applied on each coating line at the facility.

i = Subscript denoting an individual coating.

C = Mass of VOC per area of coated finished product in units of kg VOC/100 m^2 (lb VOC/1,000 ft^2).

D = The surface area coated at the facility each day in units of m^2/day (ft^2/day).

a = Constant = 100 m^2 if using metric units.

= 1,000 ft^2 if using English units.

23.7.1.2 Recordkeeping. On and after March 11, 2011, the owner or operator of a facility specified in 23.7.1 of this regulation shall collect and record all of the following information each day and maintain the information at the facility for a period of five years:

23.7.1.2.1 The name and identification number of each coating, as applied, used to coat each type of flat wood paneling product.

23.7.1.2.2 The volume of coating (i) (excluding water and exempt compounds), as applied, used each day to coat each type of flat wood paneling product (specified in 23.3.1 of this regulation), and the surface area coated each day of each type of flat wood paneling product.

23.7.1.2.3 The total VOC emissions at the facility, as calculated using the equation under 23.7.1.1.3 of this regulation.

23.7.1.3 Reporting. On and after March 11, 2011, the owner or operator of a facility specified in 23.7.1 of this regulation shall notify the Department of any record showing that combined VOC emissions from all coating lines at the coating facility exceed 6.8 kg (15 lb) on any day, before the application of capture systems and control devices. A copy of such record shall be sent to the Department within 45 calendar days after the exceedance occurs. This requirement is in addition to any other exceedance reporting requirements mandated by the State of Delaware.

23.7.2 Requirements for coating sources using complying coatings. An owner or operator of a flat wood paneling coating line subject to 23.0 of this regulation and complying with 23.3 of this regulation by means of the use of complying coatings shall comply with the following:

23.7.2.1 Certification. By Within six months after March 11, 2011, or upon startup of a new coating line, or upon changing the method of compliance for an existing coating line from control devices to the use of complying coatings, the owner or operator of a coating line specified in 23.7.2 of this regulation shall certify to the Department that the coating line is or will be in compliance with the requirements of the applicable section of this regulation on and after March 11, 2011, or on and after the initial startup date. Such certification shall include:

23.7.2.1.1 The name and location of the facility.

23.7.2.1.2 The address and telephone number of the person responsible for the facility.

23.7.2.1.3 Identification of subject sources.

23.7.2.1.4 The name and identification number of each coating, as applied, used to coat each type of flat wood paneling product.

23.7.2.1.5 The VOC content of each coating for each type of flat wood paneling product (specified in 23.3.1 of this regulation) in terms of lb VOC/gal of coating material applied (or kg VOC/L of coating material applied) and the volume of each coating (in terms of gal or L) coated each day of each type of flat wood paneling product.

23.7.2.2 Recordkeeping. On and after March 11, 2011, or on and after the initial startup date, the owner or operator of a coating line referenced in 23.7.2 of this regulation and complying by the use of complying coatings shall collect and record all of the following information each day for each coating line and maintain the information at the facility for a period of five years:

23.7.2.2.1 The name and identification number of each coating, as applied, used to coat each type of flat wood paneling product.

23.7.2.2.2 The VOC content of each coating for each type of flat wood paneling product (specified in 23.3.1 of this regulation) for each coating used each day in terms of lb VOC/gal of coating material applied (or kg VOC/L of coating material applied) and the volume of each coating (in terms of gal or L) coated each day of each type of flat wood paneling product.

23.7.2.3 Reporting. On and after March 11, 2011, the owner or operator of a flat wood paneling coating line referenced in 23.7.2 of this regulation shall notify the Department in either of the following instances:

23.7.2.3.1 Any record showing use of any noncomplying coatings shall be reported by sending a copy of such record to the Department within 45 calendar days following that use. This reporting requirement is in addition to any other exceedance reporting mandated by the State of Delaware.

23.7.2.3.2 At least 30 calendar days before changing the method of compliance from the use of complying coatings to control devices, the owner or operator shall comply with all requirements of 23.7.3.1 of this regulation, as well as 7 **DE Admin. Code** 1102. Upon changing the method of compliance from the use of complying coatings to control devices, the owner or operator shall comply with all requirements of the section applicable to the coating line referenced in 23.7.3 of this regulation.

23.7.3 Requirements for coating sources using control devices. Any owner or operator of a flat wood paneling coating line subject to 23.0 of this regulation and complying with 23.3 of this regulation by the use of control devices shall comply with the following:

23.7.3.1 Testing of control equipment. By Within six months after March 11, 2011, or upon startup of a new coating line, or upon changing the method of compliance for an existing coating line from the use of complying coatings to control devices, the owner or operator of the subject coating line shall perform a compliance test. Testing shall be performed within 90 days of startup, and pursuant to the procedures in **Appendix A**, **Appendix B** and **Appendix D** of this regulation and 23.6 of this regulation. The owner or operator of the subject coating line shall submit to the Department the results of all tests and calculations necessary to demonstrate that the subject coating line is or will be in compliance with the applicable section of this regulation on and after March 11, 2011, or on and after the initial startup date.

23.7.3.2 Recordkeeping. On and after March 11, 2011, or on and after the initial startup date, the owner or operator of a coating line referenced in 23.7.3 of this regulation shall collect and record all of the following information each day for each coating line and maintain the information at the facility for a period of five years:

23.7.3.2.1 The name and identification number of each coating used on each coating line, as applied, used to coat each type of flat wood paneling product.

23.7.3.2.2 The VOC content of each coating for each type of flat wood paneling product (specified in 23.3.1 of this regulation) in terms of lb VOC/gal of coating material applied (or kg VOC/L of coating material applied), and the volume of each coating (in terms of gal or L) coated each day of each type of flat wood paneling product.

23.7.3.2.3 The maximum VOC content of the coatings, as applied, used each day (in terms of lb VOC/gal of coating material applied [or kg VOC/L of coating material applied].

23.7.3.2.4 The required overall emission reduction efficiency for each day for each coating line as determined in 23.6.2 of this regulation.

23.7.3.2.5 The actual overall emission reduction efficiency achieved for each day for each coating line as determined in 3.0 of **Appendix D** of this regulation.

23.7.3.2.6 Control device monitoring data.

23.7.3.2.7 A log of operating time for the capture system, control device, monitoring equipment, and the associated coating line.

23.7.3.2.8 A maintenance log for the capture system, control device, and monitoring equipment detailing all routine and non-routine maintenance performed including dates and duration of any outages.

23.7.3.2.9 For thermal incinerators, all 3-hour periods of operation in which the average combustion temperature was more than 10°C (50°F) below the average combustion temperature during the most recent performance test that demonstrated that the facility was in compliance. The combustion chamber set-point shall be no less than that during the most recent performance test that demonstrated that the facility was in compliance.

23.7.3.2.10 For catalytic incinerators, all three-hour periods of operation in which the average temperature of the process vent stream immediately before the catalyst bed is more than 10°C (50°F) below the average temperature of the process vent stream immediately before the catalyst bed during the most recent performance test that demonstrated that the facility was in compliance. The set-point for the process vent stream immediately before the catalyst bed shall be no less than that during the most recent performance test that demonstrated that the facility was in compliance.

23.7.3.2.11 For carbon adsorbers, all three-hour periods of operation during which either the average VOC concentration or the reading of organics in the exhaust gases is more than 20% greater than the average exhaust gas concentration or reading measured by the organics monitoring device during the most recent determination of the recovery efficiency of the carbon adsorber that demonstrated that the facility was in compliance.

23.7.3.3 Reporting. On and after March 11, 2011, the owner or operator of a subject coating line referenced in 23.7.3 of this regulation shall notify the Department in the following instances:

23.7.3.3.1 Any record showing noncompliance with the applicable requirements for control devices shall be reported by sending a copy of the record to the Department within 45 calendar days following the occurrence. This requirement is in addition to any other exceedance reporting mandated by the State of Delaware.

23.7.3.3.2 At least 30 calendar days before changing the method of compliance from control devices to the use of complying coatings, the owner or operator shall comply with all requirements of 23.7.2.1 of this regulation, and 7 **DE Admin. Code** 1102. Upon changing the method of compliance from control devices to the use of complying coatings, the owner or operator shall comply with all requirements of the Section applicable to the coating line referenced in 23.7.2 of this regulation.

14 DE Reg. 902 (03/01/11)

24.0 Bulk Gasoline Plants

01/11/1993

24.1 Applicability

24.1.1 The provisions of 24.0 of this regulation apply to all unloading, loading, and storage operations at bulk gasoline plants and to any gasoline tank truck delivering or receiving gasoline at a bulk gasoline plant.

24.1.2 The following are subject only to the requirements of 24.3.3.7, 24.3.3.8 and 24.3.3.9 of this regulation:

24.1.2.1 Any stationary storage tank of 2,082 liters (L) (550 gallons [gal]) capacity or less notwithstanding 8.0 of this regulation.

24.1.2.2 Any bulk gasoline plant with an average daily throughput of gasoline of less than 15,000 L (4,000 gal) on a 30-day rolling average provided that records are maintained according to the requirements in 24.5.1 of this regulation. Any plant that becomes or is currently subject to all of the provisions of 24.0 of this regulation by exceeding this applicability threshold will remain subject to these provisions even if its throughput later falls below the applicability threshold. Any facility that is currently subject to a state or federal rule promulgated pursuant to the Clean Air Act Amendments of 1977 by exceeding an applicability threshold is and will remain subject to these provisions, even if its throughput or emissions have fallen or later fall below the applicability threshold.

24.2 Definitions. As used in 24.0 of this regulation, all terms not defined herein shall have the meaning given them in the November 15, 1990 Clean Air Act Amendments (CAAA), or in 2.0 of this regulation.

24.3 Standards

24.3.1 Each bulk gasoline plant subject to 24.0 of this regulation shall be equipped with a vapor balance system between the gasoline storage tank and the incoming gasoline tank truck designed to capture and transfer vapors displaced during filling of the gasoline storage tank. These lines shall be equipped with fittings that are vapor-tight and that automatically and immediately close upon disconnection.

24.3.2 Each bulk gasoline plant subject to 24.0 of this regulation shall be equipped with a vapor balance system between the gasoline storage tank and the outgoing gasoline tank truck designed to capture and transfer vapors displaced during the loading of the gasoline tank truck. The vapor balance system shall be designed to prevent any vapors collected at one loading rack from passing to another loading rack.

24.3.3 Each owner or operator of a bulk gasoline plant subject to 24.0 of this regulation shall act to ensure that the procedures in 24.3.3.1 through 24.3.3.9 of this regulation are followed during all loading, unloading, and storage operations:

24.3.3.1 The vapor balance system required by 24.3.1 and 24.3.2 of this regulation shall be connected between the tank truck and storage tank during all gasoline transfer operations.

24.3.3.2 All storage tank openings, including inspection hatches and gauging and sampling devices, shall be vapor-tight when not in use.

24.3.3.3 The gasoline tank truck compartment hatch covers shall not be opened during product transfer.

24.3.3.4 All vapor balance systems shall be designed and operated at all times to prevent gauge pressure in the gasoline tank truck from exceeding 450 millimeters (mm) (18 inches [in.]) of water and vacuum from exceeding 150 mm (5.9 in.) of water during product transfers.

24.3.3.5 No pressure vacuum relief valve in the bulk gasoline plant vapor balance system shall begin to open at a system pressure of less than 450 mm (18 in.) of water or at a vacuum of less than 150 mm (5.9 in.) of water.

24.3.3.6 All product transfers involving gasoline tank trucks at bulk gasoline plants subject to 24.0 of this regulation shall be limited to vapor-tight gasoline tank trucks.

24.3.3.7 Filling of storage tanks shall be restricted to submerged fill.

24.3.3.8 Loading of outgoing gasoline tank trucks shall be limited to submerged fill.

24.3.3.9 Owners or operators of bulk gasoline plants or owners or operators of tank trucks shall observe all parts of the transfer and shall discontinue transfer if any vapor or liquid leaks are observed.

24.3.4 Each calendar month, the vapor balance systems described in 24.3.1 and 24.3.2 of this regulation and each loading rack that loads gasoline tank trucks shall be inspected for liquid or vapor leaks during product transfer operations. For purposes of 24.3 of this regulation, detection methods incorporating sight, sound, or smell are acceptable. Each leak that is detected shall be repaired within 15 calendar days after it is detected.

24.4 Compliance provisions. A pressure measurement device (liquid manometer, magnehelic gauge, or equivalent instrument) capable of measuring 500 mm (20 in.) of water gauge pressure within a ±2.5 mm (0.098 in.) of water precision, shall be calibrated and installed on the bulk gasoline plant vapor balance system at a pressure tap, located as close as possible to the connection with the gasoline tank truck, to allow determination of compliance with 24.3.3.4 of this regulation.

24.5 Recordkeeping. The owner or operator of a facility subject to this regulation shall maintain the following records in a readily accessible location for at least five years and shall immediately make these records available to the Department upon verbal or written request.

24.5.1 All bulk gasoline plants subject to 24.0 of this regulation shall maintain daily records showing the quantity of all gasoline loaded into gasoline tank trucks.

24.5.2 A record of each monthly leak inspection required under 24.3.4 of this regulation shall be kept on file at the plant. Inspection records shall include, at a minimum, the following information:

24.5.2.1 Date of inspection.

24.5.2.2 Findings (may indicate no leaks discovered or location, nature, and severity of each leak).

24.5.2.3 Leak determination method.

24.5.2.4 Corrective action (date each leak repaired and reasons for any repair interval in excess of 15 calendar days).

24.5.2.5 Inspector name and signature.

24.6 Reporting. The owner or operator of any facility containing sources subject to 24.0 of this regulation shall comply with the requirements in 5.0 of this regulation.

25.0 Bulk Gasoline Terminals.

11/29/1994

25.1 Applicability

25.1.1 The provisions of 25.0 of this regulation apply to the total of all the loading racks at any bulk gasoline terminal that deliver liquid product into gasoline tank trucks.

25.1.2 Any facility that becomes or is currently subject to the provisions of 25.0 of this regulation by exceeding the throughput specified in the definition of bulk gasoline terminal in 2.0 of this regulation will remain subject to these provisions even if its throughput later falls below the applicability threshold. Any facility that is currently subject to a state or federal rule promulgated pursuant to the Clean Air Act Amendments of 1977 by exceeding an applicability threshold is and will remain subject to these provisions, even if its throughput or emissions have fallen or later fall below the applicability threshold.

25.2 Standards for loading racks at bulk gasoline terminals.

25.2.1 All the loading racks at a bulk gasoline terminal subject to 25.0 of this regulation shall be equipped with a vapor collection system designed to collect the organic compound liquids or vapors displaced from gasoline tank trucks during product loading.

25.2.2 Each vapor collection system shall be designed to prevent any VOC vapors collected at one loading rack from passing to another loading rack.

25.2.3 Loadings of liquid product into gasoline tank trucks shall be limited to vapor-tight gasoline tank trucks using the following procedures:

25.2.3.1 The owner or operator shall obtain the vapor tightness documentation described in 25.4.1 and 25.4.2 of this regulation for each gasoline tank truck that is to be loaded at the loading racks subject to 25.0 of this regulation.

25.2.3.2 The owner or operator shall require the tank identification number to be recorded as each gasoline tank truck is loaded at the terminal.

25.2.3.3 The owner or operator shall cross-check each tank identification number obtained in 25.2.3.2 of this regulation with the file of tank vapor tightness documentation within two weeks after the corresponding tank is loaded.

25.2.3.4 The terminal owner or operator shall notify the owner or operator of each non-vapor-tight gasoline tank truck loaded at the loading racks subject to 25.0 of this regulation that the tank truck is not vapor-tight within three weeks after the loading has occurred.

25.2.3.5 The terminal owner or operator shall take steps to assure that the non-vapor-tight gasoline tank truck will not be reloaded at a loading rack subject to 25.0 of this regulation until vapor tightness documentation for that tank truck is obtained.

25.2.4 The terminal owner or operator shall act to ensure that loadings of gasoline tank trucks at the loading racks subject to 25.0 of this regulation are made only into tank trucks equipped with vapor collection equipment that is compatible with the terminal's vapor collection system.

25.2.5 The terminal owner or operator shall act to ensure that the terminal's and the tank truck's vapor collection systems are connected during each loading of a gasoline tank truck at the loading racks subject to 25.0 of this regulation.

25.2.6 The vapor collection and liquid loading equipment shall be designed and operated to prevent gauge pressure in the gasoline tank truck from exceeding 4,500 Pascals (Pa) (450 millimeters [mm] of water) during product loading. This level shall not be exceeded when measured by the procedures specified in 25.3.1 of this regulation.

25.2.7 No pressure-vacuum vent in the bulk gasoline terminal's vapor collection system shall begin to open at a system pressure less than 4,500 Pa (450 mm of water).

25.2.8 Each calendar month, the vapor collection system, the vapor control system, and each loading rack that loads gasoline tank trucks shall be inspected for total organic compounds liquid or vapor leaks during product transfer operations. For purposes of 25.2 of this regulation, detection methods incorporating sight, sound, or smell are acceptable. Each detection of a leak shall be recorded and the source of the leak repaired within 15 calendar days after it is detected.

25.2.9 The total organic compound emissions to the atmosphere from the vapor collection system due to the loading of liquid product into gasoline tank trucks shall not exceed 80 milligrams per liter (mg/L) (4.7 grains per gallon [grain/gal]) of gasoline loaded.

25.2.10 Loading of gasoline tank trucks shall be restricted to the use of submerged fill.

25.3 Test methods and procedures

25.3.1 In determining compliance with 25.2.6 of this regulation, the following procedures shall be used:

25.3.1.1 Calibrate and install a pressure measurement device (liquid manometer or equivalent instrument) capable of measuring up to 500 millimeters (mm) (20 inches [in.]) of water gauge pressure with ±2.5 mm (0.098 in.) of water precision.

25.3.1.2 Connect the pressure measurement device to a pressure tap in the terminal's vapor collection system, located as close as possible to the connection with the gasoline tank truck.

25.3.1.3 During the performance test, record the pressure every five minutes (min) while a gasoline tank truck is being loaded, and record the highest instantaneous pressure that occurs during each loading. Every loading position shall be tested at least once during the performance test.

25.3.2 In determining compliance with the mass emission limitation of 25.2.9 of this regulation, the following reference methods shall be used:

25.3.2.1 In determining volume at the exhaust vent:

25.3.2.1.1 Method 2B for combustion vapor control systems.

25.3.2.1.2 Method 2A for all other vapor control systems.

25.3.2.2 In determining total organic compounds concentration at the exhaust vent, Method 25A or 25B. The calibration gas shall be either propane or butane.

25.3.3 Immediately prior to a performance test required to determine compliance with 25.2.6 and 25.2.9 of this regulation, all potential sources of vapor and liquid leakage from the terminal's vapor collection system equipment shall be monitored for leaks according to the procedures in **Appendix F** of this regulation. The monitoring shall be conducted only while a gasoline tank truck is being loaded. A reading of 10,000 parts per million by volume (ppmv) or greater as methane shall be considered a leak. All leaks shall be repaired prior to conducting the performance test.

25.3.4 The test procedure for determining compliance with 25.2.6 and 25.2.9 of this regulation is as follows:

25.3.4.1 All testing equipment shall be prepared and installed as specified in the appropriate test methods.

25.3.4.2 300,000 L (80,000 gal) of gasoline are loaded. If the throughput criterion is not met during the initial six hours, the test may be either continued until the throughput criterion is met, or resumed the next day with another complete six hours of testing. As much as possible, testing should be conducted during the six-hour period in which the highest throughput normally occurs.

25.3.4.3 For intermittent vapor control systems:

25.3.4.3.1 The vapor holder level shall be recorded at the start of the performance test. The end of the performance test shall coincide with a time when the vapor holder is at its original level.

25.3.4.3.2 At least two startups and shutdowns of the vapor processor shall occur during the performance test. If this does not occur under automatically controlled operation, the system shall be manually controlled.

25.3.4.4 The volume of gasoline dispensed during the performance test period at all loading racks whose vapor emissions are controlled by the vapor processing system being tested shall be determined. This volume may be determined from terminal records or from gasoline dispensing meters at each loading rack.

25.3.4.5 An emission testing interval shall consist of each five-minute period during the performance test. For each interval:

25.3.4.5.1 The reading from each measurement instrument shall be recorded.

25.3.4.5.2 The volume exhausted and the average total organic compounds concentration in the exhaust vent shall be determined, as specified in the appropriate test method. The average total organic compounds concentration shall correspond to the volume measurement by taking into account the sampling system response time.

25.3.4.6 The mass emitted during each testing interval shall be calculated as follows:

$$M_{ei} = 10^{-6} K V_{es} C_e$$

(25-1)

where:

M_{ei} = Mass of total organic compounds (milligrams [mg]) emitted during testing interval i.

V_{es} = Volume of air-vapor mixture exhausted (cubic meters [m^3]), at standard conditions.

C_e = Total organic compounds concentration (measured as carbon) at the exhaust vent (ppmv).

K = Density of calibration gas (milligrams/cubic meter [mg/m^3]) at standard conditions.

= 1.83×10^6 for propane.

= 2.41×10^6 for butane.

s = Standard conditions, 20°C and 760 millimeters of mercury (mm Hg).

25.3.4.7 The total organic compounds mass emissions shall be calculated as follows:

$$E = \frac{\sum_{i=1}^{n} M_{ei}}{L}$$

(25-2)

where:

E = Mass of total organic compounds emitted per volume of gasoline loaded, mg/L.

M_{ei} = Mass of total organic compounds emitted during testing interval i, mg.

L = Total volume of gasoline loaded, L.

n = Number of testing intervals.

25.3.5 The owner or operator may adjust the emission results to exclude the methane and ethane content in the exhaust vent by any method approved by the Department.

25.4 Recordkeeping. The owner or operator of a facility subject to the requirements of 25.0 of this regulation shall maintain the following records in a readily accessible location for at least five years and shall make these records available to the Department upon verbal or written request.

25.4.1 The tank truck vapor tightness documentation required under 25.2.3 of this regulation shall be kept on file at the terminal in a permanent form available for inspection.

25.4.2 The documentation file for each gasoline tank truck shall be updated at least once per year to reflect current test results as determined by Method 27. This documentation shall include, at a minimum, the following information:

25.4.2.1 Test title: Gasoline Delivery Tank Pressure Test EPA Reference Method 27.

25.4.2.2 Tank owner and address.

25.4.2.3 Tank identification number.

25.4.2.4 Testing location.

25.4.2.5 Date of test.

25.4.2.6 Tester name and signature.

25.4.2.7 Witnessing inspector, if any: Name, signature, and affiliation.

25.4.2.8 Test results: Actual pressure change in five min, recorded in mm of water (average for two runs).

25.4.3 A record of each monthly leak inspection required under 25.2.8 of this regulation shall be kept on file at the terminal. Inspection records shall include, at a minimum, the following information:

25.4.3.1 Date of inspection.

25.4.3.2 Findings (may indicate no leaks discovered or location, nature, and severity of each leak).

25.4.3.3 Leak determination method.

25.4.3.4 Corrective action (date each leak repaired, reasons for any repair interval in excess of 15 calendar days).

25.4.3.5 Inspector name and signature.

25.4.4 The terminal owner or operator shall keep documentation of all notifications required under 25.2.3.4 of this regulation on file at the terminal.

25.4.5 Daily records shall be maintained of gasoline throughput.

25.5 Reporting. The owner or operator of any facility containing sources subject to 25.0 of this regulation shall comply with the requirements in 5.0 of this regulation.

26.0 Gasoline Dispensing Facility Stage I Vapor Recovery.

~~01/11/2002~~ xx/xx/xxxx

26.1 Applicability

26.1.1 The provisions of Section 26.0 ~~of this regulation~~ apply to any stationary gasoline storage tank located at any gasoline dispensing facility (GDF) in the State of Delaware, except:

26.1.1.1 The following storage tanks shall be subject only to the requirements of subsection 26.3.1.1 ~~of this regulation~~:

26.1.1.1.1 Any stationary gasoline storage tank that is equipped with a floating roof or its equivalent that has been approved by the Administrator of the U.S. EPA as part of a State Implementation Plan (SIP) or Federal Implementation Plan (FIP) revision.

26.1.1.1.2 Any stationary gasoline storage tank with a capacity of less than 550 gallons [gal] used exclusively for the fueling of farm equipment.

26.1.1.1.3 Any stationary gasoline storage tank with a capacity of less than 2,000 gal that was constructed prior to January 1, 1979.

26.1.1.1.4 Any stationary gasoline storage tank with a capacity of less than 250 gal that was constructed after December 31, 1978.

26.1.1.2 The storage tank or tanks at any gasoline dispensing facility, which never has a monthly throughput of greater than 10,000 gallons of gasoline, shall be subject only to the requirements of subsections 26.3.1.1 and 26.4 ~~of this regulation~~.

26.1.1.3 The storage tank or tanks at any gasoline dispensing facility that ever exceeds this applicability threshold shall be subject to all of the requirements of Section 26.0 ~~of this regulation~~, and shall remain subject to these requirements even if its monthly throughput later falls below the exemption throughput.

26.1.2 The requirements of Section 26.0 ~~of this regulation~~ are in addition to all other State and Federal requirements, to include the permitting requirements of 7 **DE Admin. Code** 1102 of the State of Delaware "Regulations Governing the Control of Air Pollution". Any gasoline dispensing facility that is currently subject to any state or federal rule promulgated pursuant to the Clean Air Act Amendments of ~~1977~~ 1990 by exceeding an applicability threshold is and shall remain subject to those provisions.

26.1.3 Compliance Schedule

Any stationary gasoline storage tank subject to the requirements of Section 26.0 ~~of this regulation~~ shall be in compliance as follows:

26.1.3.1 Storage tanks located at any facility that first commences operations:

26.1.3.1.1 Before November 15, 1990 and having any monthly throughput of at least 100,000 gallons: no later than November 15, 1993.

26.1.3.1.2 Before November 15, 1990 and having any monthly throughput of greater than 10,000 gallons but less than 100,000 gallons: no later than November 15, 1994.

26.1.3.1.3 On or after November 15, 1990 and before May 15, 1993: no later than May 15, 1993.

26.1.3.1.4 On or after May 15, 1993: upon commencement of operations.

26.1.3.2 The requirements of subsection 26.3.1.2.5 ~~of this regulation~~ are effective on and after May 1, 2003.

26.1.4 Any gasoline dispensing facility with gasoline storage tank or tanks subject to Section 26.0 shall also comply with applicable requirements in Section 36.0 of 7 **DE Admin. Code** 1124 on or after xx/xx/xxxx.

26.2 ~~Reserved~~ Definitions

26.2.1 Terms being defined in subsection 26.2 are used exclusively for Section 26.0. Other terms not defined herein shall have meanings defined in the Clean Air Act Amendments of 1990 (CAA), 7 **DE Admin. Code** 1101, or Section 2.0 of 7 **DE Admin. Code** 1124.

"**Monthly Throughput**" means the total volume of gasoline dispensed from all the gasoline storage tanks located at a single affected GDF in a calendar month.

26.3 Standards

26.3.1 The owner or operator of any stationary storage tank that is subject to the requirements of Section 26.0 ~~of this regulation~~ shall:

26.3.1.1 Load the stationary gasoline storage tank or tanks by submerged fill using a drop tube that extends to within 150 mm (5.9 in.) from the bottom of the tank.

26.3.1.2 Design, install, operate, and maintain a Stage I Vapor Recovery System that is required in Section 36.0 and operates such that the vapors displaced by the liquid gasoline are returned to the delivery vessel and transported back to the bulk plant or terminal.

26.3.1.2.1 All hoses in the Stage I Vapor Recovery system shall be properly connected.

26.3.1.2.2 All vapor lines, couplers, and adapters used in the gasoline delivery shall be vaportight.

26.3.1.2.3 All adapters and couplers that attach to any vapor line on the storage vessel shall have closures that seal upon disconnect.

26.3.1.2.4 Reserved.

26.3.1.2.5 All Stage I systems shall utilize dual point vapor connections to return vapors from the storage tank to the delivery truck.

26.3.2 The filling of storage tanks subject to the requirements of Section 26.0 ~~of this regulation~~ shall be limited to unloading by vapor-tight gasoline tank trucks or delivery trucks which:

26.3.2.1 ~~meet~~ Meet all of the requirements of Section 27.0 ~~of this regulation~~ 7 **DE Admin. Code** 1124; and

26.3.2.2 ~~are~~ Are equipped with vapor return equipment that is compatible with the Stage I Vapor Recovery System installed on the storage tank.

26.4 Recordkeeping. The owner or operator of any stationary gasoline storage tank exempted from the requirements of Section 26.0 ~~of this regulation~~ pursuant to subsection 26.1.1.2 of this regulation shall keep on the facility premises and in a form acceptable to the Department, records showing monthly throughput. These records shall be retained for at least five (5) years from the date of record, and shall be made immediately available to the Department upon request.

26.5 Reporting. The owner or operator of any facility containing sources subject to Section 26.0 of this regulation shall also comply with the requirements of Section 5.0 of ~~this regulation~~ 7 **DE Admin. Code** 1124 "Compliance Certification, Recordkeeping, and Reporting Requirement for Non-Coating Sources".

27.0 Gasoline Tank Trucks

01/11/1993

27.1 Applicability. The provisions of 27.0 of this regulation apply to any gasoline tank truck equipped for gasoline vapor collection. No exemptions are allowable based on number of gasoline tank trucks or total quantity of volatile organic compound (VOC) emissions.

27.2 Standards. Each owner or operator of a gasoline tank truck subject to 27.0 of this regulation shall ensure that the gasoline tank truck:

27.2.1 Is a vapor-tight gasoline tank truck as demonstrated by Method 27 of **Appendix A** of 40 CFR Part 60 (July 1, 1992).

27.2.2 Displays a sticker near the Department of Transportation Certification plate required by 49 CFR 178.340-10b, that:

27.2.2.1 Shows the date that the gasoline tank truck last passed the test required in 27.2.1 of this regulation.

27.2.2.2 Shows the identification number of the truck tank.

27.2.2.3 Expires not more than one year after the date of the Method 27 test.

27.2.3 Is maintained with hatches closed at all times except during measurement of product level or maintenance. Measurement of product level or maintenance shall not be performed during product loading or unloading.

27.2.4 Is connected to vapor recovery equipment during loading and unloading.

27.3 Monitoring gasoline tank trucks for vapor tightness

27.3.1 The Department may, at any time, monitor a gasoline tank truck by the method referenced in 27.3.2 of this regulation to confirm continuing compliance with 27.0 of this regulation.

27.3.2 Monitoring to confirm the continuing existence of vapor-tight conditions shall be performed according to the procedures described in **Appendix B** of the OAQPS Guideline Series document, "Control of Organic Compound Leaks from Gasoline Tank Trucks and Vapor Collection Systems," EPA-450/2-78-051.

27.4 Test methods and procedures. The procedures in Method 27, 40 CFR, Part 60, **Appendix A** (July 1, 1992), shall be used to determine compliance with 27.2.1 of this regulation.

27.5 Recordkeeping and reporting requirements

27.5.1 The owner or operator of a gasoline tank truck subject to 27.0 of this regulation shall maintain records of all certification, testing, and repairs. The records shall identify the gasoline tank truck, the date of the tests or repair, and, if applicable, the type of repair and the date of retest. The records shall be maintained in a legible, readily available condition for at least five years after the date the testing or repair is completed. These records shall be made available to the Department immediately upon written or verbal request.

27.5.2 The records required by 27.5.1 of this regulation shall, at a minimum, contain:

27.5.2.1 The gasoline tank truck vessel tank identification number.

27.5.2.2 The initial test pressure and the time of the reading.

27.5.2.3 The final test pressure and the time of the reading.

27.5.2.4 The initial test vacuum and the time of the reading.

27.5.2.5 The final test vacuum and the time of the reading.

27.5.2.6 At the top of each report page, the company name and the date and location of the tests on that page.

27.5.2.7 The name and the title of person conducting the test.

27.5.3 The owner or operator of a gasoline tank truck subject to 27.0 of this regulation shall certify and report to the Department annually that the gasoline tank truck has been tested by Method 27 as specified in 27.4 of this regulation. The certification shall include:

27.5.3.1 The name and address of the company and the name and telephone number of the responsible company representative under whose signature the certification is submitted.

27.5.3.2 A copy of the information recorded to comply with 27.5.2 of this regulation.

27.5.4 Copies of all records and reports under 27.0 of this regulation shall immediately be made available to the Department upon verbal or written request.

28.0 Petroleum Refinery Sources

01/11/1993

28.1 Applicability

28.1.1 The provisions of 28.0 of this regulation apply to any vacuum-producing system, wastewater separator, and process unit turnaround at petroleum refinery sources. No exemptions are allowable based on size or throughput of a facility.

28.1.2 The provisions of 28.0 of this regulation do not apply to segregated storm water runoff drain systems or to non-contact cooling water systems.

28.2 Definitions. As used in 28.0 of this regulation, all terms not defined herein shall have the meaning given them in the November 15, 1990 Clean Air Act Amendments (CAAA), or in 2.0 of this regulation.

"**Accumulator**" means the reservoir of a condensing unit receiving the condensate from the condenser.

"**Firebox**" means the chamber or compartment of a boiler or furnace in which materials are burned but does not mean the combustion chamber of an incinerator.

"**Forebays**" means the primary sections of a wastewater separator.

"**Hot well**" means the reservoir of a condensing unit receiving the warm condensate from the condenser.

"**Refinery process unit**" means any segment of the petroleum refinery in which a specific processing operation is conducted.

"**Refinery fuel gas**" means any gas that is generated by a petroleum refinery process unit and that is combusted, including any gaseous mixture of natural gas and fuel gas.

"**Turnaround**" means the procedure of shutting a refinery unit down after a run to perform necessary maintenance and repair work and then returning the unit to operation.

"**Vacuum-producing system**" means any reciprocating, rotary, or centrifugal blower or compressor, or any jet ejector or device that takes suction from a pressure below atmospheric pressure and discharges against atmospheric pressure.

"**Wastewater (oil/water) separator**" means any device or piece of equipment that utilizes the difference in density between oil and water to remove oil and associated chemicals from water, or any device, such as a flocculation tank, clarifier, etc., that removes petroleum-derived compounds from wastewater.

28.3 Standards

28.3.1 Vacuum-producing systems. No person shall permit the emission of any uncondensed volatile organic compound (VOC) from the condensers, hot wells, or accumulators of any vacuum producing system at a petroleum refinery. The standard shall be achieved by either of the following:

28.3.1.1 Piping the uncondensed vapors to a firebox or incinerator.

28.3.1.2 Compressing the vapors and adding them to the refinery fuel gas.

28.3.2 Wastewater separators. The owner or operator of any wastewater (oil/water) separator at a petroleum refinery shall:

28.3.2.1 Provide covers and seals on all separators and forebays.

28.3.2.2 Equip all openings in covers, separators, and forebays with lids or seals and keep the lids or seals in the closed position at all times except when in actual use.

28.3.3 Process unit turnarounds. The owner or operator of a petroleum refinery shall provide for the following during process unit turnaround:

28.3.3.1 Depressurization venting of the process unit or vessel to a vapor recovery system, flare, or firebox.

28.3.3.2 No emission of VOC from a process unit or vessel until its internal pressure is 136 kilo Pascals (kPa) (19.7 pounds per square inch atmospheric [psia]) or less.

28.3.3.3 Recordkeeping of the following items:

28.3.3.3.1 Date of every process unit or vessel turnaround.

28.3.3.3.2 The internal pressure of the process unit or vessel immediately prior to venting to the atmosphere.

28.4 Recordkeeping. The owner or operator of a petroleum refinery shall maintain the records required by 28.3.3.3 of this regulation in a readily accessible location for at least five years and shall make these records available to the Department upon verbal or written request.

28.5 Reporting. The owner or operator of any facility containing sources subject to 28.0 of this regulation shall comply with the requirements in 5.0 of this regulation.

29.0 Leaks from Petroleum Refinery Equipment

11/29/1994

29.1 Applicability

29.1.1 The provisions of 29.0 of this regulation apply to all equipment in volatile organic compound (VOC) service in any process unit at a petroleum refinery, regardless of size or throughput.

29.1.2 The requirements of 29.4 through 29.8 of this regulation do not apply to:

29.1.2.1 Any equipment in vacuum service.

29.1.2.2 Any pressure relief valve that is connected to an operating flare header or vapor recovery device.

29.1.2.3 Any liquid pump that has a dual mechanical pump seal with a barrier fluid system.

29.1.2.4 Any compressor with a degassing vent that is routed to an operating VOC control device.

29.1.2.5 Pumps and valves in heavy liquid service except that if evidence of a leak is found by visual, audible, olfactory, or other detection method, the owner or operator shall confirm the presence of a leak using the methods specified in **Appendix F** of this regulation. If a leak is confirmed, the owner or operator shall repair the leak as specified in 29.7 of this regulation.

29.2 Definitions. As used in 29.0 of this regulation, all terms not defined herein shall have the meaning given them in the November 15, 1990 Clean Air Act Amendments (CAAA), or in 2.0 of this regulation.

"**[In] gas/vapor service**" means that the piece of equipment in VOC service contains process fluid that is in the gaseous state at operating conditions.

"**[In] heavy liquid service**" means that the piece of equipment in VOC service is not in gas/vapor service or not in light liquid service.

"**[In] light liquid service**" means that the piece of equipment in VOC service either (1) contains a liquid that meets all of the conditions in definition A; or (2) meets the condition specified in definition B:

Definition A--(1) the vapor pressure of one or more of the components is greater than 0.3 kiloPascals (kPa) (0.044 inches of mercury [in. Hg]) at 20°C (68°F). Standard reference tests or ASTM D-2879 shall be used to determine the vapor pressures; (2) the total concentration of the pure components having a vapor pressure greater than 0.3 kPa (0.044 in. Hg) at 20°C (68°F) is equal to or greater than 20% by weight; and (3) the fluid is a liquid at operating conditions.

Definition B--Equipment is "in light liquid service" if the weight percent evaporated is greater than 10% at 150°C as determined by ASTM D86.

"**[In] vacuum service**" means that the equipment in VOC service is operating at an internal pressure that is at least five kPa (0.73 in. Hg) below ambient pressure.

"**[In] VOC service**" means that the piece of equipment contains or contacts a process fluid that is at least 10% VOC by weight. The provisions of 29.9.2 of this regulation specify how to determine that a piece of equipment is not in VOC service.

"**Process unit**" means components assembled to produce intermediate or final products from petroleum, unfinished petroleum derivatives, or other intermediates; a process unit can operate independently if supplied with sufficient feed or raw materials and sufficient storage facilities for the product.

29.3 Standards: General. The owner or operator of a petroleum refinery complex subject to 29.0 of this regulation shall ensure that:

29.3.1 Any open-ended line or valve is sealed with a second valve, blind flange, cap, or plug except during operations requiring process fluid flow through the open-ended line or valve.

29.3.2 When a second valve is used, each open-ended line or valve equipped with a second valve is operated in such a manner that the valve on the process fluid end is closed before the second valve is closed.

29.3.3 When a double block-and-bleed system is used, the bleed valve or line is open only during operations that require venting of the line between the block valves and is closed at all other times.

29.4 Standards: Equipment inspection program. The owner or operator of a petroleum refinery shall conduct the equipment inspection program described in 29.4.1 thorough 29.4.3 of this regulation using the test methods specified in **Appendix F** of this regulation.

29.4.1 The owner or operator of a petroleum refinery shall conduct quarterly monitoring of each:

29.4.1.1 Compressor.

29.4.1.2 Pump in light liquid service.

29.4.1.3 Valve in light liquid service, except as provided in 29.5 and 29.6 of this regulation.

29.4.1.4 Valve in gas/vapor service, except as provided in 29.5 and 29.6 of this regulation.

29.4.1.5 Pressure relief valve in gas/vapor service, except as 29.5 and 29.6 of this regulation.

29.4.2 The owner or operator of a petroleum refinery shall conduct a weekly visual inspection of each pump in light liquid service.

29.4.3 The owner or operator of a petroleum refinery shall monitor each pressure relief valve after each overpressure relief to ensure that the valve has properly reseated and is not leaking.

29.4.4 When an instrument reading of 10,000 parts per million (ppm) or greater is measured, it shall be determined that a leak has been detected.

29.4.5 If there are indications of liquid dripping from the equipment, it shall be determined that a leak has been detected.

29.4.6 When a leak is detected, the owner or operator shall affix a weatherproof, readily visible tag in a bright color bearing the equipment identification number and the date on which the leak was detected. This tag shall remain in place until the leaking equipment is repaired. The requirements of 29.4 of this regulation apply to any leak detected by the equipment inspection program and to any leak from any equipment that is detected on the basis of sight, sound, or smell.

29.5 Standards: Alternative standards for valves: Skip period leak detection and repair.

29.5.1 An owner or operator shall comply initially with the requirements for valves in gas/vapor service and valves in light liquid service, as described in 29.4 of this regulation.

29.5.2 After two consecutive quarterly leak detection periods with the percent of valves leaking equal to or less than 2.0, an owner or operator may begin to skip one of the quarterly leak detection periods for the valves in gas/vapor and light liquid service.

29.5.3 After five consecutive quarterly leak detection periods with the percent of valves leaking equal to or less than 2.0, an owner or operator may begin to skip three of the quarterly leak detection periods for the valves in gas/vapor and light liquid.

29.5.4 If the percent of valves leaking is greater than 2.0, the owner or operator shall comply with the requirements as described in 29.4 of this regulation but can again elect to use the requirements in 29.5 of this regulation.

29.5.5 The percent of valves leaking shall be determined by dividing the sum of valves found leaking during current monitoring and valves for which repair has been delayed by the total number of valves subject to the requirements of 29.0 of this regulation.

29.5.6 An owner or operator shall keep a record of the percent of valves found leaking during each leak detection period.

29.6 Standards: Alternative standards for unsafe-to-monitor valves and difficult-to-monitor valves.

29.6.1 Any valve that is designated, as described in 29.10.5.1 of this regulation, as an unsafe-to-monitor valve is exempt from the requirements of 29.4 of regulation if:

29.6.1.1 The owner or operator of the valve demonstrates that the valve is unsafe to monitor because monitoring personnel would be exposed to an immediate danger as a consequence of complying with 29.4 of regulation.

29.6.1.2 The owner or operator of the valve adheres to a written plan that requires monitoring of the valve as frequently as practicable during safe-to-monitor times.

29.6.2 Any valve that is designated, as described in 29.10.5.1 of this regulation, as a difficult-to-monitor valve is exempt from the requirements of 29.4 of this regulation if:

29.6.2.1 The owner or operator of the valve demonstrates that the valve cannot be monitored without elevating the monitoring personnel more than two meters (m) (6.6 feet [ft]) above a support surface.

29.6.2.2 The owner or operator of the valve follows a written plan that requires monitoring of the valve at least once per calendar year.

29.7 Standards: Equipment repair program. The owner or operator of a petroleum refinery shall:

29.7.1 Make a first attempt at repair for any leak not later than five calendar days after the leak is detected.

29.7.2 Repair any leak as soon as practicable, but not later than 15 calendar days after it is detected except as provided in 29.8 of this regulation.

29.8 Standards: Delay of repair.

29.8.1 Delay of repair of equipment for which a leak has been detected is allowed if the repair is technically infeasible without a process unit shutdown. Repair of such equipment shall occur before the end of the next process unit shutdown.

29.8.2 Delay of repair of equipment is allowed for equipment that is isolated from the process and that does not remain in VOC service.

29.8.3 Delay of repair beyond a process unit shutdown is allowed for a valve, if valve assembly replacement is necessary during the process unit shutdown, valve assembly supplies have been depleted, and valve assembly supplies had been sufficiently stocked before the supplies were depleted. Delay of repair beyond the next process unit shutdown is not allowed unless the next process unit shutdown occurs sooner than 6 months after the first process unit shutdown.

29.9 Test methods and procedures.

29.9.1 In conducting the tests required to comply with 29.4 of this regulation, the owner or operator shall use the test methods specified in **Appendix F** of this regulation.

29.9.2 The owner or operator shall test each piece of equipment as required under 29.4 of this regulation unless it is demonstrated that a process unit is not in VOC service, i.e., that the VOC content would never be reasonably expected to exceed 10% by weight. For purposes of this demonstration, the following methods and procedures shall be used:

29.9.2.1 Procedures that conform to the general methods in ASTM E260, E168, and E169 shall be used to determine the percent VOC content in the process fluid that is contained in or contacts a piece of equipment.

29.9.2.2 Where the test methods in 29.9.2.1 of this regulation also measure exempt compounds, these compounds may be excluded from the total quantity of organic compounds in determining the VOC content of the process fluid.

29.9.2.3 Engineering judgment may be used to estimate the VOC content, if a piece of equipment had not been shown previously to be in VOC service. If the Department disagrees with the judgment, 29.9.2.1 and 29.9.2.2 of this regulation shall be used to resolve the disagreement.

29.9.3 The owner or operator shall demonstrate that a piece of equipment is in light liquid service by showing one of the following:

29.9.3.1 All of the following conditions apply:

29.9.3.1.1 The vapor pressure of one or more of the components is greater than 0.3 kPa at 20°C (0.044 in. Hg at 68°F); standard reference texts or ASTM D2879 shall be used to determine the vapor pressures.

29.9.3.1.2 The total concentration of the pure components having a vapor pressure greater than 0.3 kPa at 20°C (0.044 in. Hg at 68°F) is equal to or greater than 20% by weight.

29.9.3.1.3 The fluid is a liquid at operating conditions.

29.9.3.2 The percent VOC evaporated is greater than 10% at 150°C (302°F) as determined by ASTM D86.

29.9.4 Samples used in conjunction with 29.9.2 and 29.9.3 of this regulation shall be representative of the process fluid that is contained in or contacts the equipment.

29.10 Recordkeeping requirements

29.10.1 Each owner or operator subject to the provisions of 29.0 of this regulation shall comply with the recordkeeping requirements of 29.0 of this regulation. Except as noted, these records shall be maintained in a readily accessible location for a minimum of five years and shall be made available to the Department immediately upon verbal or written request.

29.10.2 An owner or operator of more than one affected facility subject to the provisions of 29.0 of this regulation may comply with the recordkeeping requirements for these facilities in one recordkeeping system if the system identifies each record by each facility.

29.10.3 When each leak is detected as specified in 29.4 of this regulation, the following information shall be recorded in a log and shall be kept for five years in a readily accessible location:

29.10.3.1 The instrument and operator identification numbers and the equipment identification number.

29.10.3.2 The date the leak was detected and the dates of each attempt to repair the leak.

29.10.3.3 The repair methods employed in each attempt to repair the leak.

29.10.3.4 The notation "Above 10,000" if the maximum instrument reading measured by the methods specified in **Appendix F** of this regulation after each repair attempt is equal to or greater than 10,000 ppm.

29.10.3.5 The notation "Repair delayed" and the reason for the delay if a leak is not repaired within 15 calendar days after discovery of the leak.

29.10.3.6 The signature of the owner or operator (or designate) whose decision it was that repair could not be effected without a process shutdown.

29.10.3.7 The expected date of successful repair of the leak if a leak is not repaired within 15 calendar days.

29.10.3.8 The dates of process unit shutdowns that occur while the equipment is unrepaired.

29.10.3.9 The date of successful repair of the leak.

29.10.4 A list of identification numbers of equipment in vacuum service shall be recorded in a log that is kept in a readily accessible location.

29.10.5 The following information pertaining to all valves subject to the requirements of 29.6 of this regulation shall be recorded in a log that is kept for five years in a readily accessible location:

29.10.5.1 A list of identification numbers for valves that are designated as unsafe to monitor, an explanation for each valve stating why the valve is unsafe to monitor, and the plan for monitoring each valve.

29.10.5.2 A list of identification numbers for valves that are designated as difficult to monitor, an explanation for each valve stating why the valve is difficult to monitor, and the schedule for monitoring each valve.

29.10.6 The following information for valves complying with 29.5 of this regulation shall be recorded in a log that is kept for five years in a readily accessible location:

29.10.6.1 A schedule of monitoring.

29.10.6.2 The percent of valves found leaking during each monitoring period as noted in 29.5.6 of this regulation.

29.10.7 Information and data used to demonstrate that a piece of equipment is not in VOC service shall be recorded in a log that is kept for five years in a readily accessible location for use in determining exemptions as provided in 29.1 of this regulation.

29.11 Reporting. The owner or operator of any facility containing sources subject to 29.0 of this regulation shall comply with the requirements in 5.0 of this regulation.

30.0 Petroleum Liquid Storage in External Floating Roof Tanks

11/29/1994

30.1 Applicability

30.1.1 The provisions of 30.0 of this regulation apply to any petroleum liquid storage tank that is equipped with an external floating roof and that has a capacity greater than 150,000 liters (L) (40,000 gallons [gal]).

30.1.2 The provisions of 30.0 of this regulation do not apply to any petroleum liquid storage tank that:

30.1.2.1 Is used to store waxy, heavy-pour crude oil.

30.1.2.2 Has a capacity less than 1,600,000 L (420,000 gal) and is used to store produced crude oil and condensate prior to lease custody transfer.

30.1.2.3 Contains a petroleum liquid with a maximum true vapor pressure less than 10.5 kiloPascals (kPa) (1.5 pounds per square inch atmospheric [psia]) provided that records are kept consistent with 30.5.2 of this regulation.

30.1.2.4 Contains a petroleum liquid with a maximum true vapor pressure less than 27.6 kPa (4.0 psia) that:

30.1.2.4.1 Is of welded construction.

30.1.2.4.2 Presently possesses a metallic-type shoe seal, a liquid-mounted foam seal, a liquid-mounted liquid-filled type seal, or other closure device of demonstrated equivalence approved by the Administrator of the U.S. EPA as part of a State Implementation Plan (SIP) or Federal Implementation Plan (FIP) revision.

30.1.2.5 Is of welded construction, equipped with a metallic-type shoe primary seal and has a secondary seal from the top of the shoe seal to the tank wall (shoe-mounted secondary seal).

30.2 Definitions. As used in 30.0 of this regulation, all terms not defined herein shall have the meaning given them in the November 15, 1990 Clean Air Act Amendments, or in 2.0 of this regulation.

"**Waxy, heavy-pour crude oil**" means a crude oil with a pour point of 10°C (50°F) or higher as determined by the American Society for Testing and Materials Standard D97-66, "Test for Pour Point of Petroleum Oils".

30.3 Standards. No owner of a petroleum liquid storage vessel subject to 30.0 of this regulation shall store a petroleum liquid in that tank unless:

30.3.1 The tank has been fitted with one of the following:

30.3.1.1 A continuous secondary seal extending from the floating roof to the tank wall (rim-mounted secondary seal).

30.3.1.2 A closure or other device that controls VOC emissions with an effectiveness equal to or greater than a seal required under 30.3.1.1 of this regulation and is approved by the Administrator of the U.S. EPA as part of a SIP or FIP revision.

30.3.2 All seal closure devices meet the following requirements:

30.3.2.1 There are no visible holes, tears, or other openings in the seal (or seals) or seal fabric.

30.3.2.2 The seal or seals are intact and uniformly in place around the circumference of the floating roof between the floating roof and the tank wall.

30.3.2.3 For vapor-mounted primary seals, the accumulated area of gaps exceeding 0.32 centimeter (cm) (0.125 inch [in.]) in width between the secondary seal and the tank wall shall not exceed 21.2 square centimeters per meter (cm^2/m) (1.0 square inch per foot [in^2/ft]) of tank diameter, as determined by the method in 30.6 of this regulation.

30.3.3 All openings in the external floating roof, except for automatic bleeder vents, rim space vents, and leg sleeves, are equipped with:

30.3.3.1 Covers, seals, or lids in the closed position except when the openings are in actual use.

30.3.3.2 Projections into the tank that remain below the liquid surface at all times.

30.3.4 Automatic bleeder vents are closed at all times except when the roof is being floated off or being landed on the roof leg supports.

30.3.5 Rim vents are set to open when the roof is being floated off the leg supports or at the manufacturer's recommended setting.

30.3.6 Emergency roof drains are provided with slotted membrane fabric covers or equivalent covers that cover at least 90% of the area of the opening.

30.4 Inspections

The owner or operator of a petroleum liquid storage tank with an external floating roof subject to 30.0 of this regulation shall:

30.4.1 Perform routine inspections semiannually in order to ensure compliance with 30.3 of this regulation (the inspections shall include a visual inspection of the secondary seal gap).

30.4.2 Measure the secondary seal gap annually in accordance with 30.6 of this regulation when the floating roof is equipped with a vapor-mounted primary seal.

30.5 Recordkeeping

30.5.1 The owner or operator of any petroleum liquid storage tank with an external floating roof subject to 30.0 of this regulation shall maintain the following records in a readily accessible location for at least five years and shall make copies of the records available to the Department upon verbal or written request:

30.5.1.1 Records of the types of volatile petroleum liquids stored.

30.5.1.2 Records of the maximum true vapor pressure of the liquid as stored.

30.5.1.3 Records of the results of the inspections performed in accordance with 30.4 of this regulation.

30.5.2 The owner or operator of a petroleum liquid storage vessel with an external floating roof exempted from 30.0 of this regulation by 30.1.2.3 of this regulation, but containing a petroleum liquid with a true vapor pressure greater than 7.0 kPa (1.0 psia), shall maintain the following records in a readily accessible location for at least five years and shall make copies of the records available to the Department upon verbal or written request:

30.5.2.1 Records of the average monthly storage temperature.

30.5.2.2 Records of the type of liquid stored.

30.5.2.3 Records of the maximum true vapor pressure for all petroleum liquids with a true vapor pressure greater than 7.0 kPa (1.0 psia).

30.5.3 The Department may, upon written notice, require more frequent inspections or modify the monitoring and recordkeeping requirements, when necessary to accomplish the purposes of 30.0 of this regulation.

30.6 Compliance provisions. Compliance with 30.3.2.3 of this regulation shall be determined by:

30.6.1 Physically measuring the length and width of all gaps around the entire circumference of the secondary seal in each place where a 0.32 cm (0.125 in.) uniform diameter probe passes freely (without forcing or binding against the seal) between the seal and tank wall.

30.6.2 Summing the area of the individual gaps.

30.7 Reporting. The owner or operator of any facility containing sources subject to 30.0 of this regulation shall comply with the requirements in 5.0 of this regulation.

31.0 Petroleum Liquid Storage in Fixed Roof Tanks

11/29/1994

31.1 Applicability

31.1.1 The provisions of 31.0 of this regulation apply to any fixed roof petroleum liquid storage tank with a capacity greater than 150,000 liters (L) (40,000 gallons [gal]).

31.1.2 The provisions of 31.0 of this regulation do not apply to any petroleum liquid storage tank that:

31.1.2.1 Has a capacity of less than 1,600,000 L (420,000 gal) and is used to store produced crude oil and condensate prior to lease custody transfer.

31.1.2.2 Is a horizontal underground storage tank used to store JP-4 jet fuel.

31.1.2.3 Contains a petroleum liquid with a maximum true vapor pressure less than 10.5 kiloPascals (kPa) (1.5 pounds per square inch atmospheric [psia]), provided that records are maintained consistent with 31.5.2 of this regulation.

31.2 Definitions. As used in 31.0 of this regulation, all terms not defined herein shall have the meaning given them in the November 15, 1990 Clean Air Act Amendments (CAAA), or in 2.0 of this regulation.

31.3 Standards. No owner or operator of a petroleum liquid storage tank subject to 31.0 of this regulation shall store petroleum liquid in that tank unless:

31.3.1 The tank is equipped with one of the following:

31.3.1.1 An internal floating roof equipped with a closure seal or seals to close the space between the roof edge and tank wall.

31.3.1.2 Equally effective alternative control, approved by the Administrator of the U.S. EPA as part of a State Implementation Plan (SIP) or Federal Implementation Plan (FIP) revision.

31.3.2 The tank is maintained such that there are no visible holes, tears, or other openings in the seal or any seal fabric or materials.

31.3.3 All openings, except stub drains, are equipped with covers, lids, or seals such that:

31.3.3.1 The cover, lid, or seal is in the closed position at all times except when in actual use.

31.3.3.2 Automatic bleeder vents are closed at all times except when the roof is being floated off or being landed on the roof leg supports.

31.3.3.3 Rim vents, if provided, are set to open when the roof is being floated off the roof leg supports or at the manufacturer's recommended setting.

31.4 Inspections. The owner or operator of a petroleum liquid storage tank with a fixed roof subject to 31.0 of this regulation shall:

31.4.1 For tanks equipped with a single seal system:

31.4.1.1 Visually inspect the internal floating roof and its closure seal or seals through roof hatches at least once every 12 months.

31.4.1.2 Perform a complete inspection of any cover and single seal whenever the tank is emptied for nonoperational reasons or at least every 10 years, whichever is more frequent.

31.4.2 For tanks equipped with a double seal system:

31.4.2.1 Visually inspect the internal floating roof and its closure seal or seals through the roof hatches at least once every five years.

31.4.2.2 Perform a complete inspection of any cover and double seal whenever the tank is emptied for nonoperational reasons or at least every five years, whichever is more frequent.

31.5 Recordkeeping

31.5.1 The owner or operator of a petroleum liquid storage tank with a fixed roof subject to 31.0 of this regulation shall maintain the following records in a readily accessible location for at least five years and shall make copies of the records available to the Department upon verbal or written request:

31.5.1.1 Records of the types of volatile petroleum liquids stored in that tank.

31.5.1.2 Records of the maximum true vapor pressure of the liquid as stored.

31.5.1.3 Records of the results of the inspections required in 31.4 of this regulation.

31.5.2 The owner or operator of a petroleum liquid storage tank with a fixed roof exempted from 31.1.2 of this regulation, but containing a petroleum liquid with a true vapor pressure greater than 7.0 kPa (1.0 psia),

shall maintain the following records in a readily accessible location for at least five years and shall make copies of the records available to the Department upon verbal or written request:

31.5.2.1 Records of the average monthly storage temperature.

31.5.2.2 Records of the type of liquid stored.

31.5.2.3 Records of the maximum true vapor pressure for any petroleum liquid with a true vapor pressure greater than 7.0 kPa (1.0 psia).

31.6 Reporting. The owner or operator of any facility containing sources subject to 31.0 of this regulation shall comply with the requirements in 5.0 of this regulation.

32.0 Leaks from Natural Gas/Gasoline Processing Equipment

11/29/1994

32.1 Applicability

32.1.1 The provisions of 32.0 of this regulation apply to all equipment in volatile organic compound (VOC) service in any process unit at any onshore natural gas/gasoline processing facility.

32.1.2 The provisions of 32.0 of this regulation do not apply to:

32.1.2.1 Any equipment in vacuum service.

32.1.2.2 Any equipment in heavy liquid service.

32.1.2.3 Wet gas reciprocating compressors in plants that do not have a VOC control device, such as a flare or a continuously burning process heater or boiler.

32.1.3 The equipment inspection requirements in 32.4 of this regulation do not apply to:

32.1.3.1 Any natural gas/gasoline processing facility with a design field gas capacity of less than 2.8×10^5 standard cubic meters (10×10^6 standard cubic feet) per day that does not fractionate natural gas liquids.

32.1.3.2 Any pump with dual pump seals.

32.1.3.3 Any pressure relief valve that is connected to an operating flare header or vapor recovery device.

32.1.3.4 Any compressor with a degassing vent that is routed to an operating VOC control device.

32.1.4 Any facility that becomes or is currently subject to the provisions of 32.0 of this regulation by exceeding the applicability threshold in 32.1.3.1 of this regulation will remain subject to these provisions, even if its throughput or emissions later fall below the applicability threshold. Any facility that is currently subject to a state or federal rule promulgated pursuant to the Clean Air Act Amendments of 1977 by exceeding an applicability threshold is and will remain subject to those provisions, even if its throughput or emissions have fallen or later fall below the applicability threshold.

32.2 Definitions. As used in 32.0 of this regulation, all terms not defined herein shall have the meaning given them in the November 15, 1990 Clean Air Act Amendments (CAAA), or in 2.0 of this regulation.

"**Equipment**" means each pump, compressor, pressure relief device, sampling connection system, open-ended valve or line, valve, and flange or other connector in VOC service or in wet gas service and any devices or systems required by 32.0 of this regulation.

"**Field gas**" means feedstock gas entering the natural gas processing plant.

"**[In] gas/vapor service**" means that the piece of equipment in VOC service contains process fluid that is in the gaseous state at operating conditions.

"**[In] heavy liquid service**" means that the piece of equipment in VOC service is not in gas/vapor service or not in light liquid service.

"**[In] light liquid service**" means that the piece of equipment in VOC service either (1) contains a liquid that meets all of the conditions in definition A or (2) meets the condition specified in definition B:

Definition A--(1) the vapor pressure of one or more of the components is greater than 0.3 kiloPascal (kPa) (0.044 inch of mercury [in. Hg]) at 20°C (68°F). Standard reference tests or ASTM D-2879 shall be used to determine the vapor pressures; (2) the total concentration of the pure components having a vapor pressure greater than 0.3 kPa (0.044 in. Hg) at 20°C (68°F) is equal to or greater than 20% by weight; and (3) the fluid is a liquid at operating conditions.

Definition B--Equipment is "in light liquid service" if the weight percent evaporated is greater than 10% at 150°C as determined by ASTM D86.

"**Liquids dripping**" means any visible leakage from a seal including spraying, misting, clouding, and ice formation.

"**Natural gas liquids**" means the hydrocarbons, such as ethane, propane, butane, and pentane, that are extracted from field gas.

"**Natural gas processing plant**" (gas plant) means any processing site engaged in the extraction of natural gas liquids from field gas, fractionation of mixed natural gas liquids to natural gas products, or both.

"**Nonfractionating plant**" means any gas plant that does not fractionate mixed natural gas liquids into natural gas products.

"**Onshore**" means all facilities except those that are located in the territorial seas or on the outer continental shelf.

"**Process unit**" means equipment assembled for the extraction of natural gas liquids from field gas, the fractionation of the liquids into natural gas products, or other operations associated with processing natural gas products. A process unit can operate independently if supplied with sufficient feed or raw materials and sufficient storage facilities for the products.

"**Reciprocating compressor**" means a piece of equipment that increases the pressure of a process gas by positive displacement, employing linear movement of the driveshaft.

"**[In] vacuum service**" means that the equipment in VOC service is operating at an internal pressure that is at least five kPa (0.73 in. Hg) below ambient pressure.

"**[In] VOC service**" means that the piece of equipment contains or contacts a process fluid that is at least 1% VOC by weight. The provisions of 32.9.2 of this regulation specify how to determine that a piece of equipment is not in VOC service.

"**[In] wet gas service**" means that a piece of equipment contains or contacts the field gas before the extraction step in the process.

32.3 Standards: General. The owner or operator of a natural gas/gasoline processing facility subject to 32.0 of this regulation shall ensure that:

32.3.1 Any open-ended line or valve is sealed with a second valve, blind flange, cap, or plug except during operations requiring process fluid flow through the open-ended line or valve.

32.3.2 When a second valve is used, each open-ended line or valve equipped with a second valve is operated in such a manner that the valve on the process fluid end is closed before the second valve is closed.

32.3.3 When a double block-and-bleed system is used, the bleed valve or line is open only during operations that require venting of the line between the block valves and is closed at all other times.

32.4 Standards: Equipment inspection program. The owner or operator of a natural gas/gasoline processing facility subject to 32.0 of this regulation shall conduct the equipment inspection program described in 32.4.1 through 32.4.3 of this regulation using the test methods specified in **Appendix F** of this regulation.

32.4.1 The owner or operator of a natural gas/gasoline processing facility subject to 32.0 of this regulation shall conduct quarterly monitoring of each:

32.4.1.1 Compressor.

32.4.1.2 Pump in light liquid service.

32.4.1.3 Valve in light liquid service, except as provided in 32.5 and 32.6 of this regulation.

32.4.1.4 Valve in gas/vapor service, except as provided in 32.5 and 32.6 of this regulation.

32.4.1.5 Pressure relief valve in gas/vapor service, except as provided in 32.5 and 32.6 of this regulation.

32.4.2 The owner or operator of a natural gas/gasoline processing facility subject to 32.0 of this regulation shall conduct a weekly visual inspection of each pump in light liquid service.

32.4.3 The owner or operator of a natural gas/gasoline processing facility subject to 32.0 of this regulation shall monitor each pressure relief valve within five days after each overpressure relief to ensure that the valve has properly reseated and is not leaking.

32.4.4

32.4.4.1 Any pressure relief device that is located in a nonfractionating plant that is monitored only by nonplant personnel may be monitored after a pressure release the next time the monitoring personnel are on site, instead of within five days.

32.4.4.2 No pressure relief device described in 32.4.4.1 of this regulation shall be allowed to operate for more than 30 days after a pressure release without monitoring.

32.4.5

32.4.5.1 When an instrument reading of 10,000 parts per million (ppm) or greater is measured, it shall be determined that a leak has been detected.

32.4.5.2 If there are indications of liquid dripping from the equipment, it shall be determined that a leak has been detected.

32.4.6 When a leak is detected, the owner or operator shall affix a weatherproof, readily visible tag in a bright color such as red or yellow bearing the equipment identification number and the date on which the leak was detected. This tag shall remain in place until the leaking equipment is repaired. The requirements of 32.0 of this regulation apply to any leak detected by the equipment inspection program and to any leak from any equipment that is detected on the basis of sight, sound, or smell.

32.5 Standards: Alternative standards for valves Skip period leak detection and repair.

32.5.1 An owner or operator shall comply initially with the requirements for valves in gas/vapor service and valves in light liquid service, as described in 32.4 of this regulation.

32.5.2 After two consecutive quarterly leak detection periods with the percent of valves leaking equal or less than 2.0, an owner or operator may skip one of the quarterly leak detection periods for the valves in gas/vapor and light liquid service.

32.5.3 After five consecutive quarterly leak detection periods with the percent of valves leaking equal to or less than 2.0, an owner or operator may begin to skip three of the quarterly leak detection periods for the valves in gas/vapor and light liquid service.

32.5.4 If the percent of valves leaking is greater than 2.0, the owner or operator shall comply with the requirements as described in 32.4 of this regulation but can again elect to use the requirements in 32.5 of this regulation.

32.5.5 The percent of valves leaking shall be determined by dividing the sum of valves found leaking during current monitoring and valves for which repair has been delayed by the total number of valves subject to the requirements of 32.0 of this regulation.

32.5.6 An owner or operator shall keep a record of the percent of valves found leaking during each leak detection period.

32.6 Standards: Alternative standards for valves that are unsafe or difficult to monitor.

32.6.1 Any valve that is designated, as described in 32.10.5.1 of this regulation, as an unsafe-to-monitor valve is exempt from the requirements of 32.4 of this regulation if:

32.6.1.1 The owner or operator of the valve demonstrates that the valve is unsafe to monitor because monitoring personnel would be exposed to an immediate danger as a consequence of complying with 32.4 of this regulation.

32.6.1.2 The owner or operator of the valve adheres to a written plan that requires monitoring the valve as frequently as practicable during safe-to-monitor times.

32.6.2 Any valve that is designated, as described in 32.10.5.1 of this regulation, as a difficult-to-monitor valve is exempt from the requirements of 32.4 of this regulation if:

32.6.2.1 The owner or operator of the valve demonstrates that the valve cannot be monitored without elevating the monitoring personnel more than two meters (m) (6.6 feet [ft]) above a support surface.

32.6.2.2 The owner or operator of the valve follows a written plan that requires monitoring of the valve at least once per calendar year.

32.7 Standards: Equipment repair program. The owner or operator of a natural gas/gasoline processing facility shall:

32.7.1 Make a first attempt at repair for any leak not later than five calendar days after the leak is detected.

32.7.2 Repair any leak as soon as practicable, but not later than 15 calendar days after it is detected except as provided in 32.8 of this regulation.

32.8 Standards: Delay of repair

32.8.1 Delay of repair of equipment for which a leak has been detected is allowed if the repair is technically infeasible without a process unit shutdown. Such equipment shall be repaired before the end of the next process unit shutdown.

32.8.2 Delay of repair of equipment is allowed for equipment that is isolated from the process and that does not remain in VOC service.

32.8.3 Delay of repair beyond a process unit shutdown is allowed for a valve if valve assembly replacement is necessary during the process unit shutdown, valve assembly supplies have been depleted, and valve assembly supplies had been sufficiently stocked before the supplies were depleted. Delay of repair beyond the next process unit shutdown is not allowed unless the next process unit shutdown occurs sooner than 6 months after the first process unit shutdown.

32.9 Test methods and procedures

32.9.1 In conducting the tests required to comply with 32.4 of this regulation, the owner or operator shall use the test methods specified in **Appendix F** of this regulation.

32.9.2 The owner or operator shall test each piece of equipment unless it is demonstrated that a process unit is not in VOC service, i.e., that the VOC content would never be reasonably expected to exceed 1% by weight. For purposes of this demonstration, the following methods and procedures shall be used:

32.9.2.1 Procedures that conform to the general methods in ASTM E260, E168, and E169 shall be used to determine the percent VOC content in the process fluid that is contained in or contacts a piece of equipment.

32.9.2.2 Where the test methods in 32.9.2.1 of this regulation also measure exempt compounds, these compounds may be excluded from the total quantity of organic compounds in determining the VOC content of the process fluid.

32.9.2.3 Engineering judgment may be used to estimate the VOC content, if a piece of equipment had not been shown previously to be in VOC service. If the Department disagrees with the judgment, 32.9.2.1 and 32.9.2.2 of this regulation shall be used to resolve the disagreement.

32.9.3 The owner or operator shall demonstrate that a piece of equipment is in light liquid service by showing that all of the following conditions apply:

32.9.3.1 The vapor pressure of one or more of the components is greater than 0.3 kPa at 20°C (0.09 in. Hg at 68°F). Standard reference texts or ASTM D2879 shall be used to determine the vapor pressures.

32.9.3.2 The total concentration of the pure components having a vapor pressure greater than 0.3 kPa at 20°C (0.09 in. Hg at 68°F) is equal to or greater than 20% by weight.

32.9.3.3 The fluid is a liquid at operating conditions.

32.9.4 Samples used in conjunction with 32.9.2 and 32.9.3 of this regulation shall be representative of the process fluid that is contained in or contacts the equipment.

32.10 Recordkeeping

32.10.1 Each owner or operator subject to the provisions of 32.0 of this regulation shall comply with the recordkeeping requirements of 32.0 of this regulation.

32.10.2 An owner or operator of more than one facility subject to the provisions of 32.0 of this regulation may comply with the recordkeeping requirements for these facilities in one recordkeeping system if the system identifies each record by each facility.

32.10.3 When each leak is detected as specified in 32.4 of this regulation, the following information shall be recorded in a log and shall be kept for five years in a readily accessible location:

32.10.3.1 The instrument and operator identification numbers and the equipment identification number.

32.10.3.2 The date the leak was detected and the dates of each attempt to repair the leak.

32.10.3.3 The repair methods employed in each attempt to repair the leak.

32.10.3.4 The notation "Above 10,000" if the maximum instrument reading measured by the methods specified in **Appendix F** of this regulation after each repair attempt is equal to or greater than 10,000 ppm.

32.10.3.5 The notation "Repair delayed" and the reason for the delay if a leak is not repaired within 15 calendar days after discovery of the leak.

32.10.3.6 The signature of the owner or operator (or designate) whose decision it was that repair could not be effected without a process shutdown.

32.10.3.7 The expected date of successful repair of the leak if a leak is not repaired within 15 calendar days.

32.10.3.8 The dates of process unit shutdowns that occur while the equipment is unrepaired.

32.10.3.9 The date of successful repair of the leak.

32.10.4 A list of identification numbers of equipment in vacuum service shall be recorded in a log that is kept in a readily accessible location.

32.10.5 The following information pertaining to all valves subject to the requirements of 32.6 of this regulation shall be recorded in a log that is kept for five years in a readily accessible location:

32.10.5.1 A list of identification numbers for valves that are designated as unsafe to monitor, an explanation for each valve stating why the valve is unsafe to monitor, and the plan for monitoring each valve.

32.10.5.2 A list of identification numbers for valves that are designated as difficult to monitor, an explanation for each valve stating why the valve is difficult to monitor, and the schedule for monitoring each valve.

32.10.6 The following information pertaining to all valves complying with 32.5 of this regulation shall be recorded in a log that is kept for five years in a readily accessible location:

32.10.6.1 A schedule of monitoring.

32.10.6.2 The percent of valves found leaking during each monitoring period.

32.10.7 The following information shall be recorded in a log that is kept for five years in a readily accessible location for use in determining exemptions as provided in 32.1 of this regulation:

32.10.7.1 An analysis demonstrating the design capacity of the affected facility.

32.10.7.2 Information and data used to demonstrate that a piece of equipment is not in VOC service.

32.10.7.3 Information and data used to demonstrate that a reciprocating compressor is in wet gas service.

32.11 Reporting. The owner or operator of any facility containing sources subject to 32.0 of this regulation shall comply with the requirements in 5.0 of this regulation.

33.0 Solvent Cleaning and Drying.

11/11/2001

33.1 Applicability

33.1.1 The provisions of 33.0 of this regulation apply to any person who owns or operates a solvent cleaning machine that meets the criteria of 33.1.1.1 and 33.1.1.2 of this regulation.

33.1.1.1 Contains more than one liter of solvent.

33.1.1.2 Uses any solvent containing volatile organic compounds in a total concentration greater than 5% by weight, as a cleaning or drying agent.

33.1.2 Except as provided in 33.3.4 through 33.3.6 of this regulation, existing sources affected by 33.0 of this regulation shall comply with the provisions of 33.0 of this regulation no later than November 11, 2001. New, modified, or reconstructed sources affected by 33.0 of this regulation shall comply with the provisions of 33.0 of this regulation upon start-up.

33.1.3 Any person subject to both 33.0 of this regulation and 7 **DE Admin. Code** 1130 shall submit to the Department a request to amend the existing Title V permit, consistent with the permitting requirements of 7 **DE Admin. Code** 1130. Any person subject to 33.3 of this regulation, but not subject to 7 **DE Admin. Code** 1130, shall request to be covered under a source category permit, consistent with 7 **DE Admin. Code** 1102 within 90 days of the Department's establishment of a source category permit covering solvent cleaning and drying. Any person subject to 33.4 through 33.7 of this regulation, but not subject to 7 **DE Admin. Code** 1130, shall submit to the Department a request to amend the existing 7 **DE Admin. Code** 1102 permit, consistent with the permitting requirements of 7 **DE Admin. Code** 1102.

33.2 Definitions. As used in 33.0 of this regulation, all terms not defined herein shall have the meaning given them in the November 15, 1990 Clean Air Act Amendments, in 7 **DE Admin. Code** 1101, or in 2.0 of this regulation.

"**Airless cleaning system**" means a solvent cleaning machine that is automatically operated and seals at a differential pressure of 0.50 pounds per square inch gauge (psig) or less, prior to the introduction of solvent or solvent vapor into the cleaning chamber and maintains differential pressure under vacuum during all cleaning and drying cycles.

"**Airtight cleaning system**" means a solvent cleaning machine that is automatically operated and seals at a differential pressure of 0.50 pounds per square inch gauge (psig) or less, prior to the introduction of solvent or solvent vapor into the cleaning chamber and during all cleaning and drying cycles.

"**Automated parts handling system**" means a mechanical device that carries all parts and parts baskets at a controlled speed from the initial loading of soiled or wet parts through the removal of the cleaned or dried parts. Automated parts handling systems include, but are not limited to, hoists and conveyors.

"**Batch vapor cleaning machine**" means a vapor solvent cleaning machine in which individual parts or a set of parts move through the entire cleaning or drying cycle before new parts are introduced into the cleaning machine. The term does not include machines that do not have a solvent/air interface, such as airless and airtight cleaning systems.

"**Carbon adsorber**" means a bed of activated carbon into which an air/solvent gas-vapor stream is routed and which adsorbs the solvent on the carbon.

"**Cold cleaning machine**" means a solvent cleaning machine that contains or uses unheated liquid solvent into which parts are placed to remove soils from the surfaces of the parts or to dry the parts. The term does not include machines that do not have a solvent/air interface, such as airless and airtight cleaning systems.

"**Downtime mode**" means the time period when a solvent cleaning machine is not cleaning or drying parts and the sump heating coils, if present, are turned off.

"**Dwell**" means the technique of holding parts within the freeboard area but above the vapor zone of a solvent cleaning machine. Dwell occurs after cleaning or drying to allow solvent to drain from the parts or parts baskets back into the solvent cleaning machine.

"**Dwell time**" means the period of time between when parts or a parts basket is placed in the vapor zone of a batch vapor or in-line vapor cleaning machine and when solvent dripping ceases.

"**Freeboard height**" means, for a batch cold cleaning machine, the distance from the liquid solvent level to the top of the solvent cleaning machine. For a batch vapor cleaning machine, it is the distance from the solvent/air interface to the top of the solvent cleaning machine, as measured during idling mode. For an in-line cleaning machine, it is the distance from the solvent/air interface to the bottom of the entrance or exit opening, whichever is lower, as measured during idling mode.

"**Freeboard ratio"** means the ratio of the solvent cleaning machine freeboard height to the smaller interior dimension (length, width, or diameter) of the solvent cleaning machine.

"**In-line vapor cleaning machine**" means a vapor solvent cleaning machine that uses an automated parts handling system, typically a conveyor, to automatically provide a continuous supply of parts to be cleaned or dried. These units are fully enclosed except for the conveyor inlet and exit portals.

"**Primary condenser**" means a series of circumferential cooling coils on a vapor cleaning machine through which a chilled substance is circulated or recirculated to provide continuous condensation of rising solvent vapors and, thereby, creating a concentrated solvent vapor zone.

"**Reduced room draft**" means decreasing the flow or movement of air across the top of the freeboard area of a solvent cleaning machine to less than 15.2 meters per minute (50 feet per minute) by methods including, but not limited to, redirecting fans or air vents to not blow across the cleaning machine, moving the cleaning machine to a corner where there is less room draft, and constructing a partial or complete enclosure around the cleaning machine.

"**Remote reservoir cold cleaning machine**" means a solvent cleaning machine in which liquid solvent is pumped to a sink-like work area that immediately drains solvent back into an enclosed container while parts are being cleaned or dried, allowing no solvent to pool in the work area.

"**Soils"** means contaminants that are removed from the parts being cleaned. Soils include, but are not limited to, grease, oils, waxes, metal chips, carbon deposits, fluxes, and tars.

"**Solvent/air interface**" means, for a vapor cleaning machine, the location of contact between the concentrated solvent vapor layer and the air. This location of contact is defined as the mid-line height of the primary condenser coils. For a cold cleaning machine, it is the location of contact between the liquid solvent and the air.

"**Solvent cleaning machine**" means any device or piece of equipment that uses volatile organic compounds, liquid or vapor, to remove soils from parts or to dry parts. Types of solvent cleaning machines include, but are not limited to, batch vapor, in-line vapor, in-line cold, immersion cold, and remote reservoir cold cleaning machines, as well as, airless cleaning and airtight cleaning systems.

"**Superheated vapor system**" means a system that heats the solvent vapor, either passively or actively, to a temperature 10°F above the solvent's boiling point. Parts are held in the superheated vapor before exiting the machine to evaporate the liquid solvent on the parts. Hot vapor recycle is an example of a superheated vapor system.

"**Vapor cleaning machine**" means a batch or in-line solvent cleaning machine that heats liquid solvent that is used as part of the cleaning or drying cycle. The heated solvent may or may not be boiling. The term does not include machines that do not have a solvent/air interface, such as airless and airtight cleaning systems.

"**Vapor up control switch**" means a thermostatically controlled switch that shuts off or prevents solvent from being sprayed when there is no vapor. On in-line vapor cleaning machines the switch also prevents the conveyor from operating when there is no vapor.

"**Working mode**" means the time period when the solvent cleaning machine is actively cleaning or drying parts.

"**Working mode cover**" means any cover or solvent cleaning machine design that allows the cover to shield the cleaning machine openings from outside air disturbances while parts are being cleaned or dried in the cleaning machine. A cover that is used during the working mode is opened only during parts entry and removal.

33.3 Standards for batch cold cleaning machines. The provisions of 33.3 of this regulation apply to all batch cold cleaning machines. The provisions of 33.3 of this regulation shall not apply if the owner or operator of the cold cleaning machine demonstrates and the Department approves in writing that compliance with 33.3 of this regulation will result in unsafe operating conditions.

33.3.1 Immersion cold cleaning machines shall have a freeboard ratio of 0.75 or greater unless the machines are equipped with working mode covers that shall be closed except when parts are being placed into or being removed from the machine. Covers shall be free of cracks, holes, and other defects, and easily opened or closed.

33.3.2 Immersion cold cleaning machines and remote reservoir cold cleaning machines shall:

33.3.2.1 Have a permanent, conspicuous label summarizing the operating requirements in 33.3.3 of this regulation.

33.3.2.2 Be equipped with a downtime mode cover that shall be closed at all times except during cleaning or drying of parts or the addition or removal of solvent. Cover shall be free of cracks, holes, and other defects, and readily opened or closed.

33.3.3 Cold cleaning machines shall be operated in accordance with the following procedures:

33.3.3.1 Waste solvent, still bottoms, and sump bottoms shall be collected and stored in closed containers. The closed containers may contain a device that allows pressure relief, but does not allow liquid solvent to drain from the container.

33.3.3.2 Cleaned parts shall be drained at least 15 seconds or until dripping ceases, whichever is longer. Parts having cavities or blind holes shall be tipped or rotated while the part is draining. During the draining, tipping or rotating, the parts shall be positioned so that solvent drains directly back to the cleaning machine.

33.3.3.3 Flushing of parts using a flexible hose or other flushing device shall be performed only within the freeboard area of the cold cleaning machine. The solvent flushing shall be a solid fluid stream, not an atomized or shower spray, at a pressure that does not exceed 10 pounds per square inch gauge (psig).

33.3.3.4 Work area fans shall be located and positioned so that they do not blow across the opening of the cold cleaning machine.

33.3.3.5 Sponges, fabric, wood, leather, paper products, and other absorbent materials shall not be cleaned or dried in the cold cleaning machine.

33.3.3.6 Any solvent bath agitator shall be operated to produce a rolling motion of the solvent with no observable splashing of the solvent against the tank walls or the parts being cleaned. Air agitated solvent baths may not be used.

33.3.3.7 Spills during solvent transfer and use of the cold cleaning machine shall be cleaned up immediately, and the wipe rags or other absorbent material shall be immediately stored in covered containers for disposal or recycling.

33.3.3.8 The owner or operator shall ensure that the solvent level does not exceed the fill line.

33.3.4 On and after November 11, 2002, no person shall use, sell, or offer for sale for use in a cold cleaning machine any solvent with a vapor pressure of 1.0 millimeters of mercury (mm Hg) or greater, measured at $20^{o}C$ ($68^{o}F$) that contains volatile organic compounds.

33.3.5 On and after November 11, 2002, a person who sells or offers for sale any solvent containing volatile organic compounds for use in a cold cleaning machine shall provide, to the purchaser, the following written information:

33.3.5.1 The name and address of the solvent supplier.

33.3.5.2 The type of solvent including the product or vendor identification number.

33.3.5.3 The vapor pressure of the solvent measured in mm Hg at $20^{o}C$ ($68^{o}F$).

33.3.6 The owner or operator of a cold cleaning machine shall maintain for not less than five years, and shall provide to the Department, on request, the information specified in 33.3.5 of this regulation. An invoice, bill of sale, certificate that corresponds to a number of sales, Material Safety Data Sheet (MSDS), or other appropriate documentation acceptable to the Department may be used to comply with 33.0 of this regulation.

33.4 Standards for batch vapor cleaning machines. The provisions of 33.4 of this regulation apply to batch vapor cleaning machines.

33.4.1 Batch vapor cleaning machines shall be equipped with:

33.4.1.1 Either a fully enclosed design or idling and downtime mode covers that completely covers the cleaning machine openings when in place. Covers shall be free of cracks, holes, and other defects, and readily opened or closed without disturbing the vapor zone. If the solvent cleaning machine opening is greater than 10 square feet, the covers must be powered. If a lip exhaust is used, the closed covers shall be below the level of the lip exhaust.

33.4.1.2 A freeboard ratio of 0.75 or greater.

33.4.1.3 A primary condenser.

33.4.1.4 A vapor up control switch.

33.4.1.5 A device that shuts off the sump heat if the sump liquid solvent level drops to the sump heater coils.

33.4.1.6 A vapor level control device that shuts off the sump heat if the vapor level in the vapor cleaning machine rises above the height of the primary condenser.

33.4.1.7 An automated parts handling system that moves parts or parts baskets at a speed of 3.4 meters per minute (11 feet per minute) or less when the parts are entering or exiting the vapor zone. If the parts or parts basket being cleaned or dried occupy more than 50% of the solvent/air interface area, the automated parts handling system shall move parts or parts baskets at a speed of 0.93 meters per minute (three feet per minute) or less.

33.4.1.8 Each vapor cleaning machine that uses a lip exhaust shall be designed and operated to route all collected solvent vapors through a properly operated and maintained carbon adsorber. The concentration of organic solvent in the exhaust shall not exceed 25 parts per million, averaged over one complete adsorption cycle or 24 hours, whichever is less.

33.4.1.9 A permanent, conspicuous label summarizing the operating requirements in 33.4.4 of this regulation.

33.4.2 In addition to the requirements of 33.4.1 of this regulation, the owner or operator of a batch vapor cleaning machine with a solvent/air interface area of 13 square feet or less shall implement one of the following control options:

33.4.2.1 A working mode cover, a freeboard ratio of 1.0, and superheated vapor.

33.4.2.2 Superheated vapor and a freeboard refrigeration device operated to ensure that the chilled air blanket temperature is no greater than 30% of the solvent's boiling point.

33.4.2.3 A working mode cover and a freeboard refrigeration device operated to ensure that the chilled air blanket temperature, in ^{o}F, is no greater than 30% of the solvent's boiling point.

33.4.2.4 Reduced room draft, a freeboard ratio of 1.0, and superheated vapor.

33.4.2.5 Reduced room draft and a freeboard refrigeration device operated to ensure that the chilled air blanket temperature, in ^{o}F, is no greater than 30% of the solvent's boiling point.

33.4.2.6 A freeboard ratio of 1.0 and a freeboard refrigeration device operated to ensure that the chilled air blanket temperature, in ^{o}F, is no greater than 30% of the solvent's boiling point.

33.4.2.7 Dwell and a freeboard refrigeration device operated to ensure that the chilled air blanket temperature, in ^{o}F, is no greater than 30% of the solvent's boiling point. Dwell shall be not less than 35% of the dwell time determined for the part or parts basket.

33.4.2.8 Reduced room draft, a freeboard ratio of 1.0, and dwell. Dwell shall be not less than 35% of the dwell time determined for the part or parts basket.

33.4.2.9 A freeboard refrigeration device operated to ensure that the chilled air blanket temperature, in ^{o}F, is no greater than 30% of the solvent's boiling point and a carbon adsorber that reduces solvent emissions in the exhaust to a level not to exceed 25 parts per million, averaged over one complete adsorption cycle or 24 hours, whichever is less.

33.4.2.10 A freeboard ratio of 1.0, superheated vapor, and a carbon adsorber that reduces solvent emissions in the exhaust to a level not to exceed 25 parts per million, averaged over one complete adsorption cycle or 24 hours, whichever is less.

33.4.3 In addition to the requirements of 33.4.1 of this regulation, the owner or operator of a batch vapor cleaning machine with a solvent/air interface area of greater than 13 square feet shall implement one of the following control options:

33.4.3.1 A freeboard refrigeration device operated to ensure that the chilled air blanket temperature, in ^{o}F, is no greater than 30% of the solvent's boiling point, a freeboard ratio of 1.0, and superheated vapor.

33.4.3.2 Dwell, a freeboard refrigeration device operated to ensure that the chilled air blanket temperature, in ^{o}F, is no greater than 30% of the solvent's boiling point, and reduced room draft. Dwell shall be not less than 35% of the dwell time determined for the part or parts basket.

33.4.3.3 A working mode cover, a freeboard refrigeration device operated to ensure that the chilled air blanket temperature, in ^{o}F, is no greater than 30% of the solvent's boiling point, and superheated vapor.

33.4.3.4 Reduced room draft, freeboard ratio of 1.0, and superheated vapor.

33.4.3.5 A freeboard refrigeration device operated to ensure that the chilled air blanket temperature, in ^{o}F, is no greater than 30% of the solvent's boiling point, reduced room draft, and superheated vapor.

33.4.3.6 A freeboard refrigeration device operated to ensure that the chilled air blanket temperature, in ^{o}F, is no greater than 30% of the solvent's boiling point, a freeboard ratio of 1.0, and reduced room draft.

33.4.3.7 A freeboard refrigeration device operated to ensure that the chilled air blanket temperature is no greater than 30% of the solvent's boiling point, superheated vapor, and a carbon adsorber that reduces solvent emissions in the exhaust to a level not to exceed 25 parts per million, averaged over one complete adsorption cycle or 24 hours, whichever is less.

33.4.4 Batch vapor cleaning machines shall be operated in accordance with the following procedures:

33.4.4.1 Waste solvent, still bottoms, and sump bottoms shall be collected and stored in closed containers. The closed containers may contain a device that allows pressure relief, but does not allow liquid solvent to drain from the container.

33.4.4.2 Cleaned parts shall be drained at least 15 seconds or until dripping ceases, whichever is longer. Parts having cavities or blind holes shall be tipped or rotated while the part is draining. During the draining, tipping or rotating, the parts shall be positioned so that solvent drains directly back to the batch vapor cleaning machine. A superheated vapor system shall be an acceptable alternate technology.

33.4.4.3 Parts or parts baskets shall not be removed from the batch vapor cleaning machine until dripping has ceased.

33.4.4.4 Flushing of parts using a flexible hose or other flushing device shall be performed within the vapor zone of the batch vapor cleaning machine or within a section of the machine that is not exposed to the ambient air. The solvent flushing shall be a solid fluid stream, not an atomized or shower spray.

33.4.4.5 When the cover is open, the batch vapor cleaning machine shall not be exposed to drafts greater than 40 meters per minute (132 feet per minute), as measured between one and two meters (3.3 and 6.6 feet) upwind and at the same elevation as the tank lip.

33.4.4.6 Sponges, fabric, wood, leather, paper products, and other absorbent materials shall not be cleaned or dried in the batch vapor cleaning machine.

33.4.4.7 Spills during solvent transfer and use of the batch vapor cleaning machine shall be cleaned up immediately, and the wipe rags or other absorbent material shall be immediately stored in covered containers for disposal or recycling.

33.4.4.8 Work area fans shall be located and positioned so that they do not blow across the opening of the batch vapor cleaning machine.

33.4.4.9 During startup of each batch vapor cleaning machine, the primary condenser shall be turned on before the sump heater.

33.4.4.10 During shutdown of each batch vapor cleaning machine, the sump heater shall be turned off and the solvent vapor layer allowed to collapse before the primary condenser is turned off.

33.4.4.11 When solvent is added to or drained from the batch vapor cleaning machine, the solvent shall be transferred using threaded or other leak-proof couplings, and the discharge end of the pipe shall be located beneath the liquid solvent surface.

33.4.4.12 The idling and downtime mode covers shall be closed at all times during idling and downtimes except during maintenance of the machine when the solvent has been removed and during addition of solvent to the machine.

33.4.4.13 If a lip exhaust is used on the open top batch vapor cleaning machine, the ventilation rate shall not exceed 20 $m^3/min/m^2$ (65 $ft^3/min/ft^2$) of batch vapor cleaning machine open area, unless a higher rate is necessary to meet OSHA requirements.

33.5 Standards for in-line cleaning machines. The provisions of 33.5 of this regulation apply to in-line cold and vapor cleaning machines.

33.5.1 In-line cleaning machines shall be equipped with:

33.5.1.1 Either a fully enclosed design or idling and downtime mode covers that completely covers the in-line cleaning machine openings when in place. Covers shall be free of cracks, holes, and other defects, and readily opened or closed without disturbing the vapor zone.

33.5.1.2 A freeboard ratio of 0.75 or greater.

33.5.1.3 A primary condenser.

33.5.1.4 A vapor up control switch.

33.5.1.5 A device that shuts off the sump heat if the sump liquid solvent level drops to the sump heater coils.

33.5.1.6 A vapor level control device that shuts off the sump heat if the vapor level in the inline cleaning machine rises above the height of the primary condenser.

33.5.1.7 An automated parts handling system that moves parts or parts baskets at a speed of 3.4 meters per minute (11 feet per minute) or less when the parts are entering or exiting the vapor zone. If the parts or parts basket being cleaned or dried occupy more than 50% of the solvent/air interface area, the automated parts handling system shall move parts or parts baskets at a speed of 0.93 meters per minute (three feet per minute) or less.

33.5.1.8 Each in-line machine that uses a lip exhaust shall be designed and operated to route all collected solvent vapors through a properly operated and maintained carbon adsorber. The concentration of organic solvent in the exhaust shall not exceed 25 parts per million, averaged over one complete adsorption cycle or 24 hours, whichever is less.

33.5.1.9 A permanent, conspicuous label summarizing the operating requirements in 33.5.3 of this regulation.

33.5.2 In addition to the requirements of 33.5.1 of this regulation, the owner or operator of an in-line cleaning machine shall implement one of the following control options:

33.5.2.1 A freeboard ratio of 1.0 and superheated vapor.

33.5.2.2 A freeboard ratio of 1.0 and a freeboard refrigeration device operated to ensure that the chilled air blanket temperature, in ^{o}F, is no greater than 30% of the solvent's boiling point.

33.5.2.3 Dwell and a freeboard refrigeration device operated to ensure that the chilled air blanket temperature, in ^{o}F, is no greater than 30% of the solvent's boiling point. Dwell shall be not less than 35% of the dwell time determined for the part or parts basket.

33.5.2.4 Dwell and a carbon adsorber that reduces solvent emissions in the exhaust to a level not to exceed 25 parts per million, averaged over one complete adsorption cycle or 24 hours, whichever is less. Dwell shall be not less than 35% of the dwell time determined for the part or parts basket.

33.5.3 In-line cleaning machines shall be operated in accordance with the following procedures:

33.5.3.1 Waste solvent, still bottoms, and sump bottoms shall be collected and stored in closed containers. The closed containers may contain a device that allows pressure relief, but does not allow liquid solvent to drain from the container.

33.5.3.2 Parts shall be oriented so that the solvent drains freely from the parts. Cleaned parts shall be drained at least 15 seconds or until dripping ceases, whichever is longer. Parts having cavities or blind holes shall be tipped or rotated while the part is draining. During the draining, tipping or rotating, the parts shall be positioned so that solvent drains directly within the in-line cleaning machine.

33.5.3.3 Parts or parts baskets shall not be removed from the in-line cleaning machine until dripping has ceased.

33.5.3.4 Flushing of parts using a flexible hose or other flushing device shall be performed within the vapor zone of the in-line cleaning machine or within a section of the machine that is not exposed to the ambient air. The solvent flushing shall be a solid fluid stream, not an atomized or shower spray.

33.5.3.5 When the in-line cleaning machine is operating, the entrance and exit portals shall not be exposed to drafts greater than 40 meters per minute (132 feet per minute), as measured between one and two meters (3.3 and 6.6 feet) upwind and at the same elevation as the portals.

33.5.3.6 Sponges, fabric, wood, leather, paper products, and other absorbent materials shall not be cleaned or dried in the in-line cleaning machine.

33.5.3.7 Spills during solvent transfer and use of the in-line cleaning machine shall be cleaned up immediately, and the wipe rags or other absorbent material shall be immediately stored in covered containers for disposal or recycling.

33.5.3.8 Work area fans shall be located and positioned so that they do not blow across the openings of the in-line cleaning machine.

33.5.3.9 During startup of each in-line cleaning machine, the primary condenser shall be turned on before the sump heater.

33.5.3.10 During shutdown of each in-line cleaning machine, the sump heater shall be turned off and the solvent vapor layer allowed to collapse before the primary condenser is turned off.

33.5.3.11 When solvent is added to or drained from the in-line cleaning machine, the solvent shall be transferred using threaded or other leak-proof couplings and the discharge end of the pipe shall be located beneath the liquid solvent surface.

33.5.3.12 The idling and downtime mode covers shall be closed at all times during idling and downtimes except during maintenance of the machine when the solvent has been removed and during addition of solvent to the machine.

33.5.3.13 If a lip exhaust is used on the on-line cleaning machine, the ventilation rate shall not exceed 20 $m^3/min/m^2$ (65 $ft^3/min/ft^2$) of on-line cleaning machine open area, unless a higher rate is necessary to meet OSHA requirements.

33.5.3.14 Minimize openings during operation so that entrances and exits silhouette workloads with an average clearance between the parts and the edge of the portal opening of less than 10 centimeters (four inches) or less than 10% of the width of the opening.

33.6 Standards for cleaning machines not having a solvent/air interface. The provisions of 33.6 of this regulation apply to cleaning machines that do not have a solvent/air interface. These cleaning machines include, but are not limited to, airless and airtight cleaning systems.

33.6.1 The owner or operator of each machine shall maintain a log of solvent additions and deletions for each machine including the weight of solvent contained in activated carbon or other adsorbent material used to control emissions from the cleaning machine.

33.6.2 The owner or operator of each machine shall demonstrate that the emissions from each machine, on a three-month rolling average, are equal to or less than the allowable emission limit determined using Equation 33-1 of this regulation.

$$EL = 330\,(Vol)^{0.6}$$

(33-1)

where:

EL = the three-month rolling average monthly emission limit (kilograms/month).

Vol = the cleaning capacity of machine (cubic meters).

33.6.3 The owner or operator of each machine shall operate the machine in conformance with the manufacturer's instructions and good air pollution control practices.

33.6.4 The owner or operator of each machine equipped with a carbon adsorber shall maintain and operate the carbon adsorber system to reduce solvent emissions in the exhaust to a level not exceed 25 parts per million, averaged over one complete adsorption cycle or 24 hours, whichever is less.

33.6.5 A permanent, conspicuous label summarizing the operating requirements in 33.6.7 of this regulation.

33.6.6 The owner or operator of a solvent cleaning machine complying with 33.6 of this regulation shall demonstrate compliance with the applicable three-month rolling average monthly emission limit on a monthly basis. If the applicable three-month rolling average monthly emission limit is not met, an exceedance has occurred. All exceedances shall be reported to the Department within 30 days of the determination of the exceedance.

33.6.7 Cleaning machines not having a solvent/air interface shall be operated in accordance with the following procedures:

33.6.7.1 Waste solvent, still bottoms, and sump bottoms shall be collected and stored in closed containers. The closed containers may contain a device that allows pressure relief, but does not allow liquid solvent to drain from the container.

33.6.7.2 Cleaned parts shall be drained at least 15 seconds or until dripping ceases, whichever is longer. Parts having cavities or blind holes shall be tipped or rotated while the part is draining. During the draining, tipping or rotating, the parts shall be positioned so that solvent drains directly into the cleaning machine.

33.6.7.3 Parts or parts baskets shall not be removed from the cleaning machine until dripping has ceased.

33.6.7.4 Sponges, fabric, wood, leather, paper products, and other absorbent materials shall not be cleaned or dried in the cleaning machines.

33.6.7.5 Spills during solvent transfer and use of the cleaning machines shall be cleaned up immediately, and the wipe rags or other absorbent material shall be immediately stored in covered containers for disposal or recycling.

33.6.7.6 Work area fans shall be located and positioned so that they do not blow across the opening of the cleaning machine.

33.6.7.7 When solvent is added to or drained from the cleaning machine, the solvent shall be transferred using threaded or other leak-proof couplings and the discharge end of the pipe shall be located beneath the liquid solvent surface.

33.6.8 The owner or operator of a solvent cleaning machine complying with 33.6 of this regulation shall maintain records and determine compliance with the applicable provisions in accordance with the following:

33.6.8.1 On the first operating day of every month ensure that the solvent cleaning machine system contains only clean liquid solvent. This includes, but is not limited to, fresh unused solvent, recycled solvent, and used solvent that have been cleaned of soils. A fill line must be indicated during the first month the measurements are made. The solvent level within the machine must be returned to the same fill-line each month, immediately prior to calculating monthly emissions. The solvent cleaning machine does not have to be emptied and filled with fresh unused solvent prior to the calculations.

33.6.8.2 Using the records of all solvent additions and deletions for the previous monthly reporting period, determine total solvent emissions, E, using Equation 33-2 of this regulation:

$$E = SA - LSR - SSR$$

(33-2)

where:

E = the total VOC solvent emissions from the solvent cleaning machine during the most recent monthly reporting period (kilograms of solvent per month).

SA = the total amount of VOC liquid solvent added to the solvent cleaning machine during the most recent monthly reporting period (kilograms of solvent per month).

LSR = the total amount of VOC liquid solvent removed from the solvent cleaning machine during the most recent monthly reporting period (kilograms of solvent per month).

SSR = the total amount of VOC solvent removed from the solvent cleaning machine in solid waste during the most recent monthly reporting period (kilograms of solvent per month), as determined from tests conducted using Method 25D in **Appendix A** of 40 CFR part 60 or by engineering calculations included in the compliance report.

33.6.8.3 Determine the monthly rolling average solvent emission, EA, using Equation 33-3 of this regulation:

$$EA = \frac{(E_{j=1} + E_{j=2} + E_{j=3})}{3}$$

(33-3)

where:

EA = the average VOC solvent emissions over the preceding three monthly reporting periods (kilograms of solvent per month).

E = the total VOC solvent emissions for each month (j) for the most recent three monthly reporting periods (kilograms of solvent per month).

j = 1 = the most recent monthly reporting period.

j = 2 = the monthly reporting period immediately prior to j = 1.

j = 3 = the monthly reporting period immediately prior to j = 2.

33.7 Alternative standard. As an alternative to meeting the requirements of 33.4 or 33.5 of this regulation, the owner or operator of a batch vapor or in-line cleaning machine can elect to comply with the requirements of 33.7.1 through 33.7.4 of this regulation. The owner or operator shall maintain records sufficient to demonstrate compliance. The records shall include, at a minimum, the quantity of solvent added to and removed from the solvent cleaning machine, the dates of the addition and removal, and the calculations of the monthly rolling three-month average emission limit.

33.7.1 The owner or operator shall:

33.7.1.1 Maintain a log of solvent additions and deletions for each solvent cleaning machine.

33.7.1.2 Ensure that emissions from each solvent cleaning machine are equal to or less than the allowable emission limit presented in Table 33-1 of this regulation.

Table 33-1 - Emission Limits for Batch Vapor and In-line Cleaning Machines

Solvent cleaning machine	Three-Month rolling average monthly emission limit (kilograms/square meters/month)
Batch vapor cleaning machines	150
Existing in-line cleaning machines	153
New in-line cleaning machines	99

33.7.2 In addition to the requirements of 33.7.1 of this regulation, the owner or operator of a cleaning machine shall comply with the following:

33.7.2.1 The 33.4.1.9 and 33.4.4 of this regulation for batch vapor cleaning machines.

33.7.2.2 The 33.5.1.9 and 33.5.3 of this regulation for in-line cleaning machines.

33.7.3 The owner or operator of a solvent cleaning machine complying with 33.7 of this regulation shall demonstrate compliance with the applicable three-month rolling average monthly emission limit on a monthly basis. If the applicable three-month rolling average monthly emission limit is not met, an exceedance has occurred. All exceedances shall be reported to the Department within 30 days of the determination of the exceedance.

33.7.4 The owner or operator of a solvent cleaning machine complying with 33.7 of this regulation shall maintain records and determine compliance with the applicable provisions in accordance with the following:

33.7.4.1 On the first operating day of every month ensure that the solvent cleaning machine system contains only clean liquid solvent. This includes, but is not limited to, fresh unused solvent, recycled solvent, and used solvent that have been cleaned of soils. A fill line must be indicated during the first month the measurements are made. The solvent level within the machine must be returned to the same fill-line each month, immediately prior to calculating monthly emissions. The solvent cleaning machine does not have to be emptied and filled with fresh unused solvent prior to the calculations.

33.7.4.2 Using the records of all solvent additions and deletions for the previous monthly reporting period, determine total solvent emissions, E, using Equation 33-4 of this regulation:

$$E = \frac{(SA - LSR - SSR)}{AREA}$$

(33-4)

where:

E = the total VOC solvent emissions from the solvent cleaning machine during the most recent monthly reporting period (kilograms of solvent per square meter of solvent/air interface area per month).

SA = the total amount of VOC liquid solvent added to the solvent cleaning machine during the most recent monthly reporting period (kilograms of solvent per month).

LSR = the total amount of VOC liquid solvent removed from the solvent cleaning machine during the most recent monthly reporting period (kilograms of solvent per month).

SSR = the total amount of VOC solvent removed from the solvent cleaning machine in solid waste during the most recent monthly reporting period (kilograms of solvent per month), as determined from tests conducted using Method 25D in **Appendix A** of 40 CFR part 60 or by engineering calculations included in the compliance report.

AREA = the solvent/air interface area of the solvent cleaning machine (square meters).

33.7.4.3 Determine the monthly rolling average solvent emission, EA, using Equation 33-5 of this regulation:

$$EA = \frac{(E_{j=1} + E_{j=2} + E_{j=3})}{3}$$

(33-5)

where:

EA = the average VOC solvent emissions over the preceding three monthly reporting periods (kilograms of solvent per square meter of solvent/air interface area per month).

E = the total VOC solvent emissions for each month (j) for the most recent three monthly reporting periods (kilograms of solvent per square meter of solvent/air interface area per month).

j = 1 = the most recent monthly reporting period.

j = 2 = the monthly reporting period immediately prior to j = 1.

j = 3 = the monthly reporting period immediately prior to j = 2.

33.8 Monitoring. The owner or operator of a solvent cleaning machine subject to the provisions of 33.4 through 33.7 of this regulation shall conduct monitoring as follows.

33.8.1 If a freeboard refrigeration device is used to comply with 33.0 of this regulation, the owner or operator shall use a thermometer or thermocouple to measure the temperature at the center of the air blanket during the idling mode. Measurements and recordings shall be made weekly.

33.8.2 If a superheated vapor system is used to comply with 33.0 of this regulation, the owner or operator shall use a thermometer or thermocouple to measure the temperature at the center of the superheated solvent vapor zone while the solvent cleaning machine is in the idling mode. Measurements and recordings shall be made weekly.

33.8.3 If a cover (working mode, downtime mode, or idling mode cover) is used to comply with 33.0 of this regulation, the owner or operator shall conduct a visual inspection to determine if the cover is opening and closing properly, completely covers the cleaning machine openings when closed, and is free of cracks, holes, and other defects. Observations and recordings shall be made monthly.

33.8.4 If dwell is used to comply with 33.0 of this regulation, the owner or operator shall determine the actual dwell time by measuring the period of time that parts are held within the freeboard area of the solvent cleaning machine after cleaning or drying. Measurements and recordings shall be made monthly.

33.8.5 The owner or operator shall determine the automated parts handling system speed by measuring the time it takes to travel a measured distance. The speed is equal to the distance in meters or feet divided by the time in minutes (meters or feet per minute). Measurements and recordings shall be made monthly.

33.8.6 If reduced room draft is used to comply with 33.0 of this regulation, the owner or operator shall determine the average wind speed and controlling room parameters (i.e., redirecting fans, closing doors and windows, etc.) as follows.

33.8.6.1 Initially measure the wind speed within six inches above the top of the freeboard area of the solvent cleaning machine in accordance with the following:

33.8.6.1.1 Determine the direction of the wind current by slowly rotating a velometer or similar device until the maximum speed is located.

33.8.6.1.2 Orient a velometer in the direction of the wind current at the four corners of the machine.

33.8.6.1.3 Record the reading for each corner.

33.8.6.1.4 Average the values obtained at each corner and record the average wind speed.

33.8.6.2 Record the room parameters established during the initial compliance test to achieve the reduced room draft.

33.8.6.3 Quarterly monitor of the wind speed in accordance with 33.8.6.1 of this regulation.

33.8.6.4 Weekly monitoring of the room parameters as specified in 33.8.6 of this regulation.

33.8.7 If an enclosure (full or partial) is used to achieve reduced room draft, the owner or operator shall conduct an initial monitoring test of the wind speed within the enclosure by slowly rotating a velometer inside the entrance to the enclosure until the maximum speed is located and recorded. Measurements and recordings shall be made monthly. The owner or operator shall also conduct a monthly visual inspection of the enclosure to determine if it is free of cracks, holes, and other defects.

33.8.8 The owner or operator of a using a carbon adsorber to comply with 33.0 of this regulation shall measure and record the concentration of VOC solvent in the exhaust of the carbon adsorber whenever the solvent cleaning machine is in the working mode or is venting to the carbon adsorber. The concentration shall be determined through a sampling port within the exhaust outlet that is easily accessible, located downstream from no other inlet, and located at least eight stack or duct diameters downstream and two stack or duct diameters upstream from any flow disturbance such as a bend, expansion, contraction, or outlet.

33.9 Recordkeeping. The owner or operator of a solvent cleaning machine subject to 33.0 of this regulation shall maintain the following records in a readily accessible location for a least five years and shall make these records available to the Department, upon verbal or written request:

33.9.1 The log of operating times for the carbon adsorber, if applicable.

33.9.2 The maintenance record for the carbon adsorber, such as replacement of the activated carbon bed, if applicable.

33.9.3 The maintenance record for each control option used, such as replacement of a heater in the superheated vapor recycle system, if applicable.

33.9.4 The logs and calculations demonstrating compliance with the allowable emission limits in 33.6 and 33.7 of this regulation.

33.9.5 The results of all monitoring conducted in accordance with the requirements in 33.8 of this regulation.

33.10 Reporting. The owner of operator of a solvent cleaning machine subject to 33.0 of this regulation shall:

33.10.1 Comply with the initial compliance certification requirements of 5.1 of this regulation.

33.10.2 Comply with the requirements of 5.2 of this regulation regarding reports of excess emissions, as well as complying with other State of Delaware exceedance reporting requirements.

34.0 Cutback and Emulsified Asphalt

01/11/1993

34.1 Applicability. The provisions of 34.0 of this regulation apply to the manufacture, mixing, storage, use, and application of cutback and emulsified asphalts. No exemptions are allowable based on the size or throughput of an operation.

34.2 Definitions. As used in 34.0 of this regulation, all terms not defined herein shall have the meaning given them in the November 15, 1990 Clean Air Act Amendments (CAAA), or in 2.0 of this regulation.

"**Asphalt**" means a dark-brown to black cementitious material (solid, semisolid, or liquid in consistency) of which the main constituents are bitumens that occur naturally or are a residue of petroleum refining.

"**Cutback asphalt**" means asphalt cement that has been liquefied by blending with petroleum solvents (diluents). Upon exposure to atmospheric conditions, the diluents evaporate, leaving the asphalt cement to perform its function.

"**Emulsified asphalt**" means an emulsion of asphalt cement and water that contains a small amount of an emulsifying agent; it is a heterogeneous system containing two normally immiscible phases (asphalt and water) in which the water forms the continuous phase of the emulsion, and minute globules of asphalt form the discontinuous phase.

"**Penetrating prime coat**" means an application of low-viscosity liquid asphalt to an absorbent surface. It is used to prepare an untreated base for an asphalt surface. The prime coat penetrates the base, plugs the voids, and hardens and helps bind the top to the overlying asphalt course. The penetrating prime coat also reduces the necessity of maintaining an untreated base course prior to placing the asphalt pavement.

34.3 Standards

34.3.1 No person shall cause, allow, or permit the manufacture, mixing, storage, use, or application of cutback asphalts during the ozone season without approval of the Department as provided in 34.3.2 of this regulation.

34.3.2 The Department may approve, as part of a State Implementation Plan (SIP) revision, the manufacture, mixing, storage, use, or application of cutback asphalts where either:

34.3.2.1 Long-life stockpile storage is necessary.

34.3.2.2 The cutback asphalt is to be used solely as a penetrating prime coat.

34.3.3 During the ozone season, no person shall cause, allow, or permit the manufacturing, mixing, storage, or use of emulsified asphalt that contains any volatile organic compound (VOC).

34.4 Recordkeeping. The owner or operator of any facility subject to 34.0 of this regulation shall maintain records of the manufacture, mixing, storage, use, or application of any asphalt containing VOC during the ozone season. These records shall be maintained in a readily accessible location for a minimum of five years and shall be made available to the Department upon verbal or written request.

35.0 Manufacture of Synthesized Pharmaceutical Products

11/29/1994

35.1 Applicability. The provisions of 35.0 of this regulation apply to the following sources of volatile organic compounds (VOCs) at all synthesized pharmaceutical manufacturing facilities:

35.1.1 Reactors.

35.1.2 Distillation operations.

35.1.3 Crystallizers.

35.1.4 Centrifuges.

35.1.5 Vacuum dryers.

35.1.6 Air dryers.

35.1.7 Production equipment exhaust systems.

35.1.8 Rotary vacuum filters and other filters.

35.1.9 In-process tanks.

35.1.10 Leaks.

35.2 Definitions. As used in 35.0 of this regulation, all terms not defined herein shall have the meaning given them in the November 15, 1990 Clean Air Act Amendments (CAAA), or in 2.0 of this regulation.

"**Production equipment exhaust system**" means a device for collecting and directing out of the work area VOC fugitive emissions from reactor openings, centrifuge openings, and other vessel openings to protect workers from excessive VOC exposure.

"**Reactor**" means a vat or vessel, which may be jacketed to permit temperature control, designed to contain chemical reactions.

"**Separation operation**" means a process that separates a mixture of compounds and solvents into two or more components. Specific mechanisms include extraction, centrifugation, filtration, and crystallization.

"**Synthesized pharmaceutical manufacturing**" means manufacture of pharmaceutical products and intermediates by chemical synthesis. The production and recovery of materials produced via fermentation, extraction of organic chemicals from vegetative materials or animal tissues, and formulation and packaging of the product are not considered synthesized pharmaceutical manufacturing.

35.3 Standards

35.3.1 Reactors, distillation operations, crystallizers, centrifuges, and vacuum dryers. The owner or operator of a synthesized pharmaceutical manufacturing facility subject to 35.0 of this regulation shall control the VOC emissions from all vents from reactors, distillation operations, crystallizers, centrifuges, and vacuum dryers at the facility that emit 6.8 kilograms per day (kg/day) (15 pounds per day [lb/day]) or more of VOC as determined by the procedure in "Control of Volatile Organic Emissions from Manufacture of Synthesized Pharmaceutical Products," **Appendix B**, EPA-450/2-78-029, December 1978. Surface condensers or equivalent controls shall be used, provided that:

35.3.1.1 If surface condensers are used, the condenser outlet gas temperature shall not exceed the allowable temperature limit described for each associated vapor pressure in the following table:

Allowable condenser outlet gas temperature, °C (°F)	VOC vapor pressure at 20°C kPa	(psi)
-25 (-13)	>40.01	(5.8)
-15 (5)	>20.0	(2.9)
0 (32)	>10.0	(1.5)
10 (50)	>7.0	(1.0)
25 (77)	>3.5	(0.5)

35.3.1.2 If equivalent controls such as carbon absorption or incineration are used, the VOC emissions shall be reduced by at least as much as they would be by using a surface condenser. The owner or operator shall calculate the efficiency equivalent to a condenser in accordance with the procedures specified on pages 4-2 through 4-6 in "Control of Volatile Organic Emissions from Manufacture of Synthesized Pharmaceutical Products," **Appendix B**, EPA-450/2-78-029, December 1978.

35.3.2 Air dryers and production equipment exhaust systems. The owner or operator of a synthesized pharmaceutical manufacturing facility subject to 35.0 of this regulation shall reduce the VOC emissions from all air dryers and production equipment exhaust systems either:

35.3.2.1 By at least 90 weight % if emissions are 150 kg/day (330 lb/day) or more of VOC before controls.

35.3.2.2 To 15.0 kg/day (33 lb/day) or less if emissions are less than 150 kg/day (330 lb/day) of VOC.

35.3.3 Storage tanks. The owner or operator of a synthesized pharmaceutical manufacturing facility subject to 35.0 of this regulation shall reduce the VOC emissions from storage tanks by:

35.3.3.1 Providing a vapor balance system or equivalent control that is at least 90% effective by weight in reducing emissions from truck or railcar deliveries to storage tanks with capacities greater than 7,500 liters (L) (2,000 gallons [gal]) that store VOC with vapor pressures greater than 28.0 kiloPascals (kPa) (4.1 pounds per square inch [psi]) at 20°C (68°F).

35.3.3.2 Installing pressure/vacuum conservation vents set at ±0.2 kPa (0.03 psi) on all storage tanks that store VOC with vapor pressures greater than 10.0 kPa (1.5 psi) at 20°C (68°F).

35.3.4 Centrifuges, rotary vacuum filters, and other filters. The owner or operator of a synthesized pharmaceutical facility subject to 35.0 of this regulation shall enclose all centrifuges, rotary vacuum filters, and other filters having an exposed liquid surface where the liquid contains VOC and exerts a total VOC vapor pressure of 3.50 kPa (0.5 psi) or more at 20°C (68°F).

35.3.5 In-process tanks. The owner or operator of a synthesized pharmaceutical facility subject to 35.0 of this regulation shall install covers on all in-process tanks that contain VOC at any time. These covers shall remain closed, unless production, sampling, maintenance, or inspection procedures require operator access.

35.3.6 Leaks. The owner or operator of a synthesized pharmaceutical manufacturing facility subject to 35.0 of this regulation shall repair all leaks from which a liquid containing VOC can be observed running or dripping. The repair shall be completed as soon as practicable but no later than 15 calendar days after the leak is found. If the leaking component cannot be repaired until the process is shut down, the leaking component shall then be repaired before the process is restarted.

35.4 Testing. The owner or operator of any facility containing sources subject to 35.0 of this regulation shall comply with the testing requirements in **Appendix E** of this regulation.

35.5 Monitoring for air pollution control equipment.

35.5.1 At a minimum, continuous monitors for the following parameters shall be installed on air pollution control equipment used to control sources subject to 35.0 of this regulation:

35.5.1.1 Destruction device combustion temperature.

35.5.1.2 Temperature rise across a catalytic incinerator bed.

35.5.1.3 VOC concentration on a carbon adsorption unit to determine breakthrough.

35.5.1.4 Outlet gas temperature of a refrigerated condenser.

35.5.1.5 Temperature of a nonrefrigerated condenser coolant supply system.

35.5.2 Each monitor shall be equipped with a recording device.

35.5.3 Each monitor shall be calibrated quarterly.

35.5.4 Each monitor shall operate at all times while the associated control equipment is operating.

35.6 Recordkeeping.

35.6.1 The owner or operator of a pharmaceutical manufacturing facility subject to 35.0 of this regulation shall maintain the following records:

35.6.1.1 Parameters listed in 35.5 of this regulation shall be recorded.

35.6.1.2 For sources subject to 35.0 of this regulation, the solvent true vapor pressure as determined by ASTM D323-89 shall be recorded for every process.

35.6.2 For any leak subject to 35.3.6 of this regulation, which cannot be readily repaired within one hour after detection, the following records shall be kept:

35.6.2.1 The name of the leaking equipment.

35.6.2.2 The date and time the leak is detected.

35.6.2.3 The action taken to repair the leak.

35.6.2.4 The date and time the leak is repaired.

35.7 Reporting. The owner or operator of any facility containing sources subject to 35.0 of this regulation shall comply with the requirements in 5.0 of this regulation.

36.0 Vapor Emission Control at Gasoline Dispensing Facilities

~~09/11/2015~~ xx/xx/xxxx

36.1 Applicability

36.1.1 The provisions of Section 36.0 ~~of this regulation~~ apply to any gasoline dispensing facility (GDF) located in the State of Delaware, except:

36.1.1.1 Any gasoline dispensing facility, which never has a monthly throughput ~~of~~ greater than 10,000 gallons of gasoline, shall be subject only to the requirements of subsection 36.7.2 ~~of this regulation~~. Any gasoline dispensing facility that ever exceeds this throughput shall be subject to all of the requirements of Section 36.0 ~~of this regulation~~, and shall remain subject to these requirements even if its throughput later falls below the exemption throughput.

36.1.1.2 Any gasoline dispensing facility that is used exclusively for refueling marine vehicles, aircraft, farm equipment, or emergency vehicles.

36.1.2 The requirements of subsection 36.8 ~~of this regulation~~ apply to any owner or operator of any company that performs compliance testing at gasoline dispensing facilities within the State of Delaware.

36.1.3 The requirements of Section 36.0 ~~of this regulation~~ are in addition to all other State and Federal requirements, to include the ~~Clean Air Act~~ requirements in 40 CFR 80.22(j), the nozzle flow rate limit of 10 gallons per minute, and the permitting requirements of 7 **DE Admin. Code** 1102. Any gasoline dispensing facility that is currently subject to any rule promulgated pursuant to the Clean Air Act Amendments of ~~1977~~ 1990 by exceeding an applicability threshold is and shall remain subject to those provisions.

36.1.4 Compliance Schedule. Any gasoline dispensing facility subject to the requirements of Section 36.0 ~~of this regulation~~ shall be in compliance as follows:

~~36.1.4.1 Any new facility that first commences construction on or after the effective date of this revision of 36.0 of this regulation, or any facility that decommissions its Stage II vapor recovery system, shall do one of the following:~~

~~36.1.4.1.1 Comply with 36.4.2 and all other applicable requirements of 36.0 of this regulation, or~~

~~36.1.4.1.2 Participate in a trial to demonstrate whether or not a continuous pressure monitoring (CPM) system is able to accurately identify system leaks and times when emissions are being vented from the pressure/vacuum valve, by complying with 36.4.3 and all other applicable requirements of this regulation. Failure to demonstrate compliance with any of the requirements of this regulation due to fault or failure of the CPM system shall not constitute a violation of this regulation. The trial period is for a minimum period of one year. Upon completion of the trial period any participating station has the option to either continue to comply with 36.4.3 or to comply with 36.4.2 of this regulation.~~

~~36.1.4.2 An owner or operator of any modified facility may decommission its Stage II vapor recovery system pursuant to the procedures in 36.9 of this regulation on or after the effective date of this revision of 36.0 of this regulation.~~

~~36.1.4.3 Any facility not identified in 36.1.4.1 of this regulation shall comply with 36.3 and all other applicable requirements of 36.0 of this regulation.~~

36.1.4.1 Decommission of Stage II vapor recovery system

36.1.4.1.1 Any GDF, which has a Stage II vapor recovery system in operation or under installation, shall decommission its Stage II vapor recovery system before December 31, 2021, pursuant to the procedures in subsection 36.9. Before decommissioning its Stage II system, a GDF shall comply with subsection 36.3 and other applicable requirements of Section 36.0.

36.1.4.1.2 On or after xx/xx/xxxx, any new facility that first commences construction shall not install a Stage II vapor recovery system.

36.1.4.2 Installation of Stage I enhanced vapor recovery (EVR) system

36.1.4.2.1 Any existing facility shall install and operate a Stage I EVR system prior to December 31, 2025.

36.1.4.2.2 On or after xx/xx/xxxx, any new facility that commences construction shall install a Stage I EVR system at construction and shall start operation of the Stage I EVR system when the facility commences the gasoline dispensing operation.

36.1.4.2.3 On or after xx/xx/xxxx, gasoline dispensing facilities (GDFs) with continuous pressure monitoring (CPM) systems shall comply with subsection 36.5, and GDFs without CPM systems shall comply with subsection 36.6, and all other applicable requirements of Section 36.0.

36.2 Definitions

36.2.1 Terms being defined in subsection 36.2 ~~of this regulation~~ are used exclusively for Section 36.0 ~~of this regulation~~. Other terms not defined herein shall have meanings defined in the Clean Air Act Amendments of 1990 (CAA), or 7 **DE Admin. Code** 1101, or Section 2.0 of ~~this regulation~~ 7 **DE Admin. Code** 1124.

"**Assist System**" means a system that creates a vacuum to assist the movement of vapors back into the storage tank.

"**Balance System**" means a system where pressure develops in the vehicle tank during fueling operations, and vacuum in the storage tank created when the fuel is removed, forces displaced vapors out the vehicle tank and back into the storage tank.

"**Day**" means a calendar day. However, when used to determine when a required document is due and the day falls on a weekend or holiday, the document may be submitted on the first working Day after the weekend or holiday.

~~"**Modified Facility**" means a facility that: (1) excavates below a shear valve or tank pad in order to repair or replace its Stage II system or an underground storage tank; or (2) undergoes a major system modification consisting of the replacement, repair or upgrade of at least 50% of a facility's Stage II vapor recovery system which includes dispensers, vapor return piping, and product piping.~~

"**Monthly**" means, when describing a compliance requirement, every 30 days or at least once each calendar month.

"**Monthly Throughput**" means the total volume of gasoline dispensed from all the gasoline storage tanks located at a single affected GDF in a calendar month.

~~"**New Facility**" means a facility that begins dispensing fuel for the first time.~~

"**Pressure/Vacuum Valve**" or "**P/V Valve**" means a relief valve installed on the vent stack of a tank system that is designed to open at specific pressure and vacuum settings to protect the system from excessive pressure or vacuum.

"**Tank System**" means a storage tank or a set of manifolded storage tanks containing gasoline at a gasoline dispensing facility.

"**Ullage**" means the empty volume of a gasoline storage tank system that contains liquid gasoline. Ullage is expressed as accumulated gallons of empty volume for all of the gasoline storage tanks in a manifolded system.

36.3 Standards for Facilities with Stage II Vapor Recovery Systems

36.3.1 The owner or operator of any gasoline dispensing facility ~~identified in 36.1.4.3 of this regulation~~ that operates a Stage II vapor recovery system shall meet the following requirements:

36.3.1.1 ~~Design, install,~~ To operate, and maintain one of the Stage II Vapor Recovery Systems identified in subsection 36.10.1 ~~of this regulation~~.

36.3.1.2 For systems with manifolded vapor lines, the liquid shall return into the lowest octane tank. For non-manifolded systems with separate vapor lines, the liquid shall return to the tank that has the same product as is dispensed at the nozzle where the liquid was introduced into the vapor lines.

36.3.1.3 ~~Install and~~ To maintain a vapor shear valve that functions similarly to the product shear valve. Valves of any kind other than the vapor shear valve in the vapor return line under each dispenser shall be prohibited, and if existing shall be removed.

36.3.1.4 ~~Conspicuously~~ To conspicuously post "Operating Instructions" on both sides of each gasoline dispenser. Such instructions shall include:

36.3.1.4.1 A clear description of how to correctly dispense gasoline.

36.3.1.4.2 A warning that repeated attempts to continue dispensing gasoline, after the system has indicated that the vehicle fuel tank is full (by automatically shutting off), may result in spillage or recirculation of gasoline.

36.3.1.4.3 A toll-free telephone number to report problems experienced with the vapor recovery system to the Department.

36.3.2 At least one representative (an owner, facility manager, or designated employee) from each facility, or facilities under common ownership, shall attend a training program on the operation and maintenance requirements of the Stage II equipment that is ~~selected for installation or~~ installed on their facility premises. Acceptable forms of training include equipment manufacturer's seminars, classes or workshops, or any other training approved by the Department.

36.3.2.1 Verification, such as a certificate of attendance from the training program, shall be obtained by the attendee ~~within three months of the installation of the Stage II system~~. The certificate shall display the name of the person who completed the training program.

36.3.2.2 The representative that completed the training program is then responsible for informing all facility employees about conducting routine maintenance pursuant to subsection 36.3.3 ~~of this regulation~~ and about the operation and maintenance of the Stage II system. The representative shall maintain proof of training for all employees who will be conducting daily inspections. If such representative leaves that facility, or the company owning several facilities, another representative shall take and successfully complete the training within three months.

36.3.2.3 Training shall include, but not be limited to, the following subjects:

36.3.2.3.1 Purposes and effects of the Stage II Vapor Control Program.

36.3.2.3.2 Equipment operation and function specific to their facility's equipment.

36.3.2.3.3 Maintenance schedules and requirements for the facility's equipment.

36.3.2.3.4 Equipment warranties.

36.3.2.3.5 Equipment manufacturer contracts (names, addresses, and phone numbers) for parts and service.

36.3.3 Each day personnel trained pursuant to subsection 36.3.2 ~~of this regulation~~ shall perform routine maintenance inspections and record the inspection results.

36.3.3.1 Such inspections shall consist of~~, but not limited to,~~ inspection of the Stage II system for the following defects:

36.3.3.1.1 A faceplate or face cone of a balance or assist system nozzle that does not make a good seal with a vehicle fill tube, or the accumulated damage to the faceplate or face cone is over 25% of its' surface.

36.3.3.1.2 A vapor assist system nozzle fitted with an efficiency compliance device that is damaged over 25% of its' surface.

36.3.3.1.3 A nozzle bellows with a triangular tear measuring ½ inch or more to a side, a hole measuring ½ inch or more in diameter, or a slit or tear measuring one inch or more in length.

36.3.3.1.4 A nozzle bellows or efficiency compliance device that is loosely attached to the nozzle body, not attached by a manufacturer approved method, or a vapor check valve frozen in the open position.

36.3.3.1.5 A nozzle liquid shutoff mechanism that malfunctions in any manner, where the spring or latching knurl is damaged or missing.

36.3.3.1.6 A nozzle with a vapor check valve that is defective, or a hose with a disconnected or damaged breakaway.

36.3.3.1.7 A vapor assist system nozzle spout that is damaged and the vapor collection holes are obstructed.

36.3.3.1.8 A dispenser mounted vacuum pump that is not functioning.

36.3.3.1.9 A vacuum assist system with a central vacuum unit or vapor processing unit that is inoperative.

36.3.3.1.10 A hose retractor that does not fully retract.

36.3.3.1.11 Any other component required by the Department for use in the system that is missing, disconnected, or malfunctioning.

36.3.3.2 The owner or operator shall post "Out of Order" signs and ~~"Bag-out"~~ bag-out the nozzle associated with any part of the defective vapor recovery system until said system has been repaired or replaced.

36.3.4 Testing requirements. Any gasoline dispensing facility subject to subsection 36.3 shall perform the following tests annually (every 12 calendar months) for its Stage II vapor recovery system, or as otherwise approved by the Department and US Environmental Protection Agency (EPA).

36.3.4.1 A Pressure Decay/Leak Test, conducted in accordance with Test Procedure TP-96-1 of the San Diego Protocol, Revision III (March 1, 1996). This test procedure is hereby incorporated by reference, as specified in subsection 36.11.1.

36.3.4.2 For balance systems, a Dynamic Backpressure and Liquid Blockage Test, conducted in accordance with the procedures in "Recommended Practices for Installation and Testing of Vapor Recovery Systems at Vehicle Fueling Sites, PEI/RP300-19, Chapter 9 (2019)". This test procedure is hereby incorporated by reference, as specified in subsection 36.11.2.

36.3.4.3 For assist systems, an Air to Liquid Volume Ratio Test conducted in accordance with the procedures in "Recommended Practices for Installation and Testing of Vapor Recovery Systems at Vehicle Fueling Sites, PEI/RP300-19, Chapter 10 (2019)". This test procedure is hereby incorporated by reference, as specified in subsection 36.11.2.

36.3.5 Written notification shall be submitted to the Department at least 10 days prior to the performance of any test required in subsection 36.3, unless otherwise approved by the Department.

36.3.6 All test results shall be reported to the Department within two (2) days after the test. If any test fails, repair, corrective action and retesting shall be completed within 14 days.

36.4 Standards for Facilities ~~without Stage II~~ with Stage I Vapor Recovery Systems

36.4.1 The owner or operator of any gasoline dispensing facility identified in ~~36.1.4.1 of this regulation~~ subsection 36.1.4.2 shall design, install, operate, and maintain one of the Stage I enhanced vapor recovery (EVR) systems identified in California Air Resource Board (CARB) Executive Orders (EOs) as listed in subsection 36.10.2 ~~of this regulation~~. All Stage I EVR systems shall be designed, installed, maintained and repaired by a contractor that is trained and certified by the Stage I EVR system manufacturer of the selected system. In addition, the Stage I EVR systems shall be maintained and tested in accordance with CARB

Executive Orders VR-101-Q, VR-102-R, VR-104-I, VR-105-F, VR-401-E, and VR-402-D, hereby incorporated by reference as specified in subsection 36.11.3.

36.4.1.1 For a Underground Storage Tank (UST) system, the following components of the Stage I EVR system shall be routinely tested: rotatable phase I vapor adaptors, overfill prevention device, spill container drain valve, and P/V valve. Specifically:

36.4.1.1.1 For VR-101-Q Phil-Tite Phase I Vapor Recovery System, following subsection 36.11.3.1.

36.4.1.1.2 For VR-102-R OPW Phase I Vapor Recovery System, following subsection 36.11.3.2.

36.4.1.1.3 For VR-104-I CNI Manufacturing Phase I Vapor Recovery System, following subsection 36.11.3.3.

36.4.1.1.4 For VR-105-F EMCO Wheaton Retail Phase I Vapor Recovery System, following subsection 36.11.3.4.

36.4.1.2 For an Aboveground Storage Tank (AST) system, the following components of the Stage I EVR system shall be routinely tested: rotatable phase I vapor adaptors (if existing), phase I adaptors, emergency vents, drain valve, dedicated gauging port with drop tube and tank gauge components. Specifically:

36.4.1.2.1 For VR-401-E OPW Phase I EVR System for ASTs (Aboveground Storage Tanks), following subsection 36.11.3.5.

36.4.1.2.2 For VR-402-D Morrison Brothers Phase I EVR System for ASTs, following subsection 36.11.3.6.

~~36.4.2 Requirements for facilities not participating in the CPM trial.~~

~~36.4.2.1 The owner or operator of any gasoline dispensing facility identified in 36.1.4.1.1 of this regulation shall conduct a monthly inspection of the Stage I EVR systems to monitor the condition of all Stage I components. The inspection shall include at a minimum the following:~~

~~36.4.2.1.1 Check fill and Stage I swivel adapters to be sure they are tightly sealed.~~

~~36.4.2.1.2 Visually inspect Stage I dry breaks to be sure they are tightly sealed.~~

~~36.4.2.1.3 Check ATG caps to be sure they are tightly sealed and that the associated electrical grommets and vent extractor caps are in good working order.~~

~~36.4.2.1.4 Visually inspect the Riser and P/V valve and cap for damage visible from the ground level.~~

~~36.4.2.2 Any components found to be in need of repair shall be repaired as soon as possible but before the next scheduled inspection.~~

36.4.2 The following tests shall be performed within 10 days after installation of the Stage I EVR system:

36.4.2.1 A pressure decay/leak test, conducted in accordance with Test Procedure TP-96-1 of the San Diego Protocol, Revision III (March 1, 1996), but excluding testing on the P/V valve. This test procedure is hereby incorporated by reference, as specified in subsection 36.11.1.

36.4.2.2 A vapor tie test, conducted in accordance with Test Procedure TP-96-1 of the San Diego Protocol, Revision III (March 1, 1996). This test procedure is hereby incorporated by reference, as specified in subsection 36.11.1.

36.4.2.3 A pressure/vacuum (P/V) valve leak rate and cracking pressure test, conducted in accordance with CARB Test Procedure TP-201.1E (October 8, 2003). This test procedure is hereby incorporated by reference, as specified in subsection 36.11.4.

36.4.2.4 Written notification shall be submitted to the Department at least 10 days prior to the performance of any test required in Section 36.4, unless otherwise approved by the Department.

36.4.2.5 All test results shall be reported to the Department within two (2) days after the tests. If any test fails, repair, corrective action and retesting shall be completed within 14 days.

36.4.3 ~~Requirements for facilities participating in the CPM trial.~~ Reserved.

~~36.4.3.1 The owner or operator of any gasoline dispensing facility identified in 36.1.4.1.2 of this regulation shall maintain the tank system at a vapor leak rate less than two times the rate allowed in accordance with California Air Resources Board (CARB) Vapor Recovery Test Procedure TP-201.3, "Determination of 2 Inch WC Static Pressure Performance of Vapor Recovery Systems of Dispensing Facilities", dated July 26, 2012, hereby incorporated by reference, and demonstrated in accordance with monitoring requirements in 36.5 of this regulation. Equation 9-2 with N=1-6 from TP-201.3 shall be used for the determination.~~

~~36.4.3.2 The owner or operator of any gasoline dispensing facility identified in 36.1.4.1.2 of this regulation shall identify the percentage of time the tank system pressure is greater than 0.5 inches water column below the positive cracking pressure of the P/V valve, on a weekly basis, demonstrated in~~

~~accordance with monitoring requirements in 36.5 of this regulation. The P/V valve positive cracking pressure shall be determined by the testing requirement in 36.6.2.1.3 of this regulation.~~

36.4.4 Enhanced conventional nozzles: Reserved.

36.4.5 Dispensing hose requirements: Reserved.

36.4.6 Any facility subject to subsection 36.4 ~~of this regulation~~ shall meet the following posting and maintenance ~~inspecting~~ inspection requirements.

36.4.6.1 Posting. Conspicuously post "Operating Instructions" on both sides of each gasoline dispenser. Such instructions shall include:

36.4.6.1.1 A clear description of how to correctly dispense gasoline.

36.4.6.1.2 A warning that repeated attempts to continue dispensing gasoline, after the system has indicated that the vehicle fuel tank is full (by automatically shutting off), may result in spillage.

36.4.6.1.3 A toll-free telephone number to report problems experienced with the gasoline dispensing system to the Department.

36.4.6.1.4 The owner or operator shall post "Out of Order" signs and "bag-out" the nozzle associated with any part of the defective gasoline dispensing system until said system has been repaired or replaced.

36.4.6.2 ~~Each day personnel~~ Inspection. Personnel shall perform daily routine maintenance inspections and record the inspection results following the recordkeeping requirements in subsection 36.7.1. Such inspections shall consist of, but not limited to, inspection of the dispensing systems for the following defects:

36.4.6.2.1 A nozzle liquid shutoff mechanism that malfunctions in any manner, where the spring or latching knurl is damaged or missing.

36.4.6.2.2 A hose with a disconnected or damaged breakaway.

36.4.6.2.3 A hose retractor that does not fully retract.

36.4.6.2.4 Any other component required by the Department for use in the dispensing system that is missing, disconnected, or malfunctioning.

36.5 ~~Monitoring~~ Requirements ~~and Corrective Action~~ for Stage I Facilities with Continuous Pressure Monitoring Systems

36.5.1 The owner or operator of any gasoline dispensing facility identified in ~~36.1.4.1.2 of this regulation~~ subsection 36.1.4.2 shall ~~design, install, operate, and maintain~~ use a continuous pressure monitoring (CPM) system as identified in Exhibit 1 Section II, Exhibit 2 Section II, and Exhibit 3 Section II of CARB Executive Order ~~VR-202-R, dated December 8, 2014~~ VR-202-W (August 30, 2018), hereby incorporated by reference as specified in subsection 36.11.5.1, to include ~~a console,~~ the leak detection software identified in VR-202-W, and use a console, a vapor pressure sensor, and an automatic tank gauge~~, in accordance with the following. A vapor flow meter for each dispenser is not required~~ as compatible per the CPM manufacturer. The owner or operator of any gasoline dispensing facility may petition the Department to allow the use of any other CPM system that ~~has been~~ is certified by CARB as being equivalent to the systems identified in CARB Executive Order ~~VR-202-R~~ VR-202-W, and the Department may allow such a system on a case-by-case basis.

36.5.2 The CPM system shall be designed, installed, maintained and repaired by the system manufacturer, or by a contractor that is trained and certified by the system manufacturer.

36.5.3 Within 10 days after installation of the required Stage I EVR system, an operability test of the CPM system shall be performed and passed in accordance with Exhibit 9 or Exhibit 10, as applicable, of CARB Executive Order VR-202-W (August 30, 2018), hereby incorporated by reference as specified in subsection 36.11.5.2 or subsection 36.11.5.3, as applicable.

36.5.4 The CPM system operability test, as specified in subsection 36.5.3, shall be performed and passed every 36 calendar months after the CPM system is installed.

36.5.5 Performance standards for the CPM system

36.5.5.1 The owner or operator of a gasoline dispensing facility with a CPM system shall maintain the tank vapor system at a volumetric leak rate less than or equal to two times the vapor volumetric leak rate allowed in accordance with California Air Resources Board (CARB) Vapor Recovery Test Procedure TP-201.3, "Determination of 2 Inch WC Static Pressure Performance of Vapor Recovery Systems of Dispensing Facilities" (July 26, 2012), hereby incorporated by reference as specified in subsection 36.11.6. Equation 9-2 with N=1-6 in TP-201.3 shall be used for the determination.

~~36.5.1.1~~36.5.5.2 The CPM system shall be operational a minimum of 95% of the time on a monthly basis and shall calculate and record the percentage of CPM operational time.

~~36.5.1.2~~36.5.5.3 The CPM system shall be capable of assessing the vapor volumetric leak rate ~~from~~ of the tank system at any working ullage pressure, both positive and negative.

~~36.5.2~~36.5.5.4 The CPM system shall assess, on a weekly basis (every seven days), the tank system vapor volumetric leak rate ~~and pressure~~.

36.5.6 CPM system warnings and correction requirements for tank leaks

~~36.5.3~~36.5.6.1 When the tank system vapor volumetric leak rate ~~fails~~ exceeds the requirement specified in ~~36.4.3.1 of this regulation, then:~~ subsection 36.5.5.1 the CPM system shall activate warnings.

~~36.5.3.1~~36.5.6.2 ~~The CPM system shall activate a warning alarm, and record the event. The~~ Within 21 days after the initial warning, the owner or operator ~~shall~~ shall:

36.5.6.2.1 Use a certified contractor or contractors to correct the excessive vapor ~~leak rate within one week of the alarm, and reset the CPM system once the correction has been made~~ volumetric leaks.

36.5.6.2.2 Notify the Department with all alarm data, information of the certified company or companies used for testing and corrective action or repair, details of corrective action or repair completed, results of all tests performed before and after the corrective action, and other information that the Department may require.

~~36.5.3.2~~36.5.6.3 ~~Following a corrective action pursuant to 36.5.3.1 of this regulation, the CPM system shall recommence monitoring the tank system. If within one week the tank system again fails to meet the requirements of 36.4.3.1 of this regulation the CPM shall activate a second warning alarm and record the event. Following the second warning alarm, the owner or operator shall use a certified compliance testing company or a certified underground storage tank retrofit/installation company to correct the excessive vapor leak.~~ The CPM system shall be reset, only after necessary corrective action or repair is performed, by the manufacturer or the certified contractor who has performed the correction or repair.

36.5.7 Written notification shall be submitted to the Department at least 10 days prior to the performance of any test required in subsection 36.5, unless otherwise approved by the Department.

36.5.8 All test results shall be reported to the Department within two (2) days after the tests. If a test fails, repair, corrective action and retesting shall be completed within 14 days.

36.6 ~~Testing~~ Requirements for Stage I Facilities without Continuous Pressure Monitoring Systems

~~36.6.1 Any gasoline dispensing facility subject to the requirements of 36.3 of this regulation shall perform and pass the following tests in accordance with the test methods and procedures stated, or as otherwise approved by the Department and EPA. Where any of the following test methods and procedures, in the opinion of the Department, conflict or are redundant with those specified in any CARB Executive Order adopted by reference in 36.10 of this regulation, the following test methods and procedures shall apply.~~

~~36.6.1.1 The following tests shall be performed and passed within 10 days of installation of the Stage II vapor recovery system:~~

~~36.6.1.1.1 A Pressure Decay/Leak Test, conducted in accordance with Test Procedure TP-96-1 of the San Diego Protocol, Revision III dated 3-1-96. This test procedure is hereby incorporated by reference.~~

~~36.6.1.1.2 A Dynamic Backpressure and Liquid Blockage Test, conducted in accordance with the procedures in "Recommended Practices for Installation and Testing of Vapor Recovery Systems at Vehicle Fueling Sites, PEI/RP300-97", Chapter 8. This test procedure is hereby incorporated by reference.~~

~~36.6.1.1.3 For assist systems, an Air to Liquid Volume Ratio Test conducted in accordance with the procedures in "Recommended Practices for Installation and Testing of Vapor Recovery Systems at Vehicle Fueling Sites, PEI/RP300-97", Chapter 9. This test procedure is hereby incorporated by reference.~~

~~36.6.1.1.4 A Vapor Tie Test, conducted in accordance with Test Procedure TP-96-1 of the San Diego Protocol, Revision III dated 3-1-96. This test procedure is hereby incorporated by reference.~~

~~36.6.1.2 The following tests shall be performed and passed annually for each Stage II vapor recovery system according to the test procedures stated in 36.6.1.1 of this regulation:~~

~~36.6.1.2.1 A Pressure Decay/Leak Test, as specified in 36.6.1.1.1 of this regulation.~~

~~36.6.1.2.2 For Balance Systems, A Dynamic Backpressure and Liquid Blockage Test as specified in 36.6.1.1.2 of this regulation.~~

~~36.6.1.2.3 For Assist Systems, An Air to Liquid Volume Ratio Test as specified in 36.6.1.1.3 of this regulation.~~

~~36.6.1.3 Any additional testing required by the Department or the manufacturer shall be carried out according to the schedule stated in any permit issued pursuant to 7 **DE Admin. Code** 1102.~~

~~36.6.2 Any gasoline dispensing facility subject to the requirements of 36.4 of this regulation shall perform and pass the following tests in accordance with the test methods and procedures stated, or as otherwise approved by the Department and EPA.~~

~~36.6.2.1 The following tests shall be performed and passed within 10 days of installation of the Stage I EVR system:~~

~~36.6.2.1.1 A Pressure Decay/Leak Test, conducted in accordance with Test Procedure TP-96-1 of the San Diego Protocol, Revision III dated 3-1-96. This test procedure is hereby incorporated by reference.~~

~~36.6.2.1.2 A Vapor Tie Test, conducted in accordance with Test Procedure TP-96-1 of the San Diego Protocol, Revision III dated 3-1-96. This test procedure is hereby incorporated by reference.~~

~~36.6.2.1.3 A P/V Valve Leak Rate and Cracking Pressure Test, conducted in accordance with CARB Test Procedure TP-201.1E dated October 8, 2003. This test procedure is hereby incorporated by reference.~~

~~36.6.2.1.4 For facilities subject to 46.4.3, an operability test of the CPM system in accordance with Exhibit 9 or Exhibit 10, as applicable, of CARB Executive Order VR-202-R, dated December 8, 2014, hereby incorporated by reference.~~

~~36.6.2.2 The CPM system operability test, as specified in 36.6.2.1.4 of this regulation, shall be performed and passed every three years after the CPM system is installed.~~

~~36.6.2.3 Owners and Operators subject to 36.4.2 shall conduct an annual pressure decay test (without any corrective action taken before or during the test on the day of the test) and a P/V valve test, as specified in 36.6.2.1.1 and 36.6.2.1.3 of this regulation, respectively. If the annual test is failed (meaning corrective action was needed on the day of the test), quarterly testing shall be required, and annual testing shall resume upon the passing of four consecutive quarterly tests.~~

36.6.1 The owner or operator of a gasoline dispensing facility identified in subsection 36.1.4.2 shall conduct monthly an inspection for the Stage I EVR system, which includes the following:

36.6.1.1 Manually check all dust caps for tightness. Check fill and Stage I swivel adapters to ensure they are tightly positioned. Check and ensure the jackscrew assembly is tight.

36.6.1.2 Manually check Stage I dry breaks to ensure they are tightly sealed. Check all dry break caps manually for tightness.

36.6.1.3 Manually check the automatic tank gauge (ATG) caps to ensure they are tightly sealed and that the associated electrical grommets and vent extractor caps are in good working condition.

36.6.1.4 Visually inspect the vent riser, P/V valve and cap for damage visible from the ground level.

36.6.1.5 Repair or replace any damaged or malfunctioning parts as soon as possible, but no later than the next monthly inspection.

36.6.1.6 Record all inspection results, and repairs if conducted, in a monthly log book, following the recordkeeping requirements in subsection 36.7.1.

36.6.2 Testing requirements. The owner or operator of a gasoline dispensing facility subject to subsection 36.6 shall conduct annually (every 12 calendar months) a pressure decay test as specified in subsection 36.4.2.1 and a P/V valve test as specified in subsection 36.4.2.3, without any corrective action taken before or during the test on the day of the test; and

36.6.2.1 If the pressure decay test fails, necessary repair and retesting shall be performed, and quarterly (every 3 calendar months) testing shall be required. The original annual testing schedule shall resume upon passing of two (2) consecutive quarterly tests.

36.6.2.2 If the P/V valve test fails, the valve shall be replaced with a new valve, and the new valve shall be tested before installation, as specified in subsection 36.4.2.3. If the P/V valve passes the test, the valve shall be reinstalled. The reinstalled the valve shall be retested with the next quarterly or annual pressure decay test, whichever comes first.

36.6.3 The Department may require the performance of any of the tests identified in ~~36.6.1 or~~ subsection 36.6.2 ~~of this regulation~~ at anytime at the owner's expense when the Department determines that the performance of such tests are necessary to ensure the proper operation of the facility or emission control equipment.

36.6.4 Written notification shall be submitted to the Department ~~not less than~~ at least 10 ~~working~~ days prior to the performance of any compliance test required in subsection 36.6, unless ~~approval~~ otherwise approved by the Department ~~is granted to the contrary~~.

36.6.5 The owner or operator ~~or both~~ and test contractor shall report all test failures to the Department within ~~24 hours of~~ two (2) days after the failure. If a test fails, repairs and testing specified in subsection 36.6.2 shall be completed and reported to the Department within 14 days after the failure.

~~36.6.6 The owner or operator shall submit the following to the Department within 30 days of the test date:~~

~~36.6.6.1 the actual test date; and~~

~~36.6.6.2 the installing or testing company's name, address, and phone number; and~~

~~36.6.6.3 if any corrective action was performed pursuant to 36.8.4.2 of this regulation then submit all information specified in 36.8.4 of this regulation.~~

36.7 Recordkeeping and Reporting

36.7.1 The owner or operator of a gasoline dispensing facility subject to the requirements of Section 36.0 ~~of this regulation~~ shall keep on the facility premises and in a form acceptable to the Department, all of the following information. This information shall be retained for at least ~~three~~ five (5) years, unless otherwise specified by the Department, from the date of record and shall be made immediately available to the Department upon request.

36.7.1.1 Permits and Applications. Copies of ~~the Stage I and Stage II System~~ all GDF permit applications and the current Construction~~/~~ and Operation Permits shall be permanently maintained.

36.7.1.2 Installation and Post-Installation Testing ~~Results~~ Records. The ~~test results~~ records shall be dated, and shall note the ~~installing~~ installation and test companies' names, addresses, and phone numbers. These records shall be kept on file until they are replaced with new ~~test results verifying~~ installation and post-installation testing records that also verify proper functioning of the Stage I and Stage II systems, as applicable.

36.7.1.3 Maintenance Records. Any maintenance conducted on any part of the Stage I or Stage II vapor recovery system shall be logged on a maintenance record. This maintenance record shall include a general part description, the date repaired or replaced, the replacement part manufacturer's information, and a description of the problem and solution. Maintenance records shall also include results of all tests, and corrective actions or repairs, if applicable, as required in subsections 36.3, 36.4, 36.5 and 36.6.

36.7.1.4 Inspection Records. A file shall be maintained of all ~~daily~~ inspection reports including records of daily ~~self-inspections~~ and monthly inspections, and any third party inspection records.

36.7.1.5 ~~The~~ For facilities with a CPM system specified in subsection 36.5, the CPM system shall generate a daily report which includes the following:

36.7.1.5.1 CPM system operational time as a percentage;

36.7.1.5.2 Percentage of time the tank system pressure is above atmospheric pressure;

36.7.1.5.3 ~~Percentage of time the tank system pressure is at or above 0.5 inches water column below the positive cracking pressure of the P/V valve.~~ The vapor volumetric leak rate in cubic feet per hour (CFH) if any is observed.

36.7.1.6 ~~The~~ For facilities with a CPM system specified in subsection 36.5, the CPM system shall generate a monthly report which includes the following:

36.7.1.6.1 CPM system operational time as a percentage;

36.7.1.6.2 Percentage of time the tank system pressure is above atmospheric pressure;

36.7.1.6.3 ~~Percentage of time the tank system pressure is at or above 0.5 inches water column below the positive cracking pressure of the P/V valve; and~~ The vapor volumetric leak rate in cubic feet per hour (CFH) if any is observed.

36.7.1.6.4 Warnings, including the date and time of each warning.

36.7.1.7 Compliance Records. A file shall be maintained of all compliance records. This record shall include:

36.7.1.7.1 Any warning letters and notices of violations issued by the Department to the facility within the past five years, the facility's responses and actions to the Department's warning or notice of violation, the facility's report of compliance to the Department after the facility's. actions, and the Department's approval of compliance.

36.7.1.7.2 Daily and monthly CPM system data records and reports shall be available for printing and electronic download at the facility, and be made available to the Department upon request.

Daily reports shall be available for the previous 12 months. Monthly reports shall be available for the previous 36 months.

36.7.1.7.3 The CPM system shall store the electronic records of the daily and monthly reports, such that the records are maintained despite loss of power to the CPM system.

36.7.1.7.4 Proof of attendance and completion of a training program for each person trained in accordance with subsection 36.3.2 ~~of this regulation~~. This does not apply to the records of an employee who is no longer in service for at least one year.

36.7.2 Any gasoline dispensing facility, including a GDF exempted from the requirements of Section 36.0 ~~of this regulation~~ pursuant to ~~36.1.1.1 of this regulation~~ subsection 36.1.1.1, shall maintain records of monthly throughput, and shall furnish these records to the Department upon request. These records shall be maintained on file for a minimum of ~~three~~ five (5) years from the date of record.

36.7.3 The owner or operator, or both, of any facility containing sources subject to Section 36.0 ~~of this regulation~~ shall also comply with the requirements of Section 5.0 of ~~this regulation~~ 7 **DE Admin. Code** 1124 "Compliance Certification, Recordkeeping, and Reporting Requirement for Non-Coating Sources".

36.8 Compliance Testing Company Requirements

36.8.1 Any owner or operator, or both, of any company that performs compliance testing pursuant to ~~36.6.1 or 36.6.2 of this regulation~~ applicable subsections 36.3, 36.4, 36.5, 36.6 and 36.9 within the State of Delaware shall submit all of the following information to the Department~~, prior~~ to ~~performing~~ become qualified to perform any compliance testing within the State of Delaware:

36.8.1.1 The name and business mailing address of the compliance testing company owner or operator;

36.8.1.2 The address and telephone number of the facility or facilities from which the daily compliance testing activities of the compliance testing company originate;

36.8.1.3 A written description of the employee training systems in place at the compliance testing company to ensure required compliance tests are performed in accordance with applicable protocols and procedures.

36.8.1.4 Certification by an individual who is a responsible and trained representative of the compliance testing company ~~containing~~ shall contain the following language ~~verbatim~~:

36.8.1.4.1 I certify that I personally examined and am familiar with the information contained in this document and all the attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including possible fines and imprisonment; and

36.8.1.4.2 Employee training systems are in place at the company to ensure compliance tests are performed in accordance with all applicable protocols and procedures; and

36.8.1.4.3 I am fully authorized to make this attestation on behalf of this Compliance Testing Company.

36.8.1.5 Any training or certification for performing the compliance tests on the systems as described in subsections 36.3, 36.4, 36.5 and 36.6, deemed necessary by the Department, shall be renewed as scheduled by the system manufacturer or the manufacturer's training contractor.

36.8.2 Any company subject to the requirements of ~~36.8 of this regulation~~ subsection 36.8.1 shall notify the Department in writing of any change to any information submitted to the Department within 14 days of the effective date of such change.

36.8.3 No ~~person~~ company or any of its employees or representatives subject to the requirements of subsection 36.8 ~~of this regulation~~ shall perform any compliance test, equipment installation or service procedures, unless said person has first been trained in accordance to applicable compliance test protocols and procedures.

36.8.4 Any person subject to subsection 36.8 ~~of this regulation~~ shall certify to the owner or operator of the gasoline dispensing facility that each compliance test performed to meet the applicable requirements of ~~36.3 and~~ subsections 36.3, 36.4, 36.5 and 36.6 ~~of this regulation~~ was performed in accordance with subsections 36.3, 36.4, 36.5 and 36.6 ~~of this regulation~~. Certification shall include:

36.8.4.1 The date each compliance test was first performed and the test results; and

36.8.4.2 An itemized list of all corrective action performed. This list shall include, but not be limited to, component re-installation, tightening, repair or replacement, as necessary, for the system to pass the applicable test or tests; and

36.8.4.3 The date each compliance test was performed and passed; and

36.8.4.4 Certification by a responsible and trained representative or representatives of the compliance testing company containing the following language verbatim:

36.8.4.4.1 I certify that I personally examined and am familiar with the information contained in this document and all the attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including possible fines and imprisonment; and

36.8.4.4.2 I am fully authorized to make this attestation on behalf of this Compliance Testing Company.

36.8.5 If at any time the Department determines that the owner or operator, or both, of any company that performs compliance testing does not meet the requirements of subsections 36.3, 36.4, 36.5, 36.6 and 36.9, a violation of this regulation may have occurred and enforcement action may ensue.

36.9 Stage II Decommissioning ~~Procedures~~ Requirements

36.9.1 The owner or operator of a gasoline dispensing facility shall decommission the Stage II vapor recovery system in accordance with all of the procedures specified in Chapter 14, except Section 14.6.14, of the Petroleum Equipment Institute's (PEI) "Recommended Practices for Installation and Testing of Vapor-Recovery Systems at Vehicle-Fueling Sites", ~~PEI/RP300-09~~ PEI/RP300-19 (2019), which is hereby incorporated by reference as specified in subsection 36.11.2.

36.9.2 On or after the effective date of ~~this regulation~~ Section 36.0, any site that has decommissioned a Stage II Vapor Recovery System shall cap the vapor return line at the tank top if accessible at the time of decommissioning, per ~~PEI/RP300-09~~ PEI/RP300-19 (2019), which is hereby incorporated by reference as specified in subsection 36.11.2. If not accessible at the time of decommissioning, the vapor return line shall be capped when a replacement or repair of the ~~underground~~ gasoline storage tank system or associated piping/components involves breaking concrete on top of the tank where the vapor return line terminates or when a pressure decay test indicates a problem with the vapor return line. ~~As part of the decommissioning process additional UST system testing may be required such as performing hydrostatic testing of sumps and line tightness testing of product lines, and ensuring non-vapor recovery nozzles have a flow rate of less than 10 GPM pursuant to Part B, Section 1.28 of the Delaware Regulations Governing Underground Storage Tanks, governing repair, upgrade, and retrofit requirements.~~

36.9.3 As a part of the decommissioning process, additional storage tank system requirements governing retrofits, repairs, upgrades and testing are incorporated by reference as specified in subsection 36.11.7, pursuant to 7 **DE Admin. Code** 1351 Underground Storage Tanks and 7 **DE Admin. Code** 1352 Aboveground Storage Tanks.

~~36.9.3~~36.9.4 Decommissioning procedures shall be performed only by Stage II vapor recovery system installers certified in the State of Delaware.

36.10 Approved Systems

The following lists of California Air Resources Board (CARB) executive orders (EOs) are hereby adopted by reference. In the lists, the term “Phase I” is equivalent to the term “Stage I,” and the term “Phase II” is equivalent to the term “Stage II,” as used in Section 36.0.

36.10.1 Stage II Vapor Recovery Systems.

Executive Order Number & Date	**Description**
G-70-7-AD (03/22/93)	Certification of the Hasstech Model VCP-2 and VCP 2A Phase II Vapor Recovery System.
G-70-14-AA (02/08/83)	Recertification of Red Jacket Aspirator Assist Phase II Vapor Recovery System.
G-70-17-AD (05/06/93)	Modification of Certification of the Emco Wheaton Balance Phase II Vapor Recovery System.
G-70-18-C (08/28/79)	Modification of Certification of the Shell Model 75B1 and 75B1-R3 Service Station Phase II Vapor Recovery System.
G-70-23-AC (04/29/96)	Recertification of the Exxon Balance Phase II Vapor Recovery System.
G-70-25-AA (02/08/83)	Recertification of the Atlantic Richfield Balance Phase II Vapor Recovery System.
G-70-33-AB (03/09/84)	Certification of the Modified Hirt VCS-200 Vacuum Assist Phase II Vapor Recovery System.

G-70-36-AD (09/18/92)	Modification of Certification of the OPW Balance Phase II Vapor Recovery System.
G-70-37-B (01/22/80)	Modification of the Certification of the Chevron Balance Phase II Vapor Recovery System with OPW nozzles for Service.
G-70-38-AB (12/19/90)	Recertification of the Texaco Balance Phase II Vapor Recovery System.
G-70-48-AA (02/08/83)	Recertification of the Mobil Oil Balance Phase II Vapor Recovery System.
G-70-49-AA (02/08/83)	Recertification of the Union Balance Phase II Vapor Recovery System.
G-70-52-AM (10/04/91)	Certification of Components for Red Jacket, Hirt and Balance Phase II Vapor Recovery System.
G-70-53-AA (02/08/83)	Recertification of the Chevron Balance Phase II Vapor Recovery System.
G-70-70-AC (06/23/92)	Certification of the Healy Phase II Vapor Recovery System of Service Stations.
G-70-77 (09/15/82)	Certification of the OPW Repair/Replacement Parts and Modification of the Certification of the OPW Balance Phase II Vapor Recovery System.
G-70-78 (05/20/83)	Certification of the E-Z Flo Nozzle Company Rebuilt Vapor Recovery Nozzles and Vapor Recovery Components.
G-70-101-B (11/15/85)	Certification of the E-Z Flo Model 3006 and 3007 Vapor Recovery Nozzles and Use of E-Z Flo Components with OPW Models 11 VC and 11 VE Vapor Recovery Nozzles.
G-70-107 (05/15/86)	Certification of Rainbow Petroleum Products Model RA3003, RA3005, RA3006 and RA3007 Vapor Recovery Nozzles and Vapor Recovery Components.
G-70-110 (01/20/87)	Certification of Stage I and II Vapor Recovery Systems for Methanol Fueling Facilities.
G-70-118-AB (03/31/95)	Certification of Amoco V-1 Vapor Recovery System.
G-70-125-AA (03/16/93)	Modification of the Certification of the Husky Model V Phase II Balance Vapor Recovery Nozzle.
G-70-127 (08/16/90)	Certification of the OPW Model 111-V Phase Vapor Recovery Nozzle.
G-70-134 (12/21/90)	Certification of the EZ Flo Rebuilt A-4000 Series and 11V-Series Vapor Recovery System.
G-70-139 (03/17/92)	Addition to the Certification of the Hirt Model VCS-200 Phase II Vapor Recovery System.
G-70-150-AE (07/12/00)	Modification of the Certification of the Gilbarco Vapor Vac Phase II Vapor Recovery System.
G-70-153-AD (04/03/00)	Modification to the Certification of the Dresser/Wayne WayneVac Phase II Vapor Recovery System.
G-70-154-AA (06/10/97)	Modification to the Certification of the Tokheim MaxVac Phase II Vapor Recovery System.
G-70-159-AB (07/17/95)	Modification of the Certification of the Saber Nozzle for Use with the Gilbarco VaporVac Phase II Vapor Recovery System.
G-70-163-AA (09/04/96)	Certification of the OPW VaporEZ Phase II Vapor Recovery System.

G-70-164-AA (12/10/96)	Modification to the Certification of the Hasstech VCP-3A Vacuum Assist Phase II Vapor Recovery System.
G-70-165 (04/20/95)	Healy Vacuum Assist Phase II Vapor Recovery System.
G-70-169-AA (08/11/97)	Modification to the Certification of the Franklin Electric INTELLIVAC Phase II Vapor Recovery System.
G-70-170 (02/22/96)	Certification of the EZ-flo Rebuilt 5005 and 5015 for use with the Balance Phase II Vapor Recovery System.
G-70-177-AA (06/22/00)	Certification of the VCS400-7 Vacuum Assist Phase II Vapor Recovery System.
G-70-179 (07/02/97)	Certification of the Catlow ICVN-V1 Vacuum Assist Phase II Vapor Recovery System.
G-70-180 (04/17/97)	Order Revoking Certification of the Healy Phase II Vapor Recovery Systems for Gasoline Dispensing Systems.
G-70-183 (03/04/98)	Certification of the Healy/Franklin Vacuum Assist Phase II Vapor Recovery System.
G-70-186 (10/26/98)	Certification of the Healy Model 400 ORVR Vapor Recovery System.
G-70-188 (05/18/99)	Certification of the Catlow ICVN Vapor Recovery Nozzle System for use with the Gilbarco VaporVac Vapor Recovery System.
G-70-191 (08/08/99)	Healy/Franklin VP-1000 Vapor Pump Phase II Vapor Recovery System (Healy ORVR Phase II Vapor Recovery System).
G-70-196 (12/30/00)	Certification of the Saber Technologies, LLC SaberVac VR Phase II Vapor Recovery System.

36.10.2 Stage I Enhanced Vapor Recovery (EVR) Systems

Executive Order Number	**Description**	**Date**
VR-101-~~N~~R	Phil-Tite Phase I Vapor Recovery System	~~June 8, 2013~~ June 3, 2019
VR-102-~~O~~S	OPW Phase I Vapor Recovery System	~~October 3, 2014~~ June 3, 2019
~~VR-103-G~~	~~EBW Phase I Vapor Recovery System~~	~~June 3, 2013~~ Expired
VR-104-~~G~~J	CNI Manufacturing Phase I Vapor Recovery System	~~June 8, 2013~~ June 3, 2019
VR-105-~~D~~G	EMCO Wheaton Retail Phase I Vapor Recovery	~~August 27, 2014~~ June 3, 2019
VR-401-~~D~~E	OPW Phase I EVR System for ASTs	~~May 12, 2014~~ June 29, 2015
VR-402-~~B~~D	Morrison Brothers Phase I EVR System for ASTs	~~April 15, 2013~~ March 29, 2016

36.11 Referenced Standards

36.11.1 Test Procedure TP-96-1 of the San Diego Protocol, Revision III (March 1, 1996). San Diego County Air Pollution Control District.

36.11.2 Recommended Practices for Installation and Testing of Vapor Recovery Systems at Vehicle Fueling Sites, PEI/RP300-19 (2019). Petroleum Equipment Institute (PEI).

36.11.3 Stage I EVR system maintenance and test requirements. California Air Resources Board. Specifically:

36.11.3.1 For Phil-Tite Phase I Vapor Recovery System: Exhibit 2 Installation, Maintenance and Compliance Specifications, Table 2-1 and Table 2-2, Executive Order VR-101-Q (June 1, 2018).

36.11.3.2 For OPW Phase I Vapor Recovery System: Exhibit 2 Installation, Maintenance and Compliance Standards and Specifications, Table 2-1 and Table 2-2, Executive Order VR-102-R (June 1, 2018).

36.11.3.3 For CNI Manufacturing Phase I Vapor Recovery System: Exhibit 2 Installation, Maintenance and Compliance Specifications, Table 2-1 and Table 2-2, Executive Order VR-104-I (June 1, 2018).

36.11.3.4 For EMCO Wheaton Retail Phase I Vapor Recovery: Exhibit 2 Installation, Maintenance and Compliance Specifications, Table 2-1 and Table 2-2, Executive Order VR-105-F (June 1, 2018).

36.11.3.5 For OPW Phase I EVR System for ASTs (Aboveground Storage Tanks): Exhibit 2 Installation, Maintenance, and Compliance Standards and Specifications, Table 2-1 and Table 2-2, Executive Order VR-401-E (June 29, 2015).

36.11.3.6 For Morrison Brothers Phase I EVR System for ASTs: Exhibit 2 Installation, Maintenance, and Compliance Standards and Specifications, Table 2-1 and Table 2-2, Executive Order VR-402-D (March 29, 2016).

36.11.4 Vapor Recovery Test Procedure TP-201.1E Leak Rate and Cracking Pressure of Pressure/Vacuum Vent Valve (October 8, 2003). California Air Resources Board.

36.11.5 Assist Phase II Enhanced Vapor Recovery (EVR) System including In-Station Diagnostics (ISD), Executive Order VR-202-W (August 30, 2018). California Air Resources Board. Specifically, the referenced standards include:

36.11.5.1 Exhibit 1 Section II, Exhibit 2 Section II, and Exhibit 3 Section II, for In-Station Diagnostics Systems.

36.11.5.2 Exhibit 9 Veeder-Root ISD (In-Station Diagnostics System) Operability Test Procedure.

36.11.5.3 Exhibit 10 Incon VRM (Vapor Recovery Monitoring System) Operability Test Procedure.

36.11.6 Vapor Recovery Test Procedure TP-201.3, Determination of 2 Inch WC Static Pressure Performance of Vapor Recovery Systems of Dispensing Facilities (July 26, 2012). California Air Resources Board.

36.11.7 7 **DE Admin. Code** 1351 Underground Storage Tanks and 7 **DE Admin. Code** 1352 Aboveground Storage Tanks. Tank Management Section, Division of Waste & Hazardous Substances, Delaware Department of Natural Resources and Environmental Control.

36.11.8 The referenced standards listed above have served in part as the basis for the standards in Section 36.0. The source from which a referenced standard is available is also listed. In addition, the referenced standards are available for review, with prior notification, at the offices of the Department's Division of Air Quality. The notification shall be made at least ten days prior to the review date.

36.11.9 All referenced standards in subsection 36.11 are specified by their codes or effective dates for their applicable editions or versions. Where there is an irreconcilable conflict between a referenced standard in subsection 36.11 and standards published by an industry or professional organization, the most stringent standard shall apply and control.

36.11.10 In subsection 36.11, the term "Phase I" is equivalent to the term "Stage I," and the term "Phase II" is equivalent to the term "Stage II".

19 DE Reg. 199 (09/01/15)

37.0 Graphic Arts Systems

03/11/11

37.1 Applicability

37.1.1 The provisions of 37.0 of this regulation apply to any packaging rotogravure, publication rotogravure, or flexographic printing press at any facility whose maximum theoretical emissions of volatile organic compounds (VOCs) (including solvents used to clean each of these printing presses) without control devices from all printing presses are greater than or equal to 7.7 tons per year on and after March 11, 2011 of this revision of 37.0 of this regulation.

37.1.2 Transition period for existing permitted sources. Every owner or operator of press that is subject to 37.5.1.2.2 of this regulation and that is covered by a permit issued pursuant to 7 **DE Admin. Code** 1102 or 1130 containing all applicable conditions of 37.0 of this regulation, as that regulation existed on November

29, 1994, shall comply with those permit conditions for up to one year after the effective date of this revision of 37.0 of this regulation. On and after the date one year after the effective date of this revision of 37.0 of this regulation, every such owner or operator of any flexible package printing facility shall comply with the provisions of 37.0 of this regulation.

37.1.3 An owner or operator of a facility whose emissions are below the applicability thresholds in 37.1.1 and 37.5.1.2.2 of this regulation shall comply with the certification, recordkeeping, and reporting requirements of 37.7.1 of this regulation.

37.1.4 Any facility that becomes or is currently subject to the provisions of 37.0 of this regulation by exceeding the applicability thresholds in 37.1.1 and 37.5.1.2.2 of this regulation will remain subject to these provisions even if its emissions later fall below the applicability thresholds.

37.1.5 Any facility that is currently subject to a state or federal rule promulgated pursuant to the Clean Air Act Amendments of 1977 by exceeding an applicability threshold is and will remain subject to these provisions, even if its throughput or emissions have fallen or later fall below the applicability threshold.

37.2 Definitions. As used in 37.0 of this regulation, all terms not defined herein shall have the meaning given them in the November 15, 1990 Clean Air Act Amendments, or in 2.0 of this regulation.

"**Add-on air pollution control device (APCD)**" means an emission control device or system that is originally separated from an emission source but can be later added or installed to the emission source to reduce emission from the source.

"**Flexible packaging**" means any package or part of a package the shape of which can be readily changed. Flexible packaging includes, but is not limited to, bags, pouches, liners, and wraps utilizing paper, plastic, film, aluminum foil, metalized or coated paper or film, or any combination of these materials.

"**Flexible packaging printing**" means printing, coating and laminating activities being performed on or in-line with a flexible packaging printing press.

"**Flexographic printing press**" means a printing press that uses a roll printing technique in which the pattern to be applied is raised above the printing roll and the image carrier is made of rubber or other elastomeric materials.

"**Packaging rotogravure printing press**" means a rotogravure printing press used to print on paper, paper board, metal foil, plastic film, and other substrates that are, in subsequent operations, formed into packaging products and labels, and other nonpublication products.

"**Press-Ready Ink**" means ink, as applied to a substrate, after all solvents and diluents have been added.

"**Printing press**" means equipment used to apply words, pictures, or graphic designs to either a continuous substrate or a sheet. A continuous substrate consists of paper, plastic, or other material that is unwound from a roll, passed through coating or ink applicators and any associated drying areas. The press includes all coating and ink applicators and drying areas between unwind and rewind of the continuous substrate. A sheet consists of paper, plastic, or other material that is carried through the process on a moving belt. The press includes all coating and ink applicators and drying operations between the time that the sheet is put on the moving belt until it is taken off.

"**Publication rotogravure printing press**" means a rotogravure printing press on which the following paper products are printed:

1. Catalogues, including mail order and premium.
2. Direct mail advertisements, including circulars, letters, pamphlets, cards, and printed envelopes.
3. Display advertisements, including general posters, outdoor advertisements, car cards, window posters; counter and floor displays; points-of-purchase, and other printed display material.
4. Magazines, books.
5. Miscellaneous advertisements, including brochures, pamphlets, catalogue sheets, circular folders, announcements, package inserts, book jackets, market circulars magazine inserts, and shopping news.
6. Newspapers, magazine and comic supplements for newspapers, and preprinted newspaper inserts, including hi-fi and spectacolor rolls and Sections.
7. Periodicals.
8. Telephone and other directories, including business reference services.

"**Roll printing**" means the application of words, designs, and pictures to a substrate, usually by means of a series of rolls each with only partial coverage.

"**Rotogravure printing press**" means any printing press designed to print on a substrate using a gravure cylinder.

37.3 Standards

37.3.1 No owner or operator of a packaging rotogravure or flexographic printing press subject to 37.0 of this regulation shall apply any coating or ink unless the VOC content is equal to or less than one of the following:

37.3.1.1 40% VOC by volume of the coating or ink, excluding water and exempt compounds, as applied.

37.3.1.2 25% VOC by volume of the volatile content in the coating or ink, as applied.

37.3.1.3 0.5 kilogram (kg) VOC per kg (0.5 pound [lb] VOC per lb) coating solids, as applied.

37.3.2 No owner or operator of a publication rotogravure printing press subject to 37.0 of this regulation shall apply any coating or ink unless the VOC content is equal to or less than one of the following:

37.3.2.1 40% VOC by volume of the coating or ink, excluding water and exempt compounds, as applied.

37.3.2.2 25% VOC by volume of the volatile content in the coating or ink, as applied.

37.3.3 As an alternative to compliance with the limits in 37.3.1 or 37.3.2 of this regulation, an owner or operator of a packaging rotogravure, publication rotogravure, or flexographic printing press may comply with the requirements of of this regulation by meeting the requirements of 37.4 or 37.5 of this regulation.

37.4 Daily-weighted average limitations

37.4.1 No owner or operator of a packaging rotogravure, publication rotogravure, or flexographic printing press shall apply, during any day, coatings or inks on the subject printing press unless the daily-weighted average, by volume, VOC content of all coatings and inks, as applied, each day on the subject printing press is equal to or less than the limitation specified in either 37.3.1.1 or 37.3.2.1 (as determined by 37.4.4); 37.3.1.2 or 37.3.2.2 (as determined by 37.4.5); or, in the case of packaging rotogravure or flexographic printing, 37.3.1.3 (as determined by 37.4.6) of this regulation.

37.4.2 An owner or operator may comply with the daily-weighted average limitation by grouping coatings or inks used on a printing press into two categories that meet the conditions in 37.4.2.1 and 37.4.2.2 of this regulation. Any use of averaging between the two categories of coating or inks used on a packaging rotogravure press or on a flexographic press requires compliance with the emission standard in 37.3.1.3 of this regulation, as determined by the equation in 37.4.6 of this regulation.

37.4.2.1 The daily-weighted average VOC content for the first category shall comply with 37.3.1.1 or 37.3.2.1 of this regulation, as determined by applying the equation in 37.4.4 of this regulation to the coatings or inks in this first category.

37.4.2.2 The daily weighted-average VOC content for the second category shall comply with 37.3.1.2 or 37.3.2.2 of this regulation, as determined by applying the equation in 37.4.5 of this regulation to the coatings or inks in this second category.

37.4.3 Compliance with 37.0 of this regulation shall be demonstrated through the applicable coating or ink analysis test methods and procedures specified in **Appendix B** of this regulation and the recordkeeping and reporting requirements specified in 37.7.3 of this regulation.

37.4.4 The following equation shall be used to determine if the weighted average VOC content of all coatings and inks, as applied, each day on the subject printing press exceeds the limitation specified in 37.3.1.1 or 37.3.2.1 of this regulation:

$$VOC_{(i)(A)} = \frac{\sum_{i=1}^{n} L_i V_{VOCi}}{\sum_{i=1}^{n} L_i (V_{si} + V_{VOCi})} \times 100$$

(37-1)

where:

$VOC_{(i)(A)}$ = The weighted average VOC content in units of percent VOC by volume of all coatings and inks (excluding water and exempt compounds) used each day.

i = Subscript denoting a specific coating or ink, as applied.

n = The number of different coatings or inks, as applied, each day on a printing press.

L_i = The liquid volume of each coating or ink, as applied, used that day in units of liters (L) (gallons [gal]).

V_{si} = The volume fraction of solids in each coating or ink, as applied.

V_{VOCi} = The volume fraction of VOC in each coating or ink, as applied.

37.4.5 The following equation shall be used to determine if the weighted average VOC content of all coatings and inks, as applied, each day on the subject printing press exceeds the limitation specified in 37.3.1.2 or 37.3.2.2 of this regulation:

$$VOC_{(i)(B)} = \frac{\sum_{i=1}^{n} L_i V_{VOCi}}{\sum_{i=1}^{n} L_i (V_{VCi})} \times 100$$

(37-2)

where:

$VOC_{(i)(B)}$ = The weighted average VOC content in units of percent VOC by volume of the volatile content of all coatings and inks used each day.

i = Subscript denoting a specific coating or ink, as applied.

n = The number of different coatings or inks, as applied, each day on each printing press.

L_i = The liquid volume of each coating or ink, as applied, in units of L (gal).

V_{VOCi} = The volume fraction of VOC in each coating or ink, as applied.

V_{VCi} = The volume fraction of volatile matter in each coating or ink, as applied.

37.4.6 The following equation shall be used to determine if the weighted average VOC content of all coatings and inks, as applied, each day on the subject printing press exceeds the limitation specified in 37.3.1.3 of this regulation:

$$VOC_{(i)(C)} = \frac{\sum_{i=1}^{n} L_i D_i W_{VOCi}}{\sum_{i=1}^{n} L_i D_i W_{si}}$$

(37-3)

where:

$VOC_{(i)(C)}$ = The weighted average VOC content in units of mass of VOC per mass of coating solids.

i = Subscript denoting a specific coating or ink, as applied.

n = The number of different coatings or inks, as applied, each day on a printing press.

L_i = The liquid volume of each coating or ink, as applied, used on the day in units of L (gal).

D_i = The density of each, as applied, in units of mass of coating or ink per unit volume of coating or ink.

W_{VOCi} = The weight fraction of VOC in each coating or ink, as applied.

W_{si} = The weight fraction of solids in each coating or ink, as applied.

37.5 Control devices

37.5.1 No owner or operator of a packaging rotogravure, publication rotogravure, or flexographic printing press equipped with a control system shall operate the printing press unless the owner or operator meets one of the requirements under 37.5.1.1 and 37.5.1.2 of this regulation.

37.5.1.1 Control device efficiency

37.5.1.1.1 A carbon adsorption control device is used that reduces the VOC emissions delivered from the capture system to the control device by at least 90% by weight.

37.5.1.1.2 An incineration control device is used to reduce VOC emissions delivered from the capture system to the control device by at least 90%, by weight.

37.5.1.1.3 Any other VOC emission control device is used to reduce the VOC emissions delivered from the capture system to the control device by at least 90%.

37.5.1.2 Overall control efficiency. The printing press is equipped with a capture system and control device that provides:

37.5.1.2.1 For any press not subject to 37.5.1.2.2 of this regulation, an overall emission reduction efficiency of at least:

37.5.1.2.1.1 75% for a publication rotogravure printing press.

37.5.1.2.1.2 65% for a packaging rotogravure printing press.

37.5.1.2.1.3 60% for a flexographic printing press.

37.5.1.2.2 For any individual flexible packing printing press with the potential-to-emit before controls greater than 25 tons of VOC per year, an overall emission reduction efficiency specified in 37.5.1.2.1, or specified in 37.5.1.2.2.1 through 37.5.1.2.2.4 below, whichever is higher:

37.5.1.2.2.1 80% for any press that was first installed on or after March 14, 1995 and that is controlled by an APCD whose first installation date was on or after March 11, 2011.

37.5.1.2.2.2 75% for any press that was first installed on or after March 14, 1995 and that is controlled by an APCD whose first installation date was prior to March 11, 2011.

37.5.1.2.2.3 70% for any press that was first installed prior to March 14, 1995 and that is controlled by an APCD whose first installation date was on or after March 11, 2011.

37.5.1.2.2.4 65% for any press that was first installed prior to March 14, 1995 and that is controlled by an APCD whose first installation date was prior to March 11, 2011.

37.5.2 An owner or operator of a packaging rotogravure, publication rotogravure, or flexographic printing press equipped with a control system shall ensure that:

37.5.2.1 A capture system and control device are operated at all times that the printing press is in operation, and the owner or operator demonstrates compliance with 37.0 of this regulation through the applicable coating analysis and capture system and control device efficiency test methods specified in **Appendix B**, **Appendix D** and **Appendix E** of this regulation and in accordance with the capture efficiency test methods in **Appendix D** of this regulation.

37.5.2.2 The control device is equipped with the applicable monitoring equipment specified in 2.0 of **Appendix D** of this regulation, and the monitoring equipment is installed, calibrated, operated, and maintained according to the vendor's specifications at all times the control device is in use.

37.6 Test methods. The VOC content of each coating and ink and the efficiency of each capture system and control device shall be determined by the applicable test methods and procedures specified in **Appendix A** through **Appendix D** of this regulation to establish the records required under 37.7 of this regulation.

37.7 Recordkeeping and reporting

37.7.1 Requirements for exempt sources. Within six months after March 11, 2011, any owner or operator of a printing press that is exempt from the requirements of 37.0 of this regulation because of the criteria in 37.1 of this regulation shall comply with the following:

37.7.1.1 Initial certification. The owner or operator shall certify to the Department that the facility is exempt under the provisions of 37.1 of this regulation. Such certification shall include:

37.7.1.1.1 The name and location of the facility.

37.7.1.1.2 The address and telephone number of the person responsible for the facility.

37.7.1.1.3 A declaration that the facility is exempt from 37.0 of this regulation because of the criteria in 37.1 of this regulation.

37.7.1.1.4 Calculations demonstrating that total potential emissions of VOC from all flexographic and rotogravure printing presses at the facility are and will be less than 7.7 tons per year of press-ready ink, before the application of capture systems and control devices. Total potential emissions of VOC for a flexographic or rotogravure printing facility is the sum of potential emissions of VOC from each flexographic and rotogravure printing press at the facility. The following equation shall be used to calculate total potential emissions of VOC per calendar year before the application of capture systems and control devices for each flexographic and rotogravure printing press at the facility:

$$E_P = A \times B$$

(37-4)

where:

E_P = Total potential emissions of VOC from one flexographic or rotogravure printing press in units of kilograms per year (kg/yr) (pounds per year [lb/yr]).

A = Weight of VOC per volume of solids of the coating or ink with the highest VOC content, as applied, each year on the printing press in units of kilograms VOC per liter (kg VOC/L) (pounds of VOC per gallon [lb VOC/gal]) of coating or ink solids.

B = Total volume of solids for all coatings and inks that can potentially be applied each year on the printing press in units of liters per year (L/yr) (gallons per year [gal/yr]). The instrument or method by which the owner or operator accurately measured or calculated the volume of coating and ink solids applied and the amount that can potentially be applied each year on the printing press shall be described in the certification to the Department.

37.7.1.2 Recordkeeping. The owner or operator shall collect and record all of the following information each year for each printing press and maintain the information at the facility for a period of five years:

37.7.1.2.1 The name and identification number of each coating and ink, as applied, each year on each printing press.

37.7.1.2.2 The weight of VOC per volume of coating solids and the volume of solids of each coating and ink, as applied, each year on each printing press.

37.7.1.2.3 The total potential emissions as calculated in 37.7.1.1.4 of this regulation using VOC content for that year.

37.7.1.3 Reporting. Any record showing that total potential emissions of VOC from all printing presses exceed 7.7 tons per year of press-ready ink in any calendar year before the application of capture systems and control devices shall be reported by sending a copy of such record to the Department within 45 calendar days after the exceedance occurs. This requirement is in addition to any other State of Delaware exceedance reporting requirements.

37.7.2 Requirements for sources using complying coatings or inks. Any owner or operator of a printing press subject to 37.0 of this regulation and complying by means of use of complying coatings or inks, shall comply with the following:

37.7.2.1 Initial certification. Within six months after [insert the effective date of this revision of 37.0, or upon initial startup of a new printing press, or upon changing the method of compliance for an existing subject printing press from daily-weighted averaging or control devices to use of complying coatings or inks, the owner or operator of a subject printing press shall certify to the Department that the printing press will be in compliance with 37.3.1 or 37.3.2 of this regulation on and after March 11, 2011, or on and after the initial startup date. Such certification shall include:

37.7.2.1.1 The name and location of the facility.

37.7.2.1.2 The address and telephone number of the person responsible for the facility.

37.7.2.1.3 Identification of subject sources.

37.7.2.1.4 The name and identification number of each coating and ink, as applied.

37.7.2.1.5 The VOC content of all coatings and inks, as applied.

37.7.2.2 Recordkeeping. On and after March 11, 2011, or on and after the initial startup date, the owner or operator of a printing press subject to the limitations of 37.0 of this regulation and complying by means of 37.3.1.1 or 37.3.2.1 of this regulation shall collect and record all of the following information each day for each printing press and maintain the information at the facility for a period of five years:

37.7.2.2.1 The name and identification number of each coating and ink, as applied.

37.7.2.2.2 The VOC content of each coating and ink, as applied, expressed in units necessary to determine compliance.

37.7.2.3 Reporting.

37.7.2.3.1 Any record showing an exceedance of the VOC contents of 37.3.1 or 37.3.2 of this regulation shall be reported by the owner or operator of the subject printing press to the Department within 45 calendar days following the exceedance, in addition to complying with any other applicable reporting requirements.

37.7.2.3.2 At least 30 calendar days before changing the method of compliance with 37.0 of this regulation from the use of complying coatings to daily-weighted averaging or control devices, the owner or operator shall comply with all requirements of 37.7.3.1 or 37.7.4.1 of this regulation, respectively, as well as the requirements of 7 **DE Admin. Code** 1102. Upon changing the method of compliance with 37.0 of this regulation from the use of complying

coatings to daily-weighted averaging or control devices, the owner or operator shall comply with all requirements of 37.7.3 or 37.7.4 of this regulation, respectively.

37.7.3 Requirements for sources using daily-weighted averaging. Any owner or operator of a printing press subject to the limitations of 37.0 of this regulation and complying by means of daily-weighted averaging shall comply with the following:

37.7.3.1 Initial certification. Within six months after March 11, 2011, or upon initial startup of a new printing press, or upon changing the method of compliance for an existing subject press from use of complying coating or control devices to daily-weighted averaging, the owner or operator of the subject printing press shall certify to the Department that the printing press will be in compliance with 37.4 of this regulation on and after March 11, 2011, or on and after the initial startup date. Such certification shall include:

37.7.3.1.1 The name and location of the facility.

37.7.3.1.2 The address and telephone number of the person responsible for the facility.

37.7.3.1.3 The name and identification of each printing press that will comply by means of 37.4 of this regulation.

37.7.3.1.5 The name and identification number of each coating and ink available for use on each printing press.

37.7.3.1.6 The VOC content of each coating and ink, as applied, each day on each printing press, expressed in units necessary to determine compliance.

37.7.3.1.7 The instrument or method by which the owner or operator will accurately measure or calculate the volume of each coating and ink, as applied, each day on each printing press.

37.7.3.1.8 The method by which the owner or operator will create and maintain records each day as required in 37.7.3.2 of this regulation.

37.7.3.1.9 An example of the format in which the records required in 37.7.3.2 of this regulation will be kept.

37.7.3.2 Recordkeeping. On and after March 11, 2011, or on and after the initial startup date, the owner or operator of a printing press subject to the limitations of 37.0 of this regulation and complying by means of daily-weighted averaging shall collect and record all of the following information each day for each printing press and maintain the information at the facility for a period of five years:

37.7.3.2.1 The name and identification number of each coating and ink, as applied, on each printing press.

37.7.3.2.2 The VOC content and the volume of each coating and ink, as applied, each day on each printing press, expressed in units necessary to determine compliance.

37.7.3.2.3 The daily-weighted average VOC content of all coatings and inks, as applied, on each printing press.

37.7.3.3 Reporting. On and after March 11, 2011, the owner or operator of a subject printing press shall notify the Department in the following instances:

37.7.3.3.1 Any record showing noncompliance with 37.4 of this regulation shall be reported by sending a copy of such record to the Department within 45 calendar days following the occurrence. This requirement is in addition to any other State of Delaware exceedance reporting requirements.

37.7.3.3.2 At least 30 calendar days before changing the method of compliance with 37.0 of this regulation from daily-weighted averaging to use of complying coatings or control devices, the owner or operator shall comply with all requirements of this regulation, respectively, as well as 7 **DE Admin. Code** 1102. Upon changing the method of compliance with 37.0 of this regulation from daily-weighted averaging to use of complying coatings or control devices, the owner or operator shall comply with all requirements of 37.7.2 or 37.7.4 of this regulation, respectively.

37.7.4 Requirements for sources using control devices. Any owner or operator of a printing press subject to 37.0 of this regulation and complying by means of control devices shall comply with 4.5 of this regulation and the following:

37.7.4.1 Initial certification. Within six months after March 11, 2011, or upon initial startup of a new printing press, or upon changing the method of compliance for an existing printing press from use of complying coatings or daily-weighted averaging to control devices, the owner or operator of the subject printing press shall perform all tests and submit to the Department the results of all tests and calculations necessary to demonstrate that the subject printing press will be in compliance with 37.5 of this regulation, on and after March 11, 2011, or on and after the initial startup date.

37.7.4.2 Recordkeeping. On and after March 11, 2011, or on and after the initial startup date, the owner or operator of a printing press subject to the limitations of 37.0 of this regulation and complying by means of control devices shall collect and record all of the following information each day for each printing press and maintain the information at the facility for a period of five years:

37.7.4.2.1 Control device monitoring data.

37.7.4.2.2 A log of operating time for the capture system, control device, monitoring equipment and the associated printing press.

37.7.4.2.3 A maintenance log for the capture system, control device, and monitoring equipment detailing all routine and non-routine maintenance performed including dates and duration of any outages.

37.7.4.3 Reporting. On and after March 11, 2011, the owner or operator of a subject printing press shall notify the Department in the following instances:

37.7.4.3.1 Any record showing non-compliance with 37.5 of this regulation shall be reported by sending a copy of such record to the Department within 45 calendar days following the occurrence. This requirement is in addition to any other State of Delaware exceedance reporting requirements.

37.7.4.3.2 At least 30 calendar days before changing the method of compliance with 37.0 of this regulation from control devices to use of complying coatings or daily-weighted averaging, the owner or operator shall comply with all requirements of 37.7.2.1 or 37.7.3.1 of this regulation, respectively, as well as 7 **DE Admin. Code** 1102. Upon changing the method of compliance with 37.0 of this regulation from control devices to use of complying coatings or daily-weighted averaging, the owner or operator shall comply with all requirements of 37.7.2 or 37.7.3 of this regulation, respectively.

14 DE Reg. 902 (03/01/11)

38.0 Petroleum Solvent Dry Cleaners

01/11/1993

38.1 Applicability

38.1.1 The provisions of 38.0 of this regulation apply to petroleum solvent dry cleaning facilities.

38.1.2 Any petroleum solvent dry cleaning facility that consumes less than 123,000 liters (L) (32,500 gallons [gal]) of petroleum solvent per year is subject only to the requirements of 38.5.1 of this regulation. Any facility that becomes or is currently subject to all of the provisions of 38.0 of this regulation by exceeding this applicability threshold will remain subject to these provisions even if its consumption of petroleum solvent later falls below the applicability threshold. Any facility that is currently subject to a state or federal rule promulgated pursuant to the Clean Air Act Amendments of 1977 by exceeding an applicability threshold is and will remain subject to these provisions, even if its throughput or emissions have fallen or later fall below the applicability threshold.

38.1.3 The provisions of 38.0 of this regulation do not apply to facilities that use only petroleum-based solvents that contain chlorine.

38.2 Definitions. As used in 38.0 of this regulation, all terms not defined herein shall have the meaning given them in the November 15, 1990 Clean Air Act Amendments, or in 2.0 of this regulation.

"**Filter cartridge**" means a replaceable filter unit containing filtration paper and carbon or carbon only.

"**Perceptible leaks**" means any petroleum solvent vapor or liquid leaks that are conspicuous from visual observation or that bubble after application of a soap solution, such as pools or droplets of liquid, open containers of solvent, or solvent-laden waste standing open to the atmosphere.

"**Petroleum solvent cartridge filtration system**" means a process in which soil-laden solvent is pumped under pressure from a washer through a sealed vessel containing filter cartridges that remove entrained solids and impurities from the solvent.

"**Petroleum solvent dry cleaning facility**" means a facility engaged in the cleaning of fabrics, clothing, and other articles in a petroleum solvent by means of one or more washes in the solvent, extraction of excess solvent by spinning, and drying by tumbling in an airstream. Equipment at the facility includes, but is not limited to, any petroleum solvent washer, dryer, solvent filter system, settling tank, vacuum still, and any other container or conveyor of petroleum solvent.

"**Settling tank**" means a container, and any associated piping and ductwork, that gravimetrically separates oils, grease, and dirt from petroleum solvent.

"**Solvent filter**" means a discrete solvent filter unit containing a porous medium that traps and removes contaminants from petroleum solvent, together with the piping and ductwork used in installing this device.

"**Solvent recovery dryer**" means a class of dry cleaning dryers that employs a condenser to condense and recover solvent vapors evaporated in a closed-loop stream of heated air, together with the piping and ductwork used in installing this device.

"**Standard dryer**" means a device that dries dry-cleaned articles by tumbling in a heated airstream.

"**Still**" means a device used to volatilize, separate, and recover petroleum solvent from contaminated olvent, together with the piping and ductwork used in installing this device.

"**Washer**" means a machine which agitates fabric articles in a petroleum solvent bath and spins the articles to remove the solvent, together with the piping and ductwork used in installing this device.

38.3 Standards

38.3.1 Fugitive emissions. The owner or operator of a petroleum solvent dry cleaning facility subject to 38.0 of this regulation shall ensure that:

38.3.1.1 There are no perceptible leaks from any portion of the equipment.

38.3.1.2 All washer lint traps, button traps, access doors, and other parts of the equipment where solvent may be exposed to the atmosphere are kept closed at all times except when opening is required for proper operation or maintenance.

38.3.2 Leak repair. The owner or operator of a petroleum solvent dry cleaning facility subject to 38.0 of this regulation shall repair any perceptible leaks in any portion of the dry cleaning equipment within three working days after the leak is detected. If necessary repair parts are not on hand, the owner or operator shall order these parts within three working days and repair the leaks no later than three working days after the parts arrive.

38.3.3 Dryers. The owner or operator of a petroleum solvent dry cleaning facility subject to 38.0 of this regulation shall do one of the following:

38.3.3.1 Limit the volatile organic compound (VOC) emissions from each standard dryer to 1.6 kilograms (kg) (3.5 pounds [lb]) VOC per 45 kg (100 lb) dry weight of articles dry cleaned.

38.3.3.2 Install, maintain, and operate a solvent-recovery dryer such that the dryer remains closed and the recovery phase continues until a final recovered solvent flow rate of no greater than 50 milliliters per minute (ml/min) (0.013 gallons per minute [gal/min]) is attained.

38.3.4 Filtration systems. The owner or operator of a petroleum solvent filtration system subject to 38.0 of this regulation shall do either 38.3.4.1 or 38.3.4.2 of this regulation:

38.3.4.1 Reduce the VOC content in filtration waste to one kg (2.2 lb) VOC per 100 kg (220 lb) dry weight of articles dry cleaned.

38.3.4.2.1 Install, maintain, and operate a cartridge filtration system according to the manufacturer's instructions.

38.3.4.2.2 Drain all filter cartridges in their sealed housings for eight hours or more before removing them.

38.4 Test methods and procedures

38.4.1 To be in compliance with 38.3.3.1 of this regulation, each owner or operator of a petroleum solvent dry cleaning facility subject to 38.0 of this regulation shall:

38.4.1.1 Calculate the weight of VOCs vented from the dryer emission control device calculated by using Methods 1, 2, and 25A (40 CFR, Part 60, **Appendix A**, July 1, 1992) with the following specifications:

38.4.1.1.1 Field calibration of the flame ionization analyzer with propane standards.

38.4.1.1.2 Laboratory determination of the ratio of the flame ionization analyzer response to a given parts per million (ppm) by volume concentration of propane to the response to the same ppm concentration of the VOCs to be measured.

38.4.1.1.3 Determination of the weight of VOCs vented to the atmosphere by:

38.4.1.1.3.1 Multiplying the ratio determined in 38.4.1.1.2 of this regulation by the measured concentration of VOC gas (as propane) as indicated by the flame ionization analyzer response output record.

38.4.1.1.3.2 Converting the ppm by volume value calculated in 38.4.1.1.3.1 of this regulation into a mass concentration value for the VOCs present.

38.4.1.1.3.3 Multiplying the mass concentration value calculated in 38.4.1.1.3.2 of this regulation by the exhaust flow rate determined by using Methods 1 and 2.

38.4.1.2 Calculate the dry weight of articles dry cleaned.

38.4.1.3 Repeat 38.4.1.1 and 38.4.1.2 of this regulation for normal operating conditions that encompass at least 30 dryer loads, which total not less than 1,800 kg (4,000 lb) dry weight and represent a normal range of variations in fabrics, solvents, load weights, temperatures, flow rates, and process deviations.

38.4.2 To determine initial compliance with 38.3.3.2 of this regulation, the owner or operator of a petroleum solvent dry cleaning facility shall:

38.4.2.1 Verify that the flow rate of recovered solvent from the solvent-recovery dryer at the end of the recovery phase is no greater than 50 ml/min (0.013 gal/min) by:

38.4.2.1.1 Determining the appropriate location for measuring the flow rate of recovered solvent; the suggested point is at the outlet of the solvent-water separator.

38.4.2.1.2 Near the end of the recovery cycle, diverting the flow of recovered solvent to a graduated cylinder.

38.4.2.1.3 Continuing the cycle until a flow rate of solvent no greater than 50 ml/min (0.013 gal/min) is reached.

38.4.2.1.4 Recording the type of articles dry cleaned and the length of the cycle.

38.4.2.2 To determine initial compliance with 38.3.3.2 of this regulation, conduct the procedure in 38.4.2.1 of this regulation for at least 50% of the dryer loads over a period of no less than two consecutive weeks.

38.4.3 To be in compliance with 38.3.4 of this regulation, the owner or operator of a petroleum solvent dry cleaning facility subject to 38.0 of this regulation shall:

38.4.3.1 Calculate the weight of volatile organic compounds (VOCs) contained in each of at least five 1-kg (2.2-lb) samples of filtration waste material taken at intervals of at least one week, by employing ASTM D322-80 (Standard Test Method for Gasoline Diluent in Used Gasoline Engine Oils by Distillation).

38.4.3.2 Calculate the total dry weight of articles dry cleaned during the intervals between removal of filtration waste samples, as well as the total mass of filtration waste produced in the same period.

38.4.3.3 Calculate the weight of VOCs contained in filtration waste material per 100 kg (220 lb) dry weight of articles dry cleaned.

38.4.4 Compliance with 38.3 of this regulation requires that each owner or operator of a petroleum solvent dry cleaning facility subject to 38.0 of this regulation make weekly inspections of washers, dryers, solvent filters, settling tanks, vacuum stills, and all containers and conveyors of petroleum solvent to identify perceptible VOC vapor or liquid leaks.

38.5 Recordkeeping requirements

38.5.1 The owner or operator of a petroleum solvent dry cleaning facility claiming exemption from 38.0 of this regulation shall maintain records of annual solvent consumption in a readily accessible location for at least five years to document whether the applicability threshold in 38.1.2 of this regulation has been exceeded.

38.5.2 The owner or operator of a petroleum solvent dry cleaning facility subject to 38.0 of this regulation shall maintain the following records in a readily accessible location for at least five years:

38.5.2.1 Records of the weight of VOCs vented from the dryer emission control device calculated according to 38.4.1.1 of this regulation.

38.5.2.2 Records of the dry weight of articles dry cleaned for use in the calculations required in 38.4.1, 38.4.2 and 38.4.3 of this regulation.

38.5.2.3 Records of the weight of VOCs contained in the filtration waste samples required by 38.4.3.1 of this regulation.

38.5.2.4 Records of the weight of VOCs in filtration waste material per 100 kg (220 lb) dry weight of articles dry cleaned.

38.6 Reporting requirements. The owner or operator of any facility containing sources subject to 38.0 of this regulation shall:

38.6.1 Comply with the initial compliance certification requirements of 5.1 of this regulation.

38.6.2 Comply with the requirements of 5.2 of this regulation for excess emissions related to the control devices required to comply with 38.3.2, 38.3.3.2 and 38.3.4.2 of this regulation. as well as any other State of Delaware exceedance reporting requirements.

39.0 [RESERVED]

06/30/1999

40.0 Leaks from Synthetic Organic Chemical, Polymer, and Resin Manufacturing Equipment.

01/11/1993

40.1 Applicability

40.1.1

40.1.1.1 The provisions of 40.0 of this regulation applies to all equipment in volatile organic compound (VOC) service in any process unit at a synthetic organic chemical, polymer, and resin production facility which manufactures, as an intermediate or end product, Methyl tert-Butyl Ether, Polyethylene, Polypropylene, Polystyrene, and those organic chemicals given in Section 60.489 of 40 CFR, Part 60 (July 1, 1992).

40.1.1.2 A piece of equipment is not in VOC service if the VOC content of the process fluid can never be reasonably expected to exceed 10% by weight. For purposes of this demonstration, the following methods and procedures shall be used:

40.1.1.2.1 Procedures that conform to the general methods in ASTM E260, E168, and E169 shall be used to determine the percent VOC content in the process fluid that is contained in or contacts a piece of equipment.

40.1.1.2.2 Organic compounds that are considered by the Administrator of the U.S. EPA to have negligible photochemical reactivity may be excluded from the total quantity of organic compounds in determining the VOC content of the process fluid.

40.1.1.2.3 Engineering judgment may be used to estimate the VOC content, if a piece of equipment had not been shown previously to be in VOC service. If the Department disagrees with the judgment, 40.9.2.1, 40.9.2.2 and 40.9.2.3 of this regulation shall be used to resolve the disagreement.

40.1.2 The provisions of 40.0 of this regulation does not apply to any synthetic organic chemical, polymer, or resin manufacturing facility whose annual design production capacity is less than 1,000 megagrams (Mg) (1,100 tons) of product.

40.1.3 The requirements of 40.4 of this regulation do not apply to:

40.1.3.1 Any equipment in vacuum service.

40.1.3.2 Any pressure-relief valve that is connected to an operating flare header or vapor recovery device.

40.1.3.3 Any liquid pump that has a dual mechanical pump seal with a barrier fluid system.

40.1.3.4 Any compressor with a degassing vent that is routed to an operating VOC control device.

40.2 Definitions. As used in 40.0 of this regulation, all terms not defined herein shall have the meaning given them in the November 15, 1990 Clean Air Act Amendments, or in 2.0 of this regulation.

"**[In] gas/vapor service**" means that the piece of equipment in VOC service contains process fluid that is in the gaseous state at operating conditions.

"**[In] heavy liquid service**" means that the piece of equipment in VOC service is not in gas/vapor service or not in light liquid service.

"**[In] light liquid service**" means that the piece of equipment in VOC service contacts a fluid that contains greater than 10% by weight light liquid and meets the following conditions: (1) the vapor pressure of one or more of the components is greater than 0.3 kiloPascal (kPa). (0.044 inch of mercury [in. Hg]) at 20°C (68°F) (standard reference tests or ASTM D-2879 shall be used to determine the vapor pressures); and (2) the fluid is a liquid at operating conditions.

"**Process unit**" means components assembled to produce, as intermediate or final products, one or more of the chemicals listed in 40 CFR 60.489 (July 1, 1992). A process unit can operate independently if supplied with sufficient feed or raw materials and sufficient storage facilities for the product.

"**[In] vacuum service**" means that the equipment in VOC service is operating at an internal pressure that is at least five kPa (0.73 in. Hg) below ambient pressure.

"**[In] VOC service**" means that the piece of equipment contains or contacts a process fluid that is at least 10% VOC by weight. The provisions of 40.1.1.2 of this regulation specify how to determine that a piece of equipment is not in VOC service.

40.3 Standards: General. The owner or operator of a synthetic organic chemical, polymer, or resin manufacturing facility subject to 40.0 of this regulation shall ensure that:

40.3.1 Any open-ended line or valve is sealed with a second valve, blind flange, cap, or plug except during operations requiring process fluid flow through the open-ended line or valve.

40.3.2 When a second valve is used, each open-ended line or valve equipped with a second valve is operated in such a manner that the valve on the process fluid end is closed before the second valve is closed.

40.3.3 When a double block-and-bleed system is used, the bleed valve or line is open only during operations that require venting of the line between the block valves and is closed at all other times.

40.4 Standards: Equipment inspection program. The owner or operator of a synthetic organic chemical, polymer, or resin manufacturing facility shall conduct the equipment inspection program described in 40.4.1 through 40.4.3 of this regulation using the test methods specified in **Appendix F** of this regulation.

40.4.1 The owner or operator of a synthetic organic chemical, polymer, or resin manufacturing facility shall conduct quarterly monitoring of each:

40.4.1.1 Compressor.

40.4.1.2 Pump in light liquid service.

40.4.1.3 Valve in light liquid service, except as provided in 40.5 and 40.6 of this regulation.

40.4.1.4 Valve in gas/vapor service, except as provided in 40.5 and 40.6 of this regulation.

40.4.1.5 Pressure relief valve in gas/vapor service, except as provided in of this regulation.

40.4.2 The owner or operator of a synthetic organic chemical or resin manufacturing facility shall conduct a weekly visual inspection of each pump in light liquid service.

40.4.3 The owner or operator of a synthetic organic chemical, polymer, or resin manufacturing facility shall monitor each pressure relief valve after each overpressure relief to ensure that the valve has properly reseated and is not leaking.

40.4.4

40.4.4.1 When an instrument reading of 10,000 parts per million (ppm) or greater is measured, it shall be determined that a leak has been detected.

40.4.4.2 If there are indications of liquid dripping from the equipment, it shall be determined that a leak has been detected.

40.4.5 When a leak is detected, the owner or operator shall affix a weatherproof, readily visible tag in a bright color such as red or yellow bearing the equipment identification number and the date on which the leak was detected. This tag shall remain in place until the leaking equipment is repaired. The requirements of this paragraph apply to any leak detected by the equipment inspection program and to any leak from any equipment that is detected on the basis of sight, sound, or smell.

40.5 Standards: Alternative standards for valves Skip period leak detection and repair.

40.5.1 An owner or operator shall comply with the requirements for valves in gas/vapor service and valves in light liquid service as described in 40.4 of this regulation except as provided in 40.5.2 of this regulation.

40.5.2

40.5.2.1 If the percent of valves leaking is equal or less than 2.0 for two consecutive quarters, an owner or operator may skip alternate quarterly leak detection periods for the valves in gas/vapor and light liquid service.

40.5.2.2 If the percent of valves leaking is equal to or less than 2.0 for five consecutive quarters, an owner or operator may skip three of the quarterly leak detection periods per year for the valves in gas/vapor and light liquid service, provided that each valve shall be monitored once each year.

40.5.2.3 If at any time the percent of valves leaking is greater than 2.0, the owner or operator shall resume compliance with the requirements in 40.4 of this regulation but may again elect to comply with the alternative standards in 40.5 of this regulation.

40.5.2.4 The percent of valves leaking shall be determined by dividing the sum of valves found leaking during current monitoring and previously leaking valves for which repair has been delayed by the total number of valves subject to the requirements of 40.0 of this regulation.

40.5.2.5 An owner or operator shall keep a record of the percent of valves found leaking during each leak detection period.

40.6 Standards: Alternative standards for unsafe-to-monitor valves and difficult-to-monitor valves.

40.6.1 Any valve is exempt from the requirements of 40.4 of this regulation as an unsafe-to-monitor valve if:

40.6.1.1 The owner or operator of the valve demonstrates that the valve is unsafe to monitor because monitoring personnel would be exposed to an immediate danger as a consequence of complying with 40.4 of this regulation.

40.6.1.2 The owner or operator of the valve adheres to a written plan that requires monitoring of the valve as frequently as practicable during safe-to-monitor times.

40.6.2 Any valve is exempt from the requirements of 40.4 of this regulation as a difficult-to-monitor valve if:

40.6.2.1 The owner or operator of the valve demonstrates that the valve cannot be monitored without elevating the monitoring personnel more than two meters (m) (6.6 feet [ft]) above a support surface.

40.6.2.2 The owner or operator of the valve follows a written plan that requires monitoring of the valve at least once per calendar year.

40.6.3 The alternative standards of 40.5 of this regulation are not available to valves subject to the requirements of 40.6 of this regulation.

40.7 Standards: Equipment repair program. The owner or operator of a synthetic organic chemical, polymer, or resin manufacturing facility shall:

40.7.1 Make a first attempt at repair for any leak not later than five calendar days after the leak is detected.

40.7.2 Repair any leak as soon as practicable, but not later than 15 calendar days after it is detected except as provided in 40.8 of this regulation.

40.8 Standards: Delay of repair

40.8.1 Delay of repair of equipment for which a leak has been detected is allowed if repair is technically infeasible without a process unit shutdown. Repair of such equipment shall occur before the end of the first process unit shutdown after the leak is detected.

40.8.2 Delay of repair of equipment is also allowed for equipment that is isolated from the process and that does not remain in VOC service after the leak is detected.

40.8.3 Delay of repair beyond a process unit shutdown is allowed for a valve, if valve assembly replacement is necessary during the process unit shutdown, and if valve assembly supplies have been depleted, where valve assembly supplies had been sufficiently stocked before the supplies were depleted. Delay of repair beyond the first process unit shutdown is not allowed unless the next process unit shutdown occurs sooner than six months after the first process unit shutdown.

40.9 Test methods and procedures

40.9.1 In conducting the monitoring required to comply with 40.4 of this regulation, the owner or operator shall use the test methods specified in **Appendix F** of this regulation.

40.9.2 The owner or operator shall demonstrate that a piece of equipment is in light liquid service by showing that all of the following conditions apply:

40.9.2.1 The vapor pressure of one or more of the components is greater than 0.3 kPa (0.044 in. Hg) at 20°C (68°F) standard reference texts or ASTM D2879 shall be used to determine the vapor pressures.

40.9.2.2 The total concentration of the pure components having a vapor pressure greater than 0.3 kPa (0.044 in. Hg) at 20°C (68°F) is equal to or greater than 20% by weight.

40.9.2.3 The fluid is a liquid at operating conditions.

40.9.3 Samples used in conjunction with 40.9.2 and 40.9.3 of this regulation shall be representative of the process fluid that is contained in or contacts the equipment.

40.10 Recordkeeping requirements

40.10.1 Each owner or operator subject to the provisions of 40.0 of this regulation shall comply with the recordkeeping requirements of 40.0 of this regulation.

40.10.2 An owner or operator of more than one facility subject to the provisions of 40.0 of this regulation may comply with the recordkeeping requirements for these facilities in one recordkeeping system if the system identifies each record by each facility.

40.10.3 When each leak is detected as specified in 40.4 of this regulation, the following information shall be recorded in a log and shall be kept for five years in a readily accessible location:

40.10.3.1 The instrument and operator identification numbers and the equipment identification number.

40.10.3.2 The date the leak was detected and the dates of each attempt to repair the leak.

40.10.3.3 The repair methods employed in each attempt to repair the leak.

40.10.3.4 The notation "Above 10,000" if the maximum instrument reading measured by the methods specified in **Appendix F** of this regulation after each repair attempt is equal to or greater than 10,000 ppm.

40.10.3.5 The notation "Repair delayed" and the reason for the delay if a leak is not repaired within 15 calendar days after the leak is discovered.

40.10.3.6 The signature of the owner or operator (or designate) whose decision it was that repair could not be effected without a process shutdown.

40.10.3.7 The expected date of successful repair of the leak if a leak is not repaired within 15 days.

40.10.3.8 The dates of process unit shutdowns that occur while the equipment is unrepaired.

40.10.3.9 The date of successful repair of the leak.

40.10.4 A list of identification numbers of equipment in vacuum service shall be recorded in a log that is kept in a readily accessible location.

40.10.5 The following information for valves complying with 40.5 of this regulation shall be recorded in a log that is kept for five years in a readily accessible location:

40.10.5.1 A schedule of monitoring.

40.10.5.2 The percent of valves found leaking during each monitoring period.

40.10.6 The following information pertaining to all valves subject to the requirements of 40.6 of this regulation shall be recorded in a log that is kept for five years in a readily accessible location:

40.10.6.1 A list of identification numbers for valves that are designated as unsafe to monitor, an explanation for each valve stating why the valve is unsafe to monitor, and the plan for monitoring each valve.

40.10.6.2 A list of identification numbers for valves that are designated as difficult to monitor, an explanation for each valve stating why the valve is difficult to monitor, and the schedule for monitoring each valve.

40.10.7 The following information shall be recorded in a log that is kept for five years in a readily accessible location for use in determining exemptions as provided in 40.1 of this regulation:

40.10.7.1 An analysis demonstrating the design capacity of the affected facility.

40.10.7.2 Information and data used to demonstrate that a piece of equipment is not in VOC service.

40.11 Reporting. The owner or operator of any facility containing sources subject to 40.0 of this regulation shall comply with the requirements in 5.0 of this regulation.

41.0 Manufacture of High-Density Polyethylene, Polypropylene and Polystyrene Resins

01/11/1993

41.1 Applicability

41.1.1 The provisions of 41.0 of this regulation applies to the following process Sections at facilities engaged in manufacturing high-density polyethylene, polypropylene, and polystyrene:

41.1.1.1 For manufacturing high-density polyethylene using a liquid-phase slurry process: each material recovery Section and each product finishing Section.

41.1.1.2 For manufacturing polypropylene using a liquid-phase process: each polymerization reaction Section, each material recovery Section, and each product finishing Section.

41.1.1.3 For manufacturing polystyrene using a continuous process: each material recovery Section.

41.1.2 Facilities having all process Sections with uncontrolled emission rates at or below those identified in 41.1.2.1 through 41.1.2.6 of this regulation are exempt from the requirements of 41.0 of this regulation except that owners or operators seeking to comply with 41.0 of this regulation by complying with the uncontrolled emission rates in 41.1.2.1 through 41.1.2.6 of this regulation are still required to comply with the initial certification requirements at 5.0 of this regulation

.

	Production Process	**Process Section**	**Uncontrolled emission rate, megagram of product per year (Mg/yr)**
41.1.2.1	High-density polyethylene, liquid-phase slurry process	material recovery Section	7
41.1.2.2	High-density polyethylene, liquid-phase slurry process	product finishing Section	19
41.1.2.3	Polypropylene, liquid-phase process	polymerization reaction Section	7
41.1.2.4	Polypropylene, liquid-phase process	material recovery Section	8
41.1.2.5	Polypropylene, liquid-phase process	product finishing Section	36

41.1.2.6	Polystyrene, continuous process	material recovery Section	7

41.1.3 Any facility that becomes or is currently subject to the provisions of 41.0 of this regulation by exceeding the applicability thresholds in 41.1.2 of this regulation will remain subject to these provisions even if its emissions later fall below the thresholds.

41.2 Definitions. As used in 41.0 of this regulation, all terms not defined herein shall have the meaning given them in the November 15, 1990 Clean Air Act Amendments, or in 2.0 of this regulation.

"**Continuous process**" means a polymerization process in which reactants are introduced continuously and products are removed either continuously or intermittently at regular intervals so that the process can be operated and polymers produced essentially continuously.

"**Flame zone**" means that portion of the combustion chamber in a boiler occupied by the flame envelope.

"**High-density polyethylene**" means a linear, thermoplastic polymer comprised of at least 50% ethylene by weight and having a density greater than 0.94 grams per cubic centimeter (g/cm^3) (59 pounds per cubic foot [lb/ft^3]).

"**Liquid-phase process**" means a polymerization process in which the polymerization reaction is carried out in the liquid phase; i.e., the monomer or monomers and any catalyst are dissolved or suspended in a liquid solvent.

"**Liquid-phase slurry process**" means a liquid-phase polymerization process in which the monomer or monomers are in solution (completely dissolved) in a liquid solvent, but the polymer is in the form of solid particles suspended in the liquid reaction mixture during the polymerization reaction, sometimes called a particle-form process.

"Polypropylene" means a polymer comprised of at least 50% propylene by weight.

"**Polystyrene**" means a thermoplastic polymer comprised of at least 80% styrene or para-methylstyrene by weight.

"**Process line**" means a group of equipment assembled that can operate independently if supplied with sufficient raw materials to produce polypropylene, high-density polyethylene, or polystyrene. A process line consists of the equipment in the following process Sections (to the extent that these process Sections are present at a plant): raw materials preparation, polymerization reaction, product finishing, product storage, and material recovery.

"**Process Section**" means the equipment designed to accomplish a general but well-defined task in polymer production. Process Sections include raw materials preparation, polymerization reaction, material recovery, product finishing, and product storage and may be dedicated to a single process line or common to more than one process line.

"**Product finishing Section**" means the equipment that treats, shapes, or modifies the polymer or resin to produce the finished end product of the particular facility. Product finishing equipment may extrude and pelletize, cool and dry, blend, introduce additives, cure, or anneal. Product finishing does not include polymerization or shaping such as fiber spinning, molding, or fabricating or modification such as fiber stretching and crimping.

41.3 Standards: High-density polyethylene and polypropylene

41.3.1 The owner or operator of a high-density polyethylene or polypropylene process line containing a process section subject to 41.0 of this regulation shall comply with one of the following:

41.3.1.1 Reduce emissions of total volatile organic compounds (VOCs) by 98 weight %, determined according to the procedure specified in 41.5.1 of this regulation, or to a VOC concentration of 20 parts per million volumetric (ppmv), as determined by the procedure specified in 41.5.2 of this regulation, on a dry basis, whichever is less stringent. Total VOC is expressed as the sum of the actual compounds, not carbon equivalents. If an owner or operator elects to comply with the 20 ppmv concentration standard, the concentration shall include a correction to 3% oxygen only when supplemental combustion air is used to combust the vent stream. The procedure in 41.5.3 of this regulation shall be used to correct the concentration to 3% oxygen.

41.3.1.2 Combust the emissions in a boiler or process heater with a design heat input capacity of 150 million British thermal units per hour (Btu/hr) or greater by introducing the vent stream into the flame zone of the boiler or process heater.

41.3.1.3 Combust the emissions in a flare as follows:

41.3.1.3.1 Flares shall be designed for and operated with no visible emissions as determined by the method specified in 41.5.4.1 of this regulation, except for periods not to exceed a total of five minutes during any two consecutive hours.

41.3.1.3.2 Flares shall be operated with a flame present at all times, as determined by the method specified in 41.5.4.2 of this regulation.

41.3.1.3.3 Flares used to comply with provisions of 41.0 of this regulation shall be steam-assisted, air-assisted, or non-assisted.

41.3.1.3.4 Flares shall be used only with the net heating value of the gas being combusted being 11.2 megajoules per standard cubic meter (MJ/scm) (300 Btu per standard cubic foot [Btu/scf]) or greater if the flare is steam-assisted or air-assisted; or with the net heating value of the gas being combusted being 7.45 MJ/scm (200 Btu/scf) or greater if the flare is nonassisted. The net heating value of the gas being combusted shall be determined by the method specified in 41.5.5.7 of this regulation.

41.3.1.3.5

41.3.1.3.5.1 Steam-assisted and nonassisted flares shall be designed for and operated with an exit velocity, as determined by the method specified in 41.5.5.4 of this regulation, less than 18.3 meters per second (m/s) (60 feet per second [ft/s]), except as provided in 41.3.1.3.5.2 and 41.3.1.3.5.3 of this regulation.

41.3.1.3.5.2 Steam-assisted and nonassisted flares designed for and operated with an exit velocity, as determined by the methods specified in 41.5.5.4 of this regulation equal to or greater than 18.3 m/s (60 ft/s) but less than 122 m/s (400 ft/s) are allowed if the net heating value of the gas being combusted is greater than 37.3 MJ/scm (1,000 Btu/scf).

41.3.1.3.5.3 Steam-assisted and nonassisted flares designed for and operated with an exit velocity, as determined by the methods specified in 41.5.5.4 of this regulation, less than the velocity, V_{max}, as determined by the method specified in 41.5.5.5 of this regulation and less than 122 m/s (400 ft/s) are allowed.

41.3.1.3.6 Air-assisted flares shall be designed and operated with an exit velocity less than the velocity, V max, as determined by the method specified in 41.5.5.6 of this regulation.

41.4 Standards: Polystyrene. The owner or operator of a polystyrene process line containing process Sections subject to 41.0 of this regulation shall comply with one of the following:

41.4.1 Not allow continuous VOC emissions from the material recovery Section to be greater than 0.12 kilogram (kg) VOC per 1,000 kg of product (0.12 lb VOC per 1,000 lb of product).

41.4.2 Not allow the outlet gas stream from each final condenser in the material recovery Section to exceed -25°C (-13°F).

41.5 Test methods and procedures.

41.5.1 The owner or operator shall determine compliance with the percent emission reduction standard in 41.3.1.1 of this regulation as follows:

41.5.1.1 The emission reduction of total VOC shall be determined using the following equation:

$$P = \frac{E_{inlet} - E_{outlet}}{E_{inlet}} \times 100$$

(41-1)

where:

P = Percent emission reduction, by weight.

E_{inlet} = Mass rate of total VOC entering the control device, kg VOC/hr.

E_{outlet} = Mass rate of total VOC discharged to the atmosphere, kg VOC/hr.

41.5.1.2 The mass rates of total VOC (E_i, E_o) shall be computed using the following equations:

$$E_i = K_1 \left(\sum_{j=1}^{n} C_{ij} M_{ij} \right) Q_i$$

(41-2)

$$E_o = K_1\left(\sum_{j=1}^{n} C_{oj}M_{oj}\right)Q_o$$

(41-3)

where:

C_{ij}, C_{oj} = Concentration of sample component J of the gas stream at the inlet and outlet of the control device, respectively, dry basis, ppmv.

M_{ij}, M_{oj} = Molecular weight of sample component J of the gas stream at the inlet and outlet of the control device respectively, g/g-mole (lb/lb-mole).

Q_i, Q_o = Flow rate of the gas stream at the inlet and outlet of the control device, respectively, dscm/hr (dscf/hr).

K_1 = 4.157×10^{-8} [(kg)/(g-mole)]/[(g)(ppm)(dscm)]{5.711×10^{-15} [(lb)(/(lb-mole)] / [(lb)(ppm)(dscf)]}.

41.5.1.3 Method 18 shall be used to determine the concentration of each individual organic component (C_{ij}, C_{oj}) in the gas stream. Method 1 or 1A, as appropriate, shall be used to determine the inlet and outlet sampling sites. The inlet site shall be before the inlet of the control device and after all product recovery units.

41.5.1.4 Method 2, 2A, 2C, or 2D, as appropriate, shall be used to determine the volumetric flow rates (Q_i, Q_o). If necessary, Method 4 shall be used to determine the moisture content. Both determinations shall be compatible with the Method 18 determinations.

41.5.1.5 Inlet and outlet samples shall be taken simultaneously. The sampling time for each run shall be one hour in which either an integrated sample or four grab samples shall be taken. If grab sampling is used, then the samples shall be taken at 15-minute intervals.

41.5.2 The owner or operator shall determine compliance with the emission concentration standard in 41.3.1.1 of this regulation as follows:

41.5.2.1 The total VOC concentration is the sum of the individual components and shall be computed for each run using the following equation:

$$C_{VOC} = \sum_{j=1}^{n} C_j$$

(41-4)

where:

C_{VOC} = Concentration of total VOC, dry basis, ppmv.

C_j = Concentration of sample component j, ppm.

n = Number of components in the sample.

41.5.2.2 Method 18 shall be used to determine the concentration of each individual inorganic component (C_j) in the gas stream. Method 1 or 1A as appropriate, shall be used to determine the sampling site at the outlet of the control device. Method 4 shall be used to determine the moisture content, if necessary.

41.5.2.3 The sampling time for each run shall be one hour in which either an integrated sample or four grab samples shall be taken. If grab sampling is used, then the samples shall be taken at 15-minute intervals.

41.5.3

41.5.3.1 If supplemental combustion air is used, the total VOC concentration shall be corrected to 3% oxygen and shall be computed using the following equation:

$$C_{CORR} = C_{MEAS}\left(\frac{17.9}{20.9 - \%O_{2d}}\right)$$

(41-5)

where:

C_{CORR} = Concentration of total VOC corrected to 3% oxygen, dry basis, ppmv.

C_{MEAS} = Concentration of total VOC, dry basis, ppmv, as calculated in 41.5.2.1 of this relation.

$\%O_{2d}$ = Concentration of O_2, dry basis, percent by volume.

41.5.3.2 The emission rate correction factor, integrated sampling and analysis procedure of Method 3 shall be used to determine the oxygen concentration ($\%O_{2d}$). The sampling site shall be the same as that of the total VOC sample and the samples shall be taken during the same time that the total VOC samples are taken.

41.5.4 When a flare is used to comply with 41.3.1.3 of this regulation:

41.5.4.1 Method 22 shall be used to determine the compliance of flares with the visible emission requirement in 41.3.1.3.1 of this regulation. The observation period is 2 hours and shall be used according to Method 22.

41.5.4.2 The presence of a flare pilot flame shall be monitored using a thermocouple or other equivalent monitoring device to detect the presence of a flame.

41.5.5 The test methods in 40 CFR Part 60, **Appendix A** (July 1, 1992), shall be used as reference methods for determining the VOC emission rate in terms of kg emission per megagram (Mg) of product, exit velocities, or net heating value of the gas combusted to determine compliance under 41.3 and 41.4 of this regulation as follows:

41.5.5.1 Method 1 or 1A, as appropriate, for selecting the sampling site. The sampling site for the molar composition and vent stream flow rate determination prescribed in 41.5.5.2 and 41.5.5.3 of this regulation shall be prior to the inlet of any combustion device and prior to any dilution of the stream with air.

41.5.5.2 The composition of the process vent stream shall be determined as follows:

41.5.5.2.1 Method 18 and ASTM D2504-67 (reapproved 1977) to measure the concentration of VOC and the concentration of all other compounds present except water vapor and carbon monoxide.

41.5.5.2.2 Method 4 to measure the content of water vapor.

41.5.5.3 The volumetric flow rate shall be determined using Method 2, 2A, 2C, or 2D, as appropriate.

41.5.5.4 The actual exit velocity of a flare shall be determined by dividing the volumetric flow rate (in units of standard temperature and pressure), as determined by Method 2, 2A, 2C, or 2D as appropriate, by the unobstructed (free) cross-Sectional area of the flare tip.

41.5.5.5 The maximum permitted velocity, V_{max}, for flares complying with 41.3.1.3.5.1 of this regulation shall be determined using the following equation:

$$\mathrm{Log}_{10}(V_{max}) = \frac{H_T + 28.8}{31.7}$$

(41-6)

where:

V_{max} = Maximum permitted velocity, m/s.

28.8 = Constant.

31.7 = Constant.

H_T =The net heating value as determined in 41.5.5.7 of this regulation.

41.5.5.6 The V_{max} for air-assisted flares shall be determined by the following equation:

$$V_{max} = 8.706 + 0.7084(H_T)$$

(41-7)

where:

V_{max} = Maximum permitted velocity, m/s.

8.706 = Constant.

0.7084 = Constant.

H_T = The net heating value as determined in 41.5.5.7 of this regulation.

41.5.5.7 The net heating value of the process vent stream being combusted in a flare shall be calculated using the following equation:

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

(41-8)

where:

H_T = Net heating value of the sample, MJ/scm, where the net enthalpy per mole of off-gas is based on combustion at 25°C and 760 millimeters of Mercury (mm Hg) (77°F and 29.92 inches of Mercury [in. Hg]), but the standard temperature for determining the volume corresponding to one mole is 20°C (68°F).

K = Constant: $K = 1.740 \times 10^{-7} \frac{(1)}{ppm} \frac{(g\text{-}mole)}{scm} \frac{(MJ)}{kcal}$

where standard temperature for $\frac{(g\text{-}mole)}{scm}$ is 20°C.

C_i = Concentration of sample components i in ppm on a wet basis, as measured for organics by Method 18 and measured for hydrogen and carbon monoxide by ASTM D1946-82.

H_i = Net heat of combustion of sample component i, kcal/g-mole at 25°C (77°F) and 760 mm Hg (29.92 in. Hg). The heats of combustion of process vent stream components may be determined using ASTM D2382-76 (reapproved 1977) if published values are not available or cannot be calculated.

41.5.5.8 The emission rate of VOC in the process vent stream shall be calculated using the following equation:

$$E_{VOC} = K\left(\sum_{i=1}^{n} C_i M_i\right) Q_s$$

(41-9)

where:

E_{VOC} = Emission rate of total organic compounds in the sample, kilogram per hour (kg/hr).

K = Constant, 2.494×10^{-6}(1/ppm)(g-mole/scm)(kg/g)(min/hr), where standard temperature for (g-mole/scm) is 20°C (68°F).

C_i = Concentration of sample component i, ppm.

M_i = Molecular weight of sample component i, g/g-mole.

Q_s = Vent stream flow rate (scm/min), at a standard temperature of 20°C (68°F).

41.5.5.9 The rate of polymer produced, P_p (kg/hr), shall be determined by dividing the weight of polymer pulled in kg from the process line during the performance test by the number of hours (hr) taken to perform the performance test. The polymer pulled, in kg, shall be determined by direct measurement or, subject to prior approval by the Administrator of the U.S. EPA and acceptance as part of a State Implementation Plan (SIP) or Federal Implementation Plan (FIP) revision, computed from materials balance by good engineering practice.

41.5.5.10 The emission rate of VOC in terms of kilograms of emissions per megagram of production shall be calculated using the following equation:

$$ER_{VOC} = \frac{E_{VOC}}{P_P \times \frac{1Mg}{1{,}000\,kg}}$$

(41-10)

where:

ER_{VOC} = Emission rate of VOC, kg VOC/Mg product.

E_{VOC} = Emission rate of VOC in the sample, kg/hr.

P_P = The rate of polymer produced, kg/hr.

41.6 Recordkeeping. The owner or operator of a facility subject to 41.0 of this regulation shall maintain the following records in a readily accessible location for at least five years and shall make these records available to the Department upon verbal or written request:

41.6.1 For facilities complying with the standards listed in 41.3.1.1 of this regulation, parameters listed in 41.5.1, 41.5.2, and, where applicable, 41.5.5 of this regulation.

41.6.2 For facilities complying with the standards listed in 41.3.1.2 of this regulation, parameters listed in 41.5.3, and, where applicable, 41.5.5 of this regulation.

41.6.3 For facilities complying with the standards listed in 41.3.1.3 of this regulation, parameters listed in 41.5.4, and, where applicable, 41.5.5 of this regulation.

41.6.4 For facilities complying with the standards listed in 41.4 of this regulation, parameters listed in 41.5.5 of this regulation where applicable.

41.6.5 For all facilities containing sources subject to 41.0 of this regulation, the following records shall be kept:

41.6.5.1 The time, date, and duration of any excess emissions.

41.6.5.2 The subject source of any excess emissions.

41.6.5.3 The cause of any excess emissions.

41.6.5.4 The estimated rate of emissions (expressed in the units of the applicable emission limitation) and the operating data and calculations used in determining the magnitude of any excess emissions.

41.6.5.5 Any corrective actions and schedules utilized to correct the conditions causing any excess emissions.

41.7 Reporting requirements. The owner or operator of any facility containing sources subject to 41.0 of this regulation shall:

41.7.1 Comply with the initial compliance certification requirements of 5.1 of this regulation.

41.7.2 Comply with the requirements of 5.2 of this regulation for excess emissions related to the control devices required to comply with 41.3.1.2, 41.3.1.3, or 41.4.2 of this regulation, as well as any other State of Delaware exceedance reporting requirements.

42.0 Air Oxidation Processes in the Synthetic Organic Chemical Manufacturing Industry

01/11/1993

42.1 Applicability

42.1.1 The provisions of 42.0 of this regulation apply to the following air oxidation facilities in the synthetic organic chemical manufacturing industry:

42.1.1.1 Each air oxidation reactor not discharging its vent stream into a recovery system.

42.1.1.2 Each combination of an air oxidation reactor and the recovery system into which its vent stream is discharged.

42.1.1.3 Each combination of two or more air oxidation reactors and the common recovery system into which their vent streams are discharged.

42.1.2 Any air oxidation reactor vent stream that has a total resource effectiveness (TRE) index value greater than 1.0 is exempt from all provisions of 42.0 of this regulation except the requirements in 42.3, 42.5.2, and 42.6.10 of this regulation.

42.2 Definitions. As used in 42.0 of this regulation, all terms not defined herein shall have the meaning given them in the November 15, 1990 Clean Air Act Amendments (CAAA), or in 2.0 of this regulation.

"**Air oxidation facility**" means a product recovery system and all associated air oxidation process reactors discharging directly into that system or any such reactors discharging directly into the atmosphere.

"**Air oxidation process**" means a reactor in which air is used as an oxidizing agent to produce an organic chemical.

"**Air oxidation reactor**" means any device or process vessel in which one or more organic reactants are combined with air or a combination of air and oxygen to produce one or more organic compounds. Ammoxidation and oxychlorination are included in this definition.

"**Air oxidation reactor recovery train**" means an individual recovery system receiving the vent stream from at least one air oxidation reactor, along with all air oxidation reactors feeding vent streams into this system.

"**Product recovery system**" means any equipment used to collect volatile organic compounds (VOCs) for use, reuse, or sale. Such equipment includes, but is not limited to, absorbers, adsorbers, condensers, and devices that recover non-VOCs such as ammonia and HCl.

"**Synthetic organic chemical manufacturing industry**" means the industry that produces, as intermediates or final products, one or more of the chemicals listed at 40 CFR 60.489 (July 1, 1992).

"**Total resource effectiveness index value**," or TRE index value, means a measure of the supplemental total resource requirement per unit of VOC emission reduction associated with an individual air oxidation vent stream, based on vent stream flow rate, emission rate of VOC, net heating value, and corrosive properties, as quantified by the equation given under 42.5.1 of this regulation.

"**Vent stream**" means any gas stream containing nitrogen that was introduced as air to the air oxidation reactor and released to the atmosphere directly from any air oxidation reactor recovery train or indirectly, after diversion through other process equipment.

42.3 Standards. For each vent stream from an air oxidation reactor or combination air oxidation reactor and recovery train subject to 42.0 of this regulation, the owner or operator shall comply with 42.3.1, 42.3.2, or 42.3.3 of this regulation.

42.3.1 Reduce total VOC emissions by 98 weight % or to 20 parts per million volumetric (ppmv) on a dry basis corrected to 3% oxygen, whichever is less stringent. If a boiler or process heater is used to comply with 42.3 of this regulation, the vent stream shall be introduced into the flame zone of the boiler or process heater.

42.3.2 Combust the emissions in a flare that meets the requirements of 40 CFR 60.18 (July 1, 1992).

42.3.3 Maintain a TRE index value greater than 1.0 without the use of VOC emission control devices.

42.4 Monitoring requirements.

42.4.1 The owner or operator of an air oxidation facility that uses an incinerator to seek to comply with the VOC emission limit specified under 42.3.1 of this regulation shall install, calibrate, maintain, and operate according to manufacturer's specifications the following equipment:

42.4.1.1 A temperature monitoring device equipped with a continuous recorder and having an accuracy of ±1% of the temperature being monitored expressed in degrees Celsius or ±0.5°C, whichever is greater.

42.4.1.1.1 Where an incinerator other than a catalytic incinerator is used, a temperature monitoring device shall be installed in the firebox.

42.4.1.1.2 Where a catalytic incinerator is used, temperature monitoring devices shall be installed in the gas stream immediately before and after the catalyst bed.

42.4.1.2 A flow indicator that provides a record of vent stream flow to the incinerator at least once every hour for each air oxidation facility. The flow indicator shall be installed in the vent stream from each air oxidation facility at a point closest to the inlet of each incinerator and before being joined with any other vent stream.

42.4.2 The owner or operator of an air oxidation facility that uses a flare to seek to comply with 42.3.2 of this regulation shall install, calibrate, maintain, and operate according to manufacturer's specifications the following equipment:

42.4.2.1 A heat-sensing device, such as an ultra-violet sensor or thermocouple, at the pilot light to indicate the continuous presence of a flame.

42.4.2.2 A flow indicator that provides a record of vent stream flow to the flare at least once every hour for each air oxidation facility. The flow indicator shall be installed in the vent stream from each air oxidation facility at a point closest to the flare and before being joined with any other vent stream.

42.4.3 The owner or operator of an air oxidation facility that uses a boiler or process heater to seek to comply with 42.3.1 of this regulation shall install, calibrate, maintain, and operate according to the manufacturer's specifications the following equipment:

42.4.3.1 A flow indicator that provides a record of vent stream flow to the boiler or process heater at least once every hour for each air oxidation facility. The flow indicator shall be installed in the vent stream from each air oxidation reactor within a facility at a point closest to the inlet of each boiler or process heater and before being joined with any other vent stream.

42.4.3.2 A temperature monitoring device in the firebox equipped with a continuous recorder and having an accuracy of ±1% of the temperature being measured expressed in degrees Celsius or ±0.5 °C, whichever is greater, for boilers or process heaters of less than 44 megawatts (MW) (150 million British thermal units per hour [Btu/hr]) heat input design capacity.

42.4.3.3 Monitor and record the periods of operation of the boiler or process heater if the design input capacity of the boiler or process heater is 44 MW (150 million Btu/hr) or greater. The records shall be readily available for inspection.

42.4.4 The owner or operator of an air oxidation facility that seeks to demonstrate compliance with the TRE index value limit specified under 42.3.3 of this regulation shall install, calibrate, maintain, and operate according to manufacturer's specifications the following equipment:

42.4.4.1 Where an absorber is the final recovery device in a recovery system:

42.4.4.1.1 A scrubbing liquid temperature monitoring device having an accuracy of ±1% of the temperature being monitored, expressed in degrees Celsius or ±0.5°C, whichever is greater, and a specific gravity monitoring device having an accuracy of ±0.02 specific gravity unit, each equipped with a continuous recorder.

42.4.4.1.2 An organic monitoring device used to indicate the concentration level of organic compounds exiting the recovery device based on a detection principle such as infrared, photoionization, or thermal conductivity, each equipped with a continuous recorder.

42.4.4.2 Where a condenser is the final recovery device in a recovery system:

42.4.4.2.1 A condenser exit (product side) temperature monitoring device equipped with a continuous recorder and having an accuracy of ±1% of the temperature being monitored expressed in degrees Celsius or ±0.5°C, whichever is greater.

42.4.4.2.2 An organic monitoring device used to indicate the concentration level of organic compounds exiting the recovery device based on a detection principle such as infrared, photoionization, or thermal conductivity, each equipped with a continuous recorder.

42.4.4.3 Where a carbon adsorber is the final recovery device in a recovery system:

42.4.4.3.1 An integrating steam flow monitoring device having an accuracy of ±10%, and a carbon bed temperature monitoring device having an accuracy of ±1% of the temperature being monitored expressed in degrees Celsius or ±0.5°C, whichever is greater, both equipped with a continuous recorder.

42.4.4.3.2 An organic monitoring device used to indicate the concentration level of organic compounds exiting the recovery device based on a detection principle such as infrared, photoionization, or thermal conductivity, each equipped with a continuous recorder.

42.5 Test methods and procedures. The following methods shall be used as reference methods to demonstrate compliance with 42.3 of this regulation:

42.5.1 The following equation shall be used to calculate the TRE index for a given vent stream:

$$TRE = \frac{1}{E}\left[a + b(FL)^{0.66} + c(FL) + d(FL)(H_T) + e(FL)^{0.66}(H_T)^{0.66} + f(FL)^{0.5}\right]$$

(42-1)

where:

TRE = The total resource effectiveness index value.

E = The measured hourly emissions in units of kilograms per hour (kg/hr).

FL = The vent stream flow rate in standard cubic meter per minute (scm/min), at a standard temperature of 20°C. For a Category E stream, the factor $f(FL)^{0.5}$ should be replaced with:

$$f\left[(FL)\frac{(H_T)^{0.5}}{3.6}\right]$$

where:

HT = Vent stream net heating value in units of megajoules per standard cubic meter (MJ/scm), where the net enthalpy per mole of off-gas is based on combustion at 25°C (68°F) and 760 millimeters of Mercury (mm Hg), but the standard temperature for determining the volume corresponding to one mole is 20°C, as in the definition of FL.

a, b, c, d, e, and f = Specific coefficients for six different general categories of process vent streams. The set of coefficients that apply to a given air oxidation process vent stream may be obtained from the Department.

42.5.2 Each owner or operator of an air oxidation facility seeking to comply with 42.1.2 or 42.3.3 of this regulation shall recalculate the TRE index value for that air oxidation facility whenever process changes are made. Some examples of process changes are changes in production capacity, feedstock type, or catalyst type, or whenever recovery equipment is replaced, removed, or added. The TRE index value shall be recalculated based on test data or on best engineering estimates of the effects of the change to the recovery system.

42.5.3 Method 1 or 1A, as appropriate, for selection of the sampling sites. The control device inlet sampling site for determining vent stream molar composition or VOC reduction efficiency shall be prior to the inlet of the control device and after the recovery system.

42.5.4 Method 2, 2A, 2C, or 2D, as appropriate, for determining the volumetric flow rates.

42.5.5 The emission rate correction factor, integrated sampling, and analysis procedure of Method 3 shall be used to determine the oxygen concentration ($\%O_{2d}$) for determining compliance with the 20 ppmv limit. The sampling site shall be the same as that of the VOC. samples, and the samples shall be taken during the same time that the VOC samples are taken. The VOC concentration corrected to 3% O_2 (C_c) shall be computed using the following equation:

$$C_c = C_{VOC} \frac{17.9}{20.9 - \%O_{2d}}$$

(42-2)

where:

C_c = Concentration of VOC corrected to 3% O_2, dry basis, ppmv.

C_{VOC} = Concentration of VOC, dry basis, ppmv.

$\%O_{2d}$ = Concentration of O_2, dry basis, percent by volume.

42.5.6 Method 18 to determine the VOC concentration in the control device outlet and the VOC concentration in the inlet when the reduction efficiency of the control device is to be determined.

42.5.6.1 The sampling time for each run shall be one hour, in which either an integrated sample or four grab samples shall be taken. If grab sampling is used, then the samples shall be taken at 15- minute intervals.

42.5.6.2 The emission reduction (R) of VOC shall be determined using the following equation:

$$R = \frac{E_i - E_o}{E_i} \times 100$$

(42-3)

where:

R = Emission reduction, percent by weight.

E_i = Mass rate of VOC entering the control device, kg VOC/hr.

E_o = Mass rate of VOC discharged to the atmosphere, kg VOC/hr.

42.5.6.3 The mass rates of VOC (E_i, E_o) shall be computed using the following equations:

$$E_i = K_2 \left(\sum_{j=1}^{n} C_{ij} M_{ij} \right) Q_i$$

(42-4)

$$E_o = K_2 \left(\sum_{j=1}^{n} C_{oj} M_{oj} \right) Q_o$$

(42-5)

where:

C_{ij}, C_{oj} = Concentration of sample component J of the gas stream at the inlet and outlet of the control device, respectively.

M_{ij}, M_{oj} = Molecular weight of sample component J of the gas stream at the inlet and outlet of the control device, respectively, g/g-mole (lb/lb-mole).

Q_i, Q_o = Flow rate of gas stream at the inlet and outlet of the control device, respectively, dscm/min (dscf/hr).

K_2 = Constant, 2.494×10^{-6}(1/ppm)(g-mole/scm)(kg/g)(min/hr), where standard temperature for (g-mole/scm) is 20°C.

42.5.6.4 The VOC concentration (C_{VOC}) is the sum of the individual components and shall be computed for each run using the following equation:

$$C_{VOC} = \sum_{j=1}^{n} C_j$$

(42-6)

where:

C_{VOC} = Concentration of VOC, dry basis, ppmv.

C_j = Concentration of sample components in the sample.

n = Number of components in the sample.

42.5.7 When a flare is used to seek to comply with 42.3.2 of this regulation, the flare shall comply with the requirements of 40 CFR 60.18 (July 1, 1992).

42.5.8 The test methods in **Appendix A** to 40 CFR Part 60 (July 1, 1992), except as provided under 40 CFR 60.8 (July 1, 1992), shall be used for determining the net heating value of the gas combusted to determine compliance under 42.3.2 of this and for determining the process vent stream TRE index value to determine compliance under 42.3.3 of this regulation.

42.5.9

42.5.9.1 Method 1 or 1A, as appropriate, for selecting the sampling site. The sampling site for the vent stream flow rate and molar composition determination prescribed in 42.5.10 and 42.5.11 of this regulation shall be, except for the situations outlined in 42.5.9.2 of this regulation, prior to the inlet of any control 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. No transverse site selection method is needed for vents smaller than four inches in diameter.

42.5.9.2 If any gas stream other than the air oxidation vent stream is normally conducted through the final recovery device:

42.5.9.2.1 The sampling site for vent stream flow rate and molar composition shall be prior to the final recovery device and prior to the point at which the nonair oxidation stream is introduced.

42.5.9.2.2 The efficiency of the final recovery device is determined by measuring the VOC concentration using Method 18 at the inlet to the final recovery device after the introduction of any nonair oxidation vent stream and at the outlet of the final recovery device.

42.5.9.2.3 This efficiency is applied to the VOC concentration measured prior to the final recovery device and prior to the introduction of the nonair oxidation stream to determine the concentration of VOC in the air oxidation stream from the final recovery device. This concentration of VOC is then used to perform the calculations outlined in 42.5.12 and 42.5.13 of this regulation.

42.5.10 The molar composition of the process vent stream shall be determined as follows:

42.5.10.1 Method 18 to measure the concentration of VOC including those containing halogens.

42.5.10.2 ASTM D1946-77 to measure the concentration of carbon monoxide and hydrogen.

42.5.10.3 Method 4 to measure the content of water vapor.

42.5.11 The volumetric flow rate shall be determined using Method 2, 2A, 2C, or 2D, as appropriate.

42.5.12 The net heating value of the vent stream shall be calculated using the following equation:

$$H_T = K_1 \left(\sum_{j=1}^{n} C_j H_j \right)$$

(42-7)

where:

H_T = Net heating value of the sample, MJ/scm, where the net enthalpy per mole of off-gas 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 Q_s (off-gas flow rate).

K_1 = Constant, $1.740 \times 10^{-7} \frac{1}{ppm} \frac{(g-mole)}{scm} \frac{MJ}{kcal}$

where standard temperature for $\frac{(g-mole)}{scm}$ is 20°C.

C_j = Concentration of compound j in ppm, as measured for organics by Method 18 and measured for hydrogen and carbon monoxide by ASTM D1946-77 as indicated in 42.5.10 of this regulation.

H_j = Net heat of combustion of compound j, kilocalories per gram-mole (kcal/g-mole), based on combustion at 25°C and 760 mm Hg. The heats of combustion of vent stream components would be required to be determined using ASTM D2382-76 if published values are not available or cannot be calculated.

42.5.13 The emission rate of VOCs in the process vent stream shall be calculated using the following equation:

$$E_{VOC} = K_2 \left(\sum_{j=1}^{n} C_j M_j \right) Q_s$$

(42-8)

where:

E_{VOC} = Emission rate of VOC in the sample, kg/hr.

K_2 = Constant, 2.494×10^{-6}(1/ppm)(g-mole/scm)(kg/g)(min/hr), where standard temperature for (g-mole/scm) is 20°C.

C_j = Concentration on a dry basis of compound j in ppm as measured by Method 18 as indicated in 42.5.10 of this regulation.

M_j = Molecular weight of sample j, g/g-mole.

Q_s = Vent stream flow rate (scm/min) at a standard temperature of 20°C.

42.6 Recordkeeping. The owner or operator of a facility subject to 42.0 of this regulation shall keep the records specified in 42.6 of this regulation in a readily accessible location for at least 5 years. These records shall be made available to the Department immediately upon verbal or written request.

42.6.1 Where an owner or operator subject to 42.0 of this regulation seeks to demonstrate compliance with 42.3.1 of this regulation through using either a thermal or catalytic incinerator:

42.6.1.1 The average firebox temperature of the incinerator (or the average temperature upstream and downstream of the catalyst bed for a catalytic incinerator), measured at least every 15 minutes and averaged over the same time period as the compliance test.

42.6.1.2 The percent reduction of VOC determined as specified in 42.3.1 of this regulation that is achieved by the incinerator, or the concentration of VOC determined as specified in 42.3.1 of this regulation at the outlet of the control device on a dry basis corrected to 3% oxygen.

42.6.2 Where an owner or operator subject to the provisions of 42.0 of this regulation seeks to demonstrate compliance with 42.3.1 of this regulation through using a boiler or process heater:

42.6.2.1 A description of the location at which the vent stream is introduced into the boiler or process heater.

42.6.2.2 The average combustion temperature of the boiler or process heater with a design heat input capacity of less than 44 MW (150 million Btu/hr) measured at least every 15 minutes and averaged over the same time period as the compliance testing.

42.6.3 Where an owner or operator subject to the provisions of 42.0 of this regulation seeks to comply with 42.3.2 of this regulation through the use of a smokeless flare:

42.6.3.1 The flare design (i.e., steam-assisted, air-assisted, or nonassisted), all visible emission readings, heat content determinations, flow rate measurements, and exit velocity determinations made during the compliance test.

42.6.3.2 Continuous records of the flare pilot flame monitoring.

42.6.3.3 Records of all periods of operation during which the pilot flame is absent.

42.6.4 Where an owner or operator seeks to demonstrate compliance with 42.3.3 of this regulation:

42.6.4.1 Where an absorber is the final recovery device in a recovery system, the exit specific gravity and average exit temperature of the absorbing liquid, measured at least every 15 minutes and averaged over the same time period of the compliance testing (both measured while the vent stream is normally routed and constituted).

42.6.4.2 Where a condenser is the final recovery device in a recovery system, the average exit (product side) temperature, measured at least every 15 minutes and averaged over the same time period of the compliance testing while the vent stream is normally routed and constituted.

42.6.4.3 Where a carbon adsorber is the final recovery device in a recovery system, the total steam mass flow measured at least every 15 minutes and averaged over the same time period of the compliance test (full carbon bed cycle), temperature of the carbon bed after regeneration (and within 15 minutes of completion of any cooling cycle or cycles), and duration of the carbon bed steaming cycle (all measured while the vent stream is normally routed and constituted).

42.6.4.4 As an alternative to 42.6.4.1, 42.6.4.2, or 42.6.4.3 of this regulation, the concentration level or reading indicated by the organic monitoring device at the outlet of the absorber, condenser, or carbon adsorber measured at least every 15 minutes and averaged over the same time period of the compliance testing while the vent stream is normally routed and constituted.

42.6.4.5 As an alternative to 42.6.4.1, 42.6.4.2, 42.6.4.3, or 42.6.4.4 of this regulation, all measurements and calculations performed to determine the TRE index value of the vent stream.

42.6.5 Each owner or operator subject to the provisions of 42.0 of this regulation shall keep up-to-date, readily accessible, continuous records of the equipment operating parameters specified to be monitored under 42.4.1 and 42.4.3 of this regulation, as well as up-to-date, readily accessible records of periods of operation during which the parameter boundaries established during the most recent compliance test are exceeded. The Department may at any time require a report of these data. Where a combustion device is used by an owner or operator seeking to demonstrate compliance with 42.3.1 or 42.3.3 of this regulation, periods of operation during which the parameter boundaries established during the most recent performance tests are exceeded are defined as follows:

42.6.5.1 For thermal incinerators, all three-hour periods of operation during which the average combustion temperature was more than 28°C (50°F) below the average combustion temperature during the most recent test at which compliance with 42.3.1 of this regulation was determined.

42.6.5.2 For catalytic incinerators, all three-hour periods of operation during which the average temperature of the vent stream immediately before the catalyst bed is more than 28°C (50°F) below the average temperature of the vent stream during the most recent test at which compliance with 42.3.1 of this regulation was determined. The owner or operator also shall record all three-hour periods of operation during which the average temperature difference across the catalyst bed is less than 80% of the average temperature difference of the device during the most recent test at which compliance with 42.3.1 of this regulation was determined.

42.6.5.3 All three-hour periods of operation during which the average combustion temperature was more than 28°C (50°F) below the average combustion temperature during the most recent test at which compliance with 42.3.1 of this regulation was determined for boilers or process heaters with a design heat input capacity of less than 44 MW (150 million Btu/hr).

42.6.5.4 For boilers or process heaters, whenever there is a change in the location at which the vent stream is introduced into the flame zone as required under 42.3.1 of this regulation.

42.6.6 Each owner or operator subject to the provisions of 42.0 of this regulation shall keep up-to-date, readily accessible continuous records of the flow indication specified under 42.4.1.2, 42.4.2.2, and 42.4.3.1 of this regulation, as well as up-to-date, readily accessible records of all periods when the vent stream is diverted from the control device or has no flow rate.

42.6.7 Each owner or operator subject to the provisions of 42.0 of this regulation who uses a boiler or process heater with a design heat input capacity of 44 MW or greater to comply with 42.3.1 of this regulation shall keep an up-to-date, readily accessible record of all periods of operation of the boiler or process heater. (Examples of such records could include records of steam use, fuel use, or monitoring data collected pursuant to other state or federal regulatory requirements.)

42.6.8 Each owner or operator subject to the provisions of 42.0 of this regulation shall keep up-to-date, readily accessible, continuous records of the flare pilot flame monitoring specified in 42.4.2 of this regulation as well as up-to-date, readily accessible records of all periods of operations in which the pilot flame is absent.

42.6.9 Each owner or operator subject to the provisions of 42.0 of this regulation shall keep up-to-date, readily accessible, continuous records of the equipment operating parameters specified to be monitored under 42.4.3 of this regulation as well as up-to-date, readily accessible records of periods of operation during which the parameter boundaries established during the most recent compliance test are exceeded. The Department may at any time require a report of these data. Where the owner or operator seeks to demonstrate compliance with 42.3.3 of this regulation, periods of operation during which the parameter boundaries established during the most recent compliance tests are exceeded are defined as follows:

42.6.9.1 Where an absorber is the final recovery device in a recovery system, and where an organic monitoring device is not used, either 42.6.9.1.1 or 42.6.9.1.2 of this regulation:

42.6.9.1.1 All three-hour periods of operation during which the average absorbing liquid temperature was more than 11°C (20°F) above the average absorbing liquid temperature during the most recent compliance test that demonstrated that the facility was in compliance.

42.6.9.1.2 All three-hour periods of operation during which the average absorbing liquid specific gravity was more than 0.1 unit above or below the average absorbing liquid specific gravity during the most recent compliance test that demonstrated that the facility was in compliance.

42.6.9.2 Where a condenser is the final recovery device in a recovery system, and where an organic monitoring device is not used, all three-hour periods of operation during which the average exit (product side) condenser operating temperature was more than 6°C (11°F) above the average exit (product side) operating temperature during the most recent compliance test that demonstrated that the facility was in compliance.

42.6.9.3 Where a carbon adsorber is the final recovery device in a recovery system and where an organic monitoring device is not used, either 42.6.9.3.1 or 42.6.9.3.2 of this regulation:

42.6.9.3.1 All carbon bed regeneration cycles during which the total mass steam flow was more than 10% below the total mass steam flow during the most recent compliance test that demonstrated that the facility was in compliance.

42.6.9.3.2 All carbon bed regeneration cycles during which the temperature of the carbon bed after regeneration (and after completion of any cooling cycle or cycles) was more than 10% greater than the carbon bed temperature (in degrees Celsius) during the most recent compliance test that demonstrated that the facility was in compliance.

42.6.9.4 Where an absorber, condenser, or carbon adsorber is the final recovery device in the recovery system and an organic monitoring device approved by the Department is used, all three-hour periods of operation during which the average concentration level or reading of organic compounds in the exhaust gases is more than 20% greater than the exhaust gas organic compound concentration level or reading measured by the monitoring device during the most recent compliance test that demonstrated that the facility was in compliance.

42.6.10 Each owner or operator subject to the provisions of 42.0 of this regulation and seeking to demonstrate compliance with 42.3.3 of this regulation shall keep up-to-date, readily accessible records of:

42.6.10.1 Any changes in production capacity, feedstock type, or catalyst type, or of any replacement, removal, or addition of recovery equipment or air oxidation reactors.

42.6.10.2 Any recalculation of the TRE index value performed pursuant to 42.5.2 of this regulation.

42.6.10.3 The results of any test performed pursuant to the methods and procedures required by 42.4.4 of this regulation.

42.7 Reporting requirements. The owner or operator of any facility containing sources subject to 42.0 of this regulation shall:

42.7.1 Comply with the initial compliance certification requirements of 5.1 of this regulation.

42.7.2 Comply with the requirements of 5.2 of this regulation for excess emissions related to the control devices required to comply with 42.0 of this regulation, as well as any other State of Delaware exceedance reporting requirements.

43.0 Bulk Gasoline Marine Tank Vessel Loading Facilities.

08/08/1994

43.1 Applicability

43.1.1 The provisions of this regulation apply to all loading berths at any bulk marine tank loading facility that delivers gasoline into marine tank vessels. Operations conducted in association with crude oil handling are not subject to 43.0 of this regulation.

43.1.2 Any facility subject to 43.0 of this regulation which has an annual throughput of less than or equal to 15,000 gallons of gasoline is exempt from this regulation except for the recordkeeping and reporting requirements of 43.7 and 43.8 of this regulation, respectively.

43.1.3 Any facility that becomes or is currently subject to the provisions of 43.0 of this regulation will remain subject to these provisions even if its throughput later falls below the applicability threshold.

43.1.4 Nothing in 43.0 of this regulation shall be construed as to require any act or omission that would be in violation of any regulation or other requirements of the United States Coast Guard or prevent any act that is necessary to secure the safety of a vessel or the safety of the passengers or crew.

43.2 Definitions. As used in 43.0 of this regulation, all terms not defined herein shall have the meaning given them in the November 15, 1990 Clean Air Act Amendments (CAAA), or in 2.0 of this regulation.

"**Ballasting**" means the loading of water or other liquid into a marine tank vessel's cargo tank to obtain proper propeller, rudder and hull immersion.

"**Boiler"** means any enclosed combustion device that uses fuel to produce energy in the form of steam.

"**Car-sealed**" means having a seal that is placed on the device used to change the position of a valve (e.g., from open to closed) such that the position of the valve cannot be changed without breaking the seal and requiring the replacement of the old seal, once broken, with a new seal.

"**Combustion device**" means all equipment, including, but not limited to, incinerators, flares, boilers, and process heaters used for combustion or destruction of organic vapors displaced from the loading berths.

"**Flare**" means an engineered control device designed for direct combustion of waste gases.

"**Facility**" means any plant, terminal, refinery or other location where there exists a dock, berth, or anchorage capable of bulk loading on marine tank vessels.

"**Gasoline**" means any petroleum product having a Reid Vapor Pressure of four psia or greater and used as automotive fuel and aviation fuel.

"**Housekeeping**" means altering the composition of gases contained within marine vessel tanks by tank washing, gas freeing, or purging.

"**Inlet to the control device**" means any point on the vapor line between the vessel and the control device prior to the addition of any inert, dilution or enrichment gas.

"**Loading berth**" means the loading arms, pumps, meters, shutoff valves, relief valves, and other piping and valves necessary to fill marine vessels. This includes those items necessary for off shore loading.

"**Loading cycle**" means the time period from the beginning of filling a marine vessel until flow of product into the vessel ceases, as measured by the flow indicator.

"**Marine tank vessel**" means any tank ship or barge which transports liquid product such as gasoline in bulk.

"**Non-vapor tight**" means any marine vessel that does not pass the required vapor-tightness test.

"**Process heater**" means a device that transfers heat liberated by burning fuel to fluids contained in tubes, except water that is heated to produce steam.

"**Recovery devic**e" means an individual unit of equipment, including but not limited to an absorber, carbon adsorber, or condensers, capable of and used for the purpose of removing vapors and recovering liquids.

"**Vapor collection system**" means any equipment located at the affected facility used for containing vapors displaced during the loading of marine tank vessels. This does not include the vapor collection system that is part of any marine vessel vapor collection manifold system.

"**Vapor-tight**" means any marine tank vessel that has demonstrated within the preceding 12 months to have no leaks. This demonstration shall be made using 40 CFR Part 60, App. A., Method 21 (7/1/92), during the last 20% of loading in a product tank. A reading of greater than 10,000 ppmv as methane shall constitute a leak. As an alternative, a marine vessel owner or operator may use the vapor-tightness test described in 43.6 of this regulation to demonstrate vapor-tightness. A marine vessel loaded at negative pressure is assumed to be vapor-tight.

43.3 Standards. On or before December 31, 1995:

43.3.1 The owner or operator of a bulk gasoline marine tank vessel loading facility subject to 43.0 of this regulation shall ensure that each loading berth is equipped with a vapor collection system that is designed to collect all VOC vapors displaced from marine tank vessels during loading, ballasting, or housekeeping.

43.3.2 Each vapor collection system shall be designed to prevent any VOC vapors collected at one loading berth from passing to another loading berth.

43.3.3 The owner or operator of a bulk gasoline marine tank vessel loading facility subject to 43.0 of this regulation shall comply with 43.3.3.1, 43.3.3.2, or 43.3.3.3 of this regulation.

43.3.3.1 Reduce total VOC emissions by 98 weight-percent using a combustion device. If a boiler or process heater is used to comply with 43.3 of this regulation, the vent stream shall be introduced into the flame zone of the boiler or process heater.

43.3.3.2 Combust the VOC emissions in a flare that meets the requirements of 40 CFR 60.18 (7/1/92).

43.3.3.3 Reduce VOC emissions by 95 weight % using a vapor recovery device.

43.3.4 Loading of gasoline into marine tank vessels shall be limited to marine tank vessels that have been approved by the United States Coast Guard for connection to marine vapor control systems and are vapor tight. Vapor tightness shall be determined using the following procedures:

43.3.4.1 Prior to initiating the loading process, the loading berth owner or operator shall obtain the vapor tightness documentation described in 43.7 of this regulation for each marine tank vessel that is to be loaded at the loading berth subject to 43.0 of this regulation.

43.3.4.2 If there is no documentation of a successful vapor tightness test conducted on the marine tank vessel, the owner or operator of the loading berth subject to 43.0 of this regulation shall require that a vapor tightness test be conducted during the last 20% of loading of the marine tank vessel or shall not load the marine tank vessel.

43.3.4.3 Within three weeks after the loading has occurred, the loading berth owner or operator shall notify the owner or operator of each non-vapor-tight marine tank vessel loaded at the loading berths subject to 43.0 of this regulation that the marine tank vessel is not vapor-tight.

43.3.4.4 The loading berth owner or operator shall take steps to assure that the non-vapor-tight marine tank vessel will not be reloaded at the loading berth subject to 43.0 of this regulation until vapor tightness documentation for that marine tank vessel is obtained.

43.3.5 The owner or operator of a bulk gasoline marine tank loading facility subject to 43.0 of this regulation shall limit loading of gasoline to marine tank vessels equipped with vapor collection equipment that is compatible with the vapor collection system of the bulk gasoline marine tank loading facility.

43.3.6 The owner or operator of a bulk gasoline marine tank loading facility subject to 43.0 of this regulation shall limit loading of gasoline to marine tank vessels whose vapor collection system is connected to the vapor collection system of the bulk gasoline marine tank loading facility.

43.3.7 The owner or operator of a bulk gasoline marine tank loading facility subject to 43.0 of this regulation shall ensure that the maximum normal operating pressure of the marine tank vessel vapor collection equipment shall not exceed 0.8 times the set relief pressure of the pressure-vacuum vents in the vessel compartment. This level is not to be exceeded when measured by the procedures described in 43.5.12 of this regulation.

43.3.8 Each calendar month, the owner or operator shall inspect the vapor collection system, the vapor control system, and each loading berth that loads gasoline into marine tank vessels for total organic compound liquid and vapor leaks during product transfer operations. For purposes of 43.3 of this regulation, detection methods incorporating sight, sound, or smell are acceptable. Each detection of a leak shall be tagged and recorded and the source of the leak repaired within 15 days. A first attempt at repair shall be made no later than five calendar days after the leak is detected.

43.3.9 Loading of gasoline marine tank vessels shall be restricted to the use of submerged fill.

43.4 Monitoring requirements.

43.4.1 The owner or operator of a bulk gasoline marine tank vessel loading facility that uses an incinerator to comply with the VOC emission reduction specified under 43.3.3.1 of this regulation shall install, calibrate, maintain, and operate according to manufacturer's specifications a temperature monitoring device equipped with a continuous recorder and having an accuracy of ±1% of the temperature being monitored expressed in Celsius or ±0.5°, whichever is greater.

43.4.1.1 Where an incinerator other than a catalytic incinerator is used, a temperature monitoring device shall be installed in the firebox.

43.4.1.2 Where a catalytic incinerator is used, temperature monitoring devices shall be installed in the gas stream immediately before and after the catalyst bed.

43.4.2 The owner or operator of a bulk gasoline marine tank vessel loading facility that uses a flare to comply with 43.3.3.2 of this regulation shall install, calibrate, maintain, and operate according to manufacturer's specifications a heat-sensing device, such as an ultra-violet sensor or thermocouple, at the pilot light to indicate the continuous presence of a flame.

43.4.3 The owner or operator of a bulk gasoline marine tank vessel loading facility that uses a boiler or process heater to comply with 43.3.3.1 of this regulation shall install, calibrate, maintain, and operate according to

manufacturer's specifications the following equipment, or monitor and record operating parameters described as follows:

43.4.3.1 A temperature monitoring device in the firebox equipped with a continuous recorder and having an accuracy of ±1% of the temperature being measured expressed in degrees Celsius or ±0.5°C, whichever is greater, for boilers or process heaters of less than 44 megawatts (MW) (150 million British thermal units per hour [BTU/hr]) heat input design capacity.

43.4.3.2 Monitor and record the periods of operation of the boiler or process heater if the design capacity of the boiler or process heater is 44 MW (150 million BTU/hr) or greater. The records shall be readily available for inspection.

43.4.4 The owner or operator of a bulk gasoline marine tank vessel loading facility that uses a carbon adsorption system to comply with 43.3.3.3 of this regulation shall install, calibrate, maintain, and operate according to manufacturer's specifications the following equipment:

43.4.4.1 An integrating steam flow monitoring device having an accuracy of ±10% if steam regeneration is used, or a vacuum monitoring device with timing capability having an accuracy of ±5% of full scale if vacuum regeneration is used, and a carbon bed temperature monitoring device having an accuracy of ±1% of the temperature being measured expressed in degrees Celsius or ±0.5°C, whichever is greater, both equipped with a continuous recorder, or

43.4.4.2 An organic monitoring device used to indicate the concentration level of organic compounds exiting the recovery device based on a detection principle such as infrared, photoionization, or thermal conductivity, and equipped with a continuous recorder.

43.4.5 The owner or operator of a bulk gasoline marine tank vessel loading facility subject to 43.0 of this regulation who wishes to demonstrate compliance with the percent reduction requirements specified in 43.3.3.1 and 43.3.3.3 of this regulation using control devices other than an incinerator, boiler, process heater, carbon adsorber, or flare shall provide the Department with information describing the operation of the control device and the process parameter or parameters that would indicate proper operation and maintenance of the device. The Department may request further information and shall specify appropriate monitoring procedures or requirements.

43.4.6 The owner or operator of a bulk gasoline marine tank vessel loading facility subject to 43.0 of this regulation that uses a vent system that contains valves that could divert a vent stream from a control device used to comply with the requirements of 43.0 of this regulation shall do the following:

43.4.6.1 Install a flow indicator immediately downstream of each valve that if opened would allow a vent stream to bypass the control device and be emitted, either directly or indirectly, to the atmosphere. The flow indicator shall be capable of recording flow at least every 15 minutes, or

43.4.6.2 Monitor the valves once a month, checking the position of the valves and the condition of the car seal, and identify all times when the car seals have been broken and the valve position changed (i.e., from open to closed for valves in the vent piping to the control device and closed to open for valves that allow the stream to be vented directly or indirectly to the atmosphere).

43.5 Test method and procedures for control devices. The following methods from 40 CFR. Part 60, App. A. (7/1/92), shall be used as reference methods to demonstrate compliance with 43,3,3,1 and 43.3.3.3 of this regulation:

43.5.1 Method 1 or 1A, as appropriate, for selection of the sampling sites. The control device sampling site for determining vent stream molar composition or VOC reduction efficiency shall be prior to the inlet of the control device and after the recovery system.

43.5.2 Method 2, 2A, 2C, or 2D, as appropriate, for determining the volumetric flow rates, and Method 18 for determining the vent gas composition.

43.5.3 Method 25A or 25B, as appropriate, for determining the total organic compounds concentration upstream and downstream of the control device. The calibration gas shall be either propane or butane. This test shall be conducted for at least 30 minutes during the transfer of the last 50% of total liquid cargo. For events of less than one hour duration, the test shall include the entire last 50% of total liquid cargo.

43.5.4 All testing equipment shall be prepared and installed as specified in the appropriate test methods.

43.5.5 Immediately prior to each performance test required for determination of compliance with 43.3.3 of this regulation, all potential sources of vapor leakage in the vapor collection system equipment shall be monitored for detectable emissions according to the procedures in **Appendix F** of this regulation. The monitoring shall be conducted only while a vapor tight marine tank vessel is being loaded. All leaks shall be repaired prior to conducting the performance test.

43.5.6 An emission testing interval shall consist of each five minute period during the performance test. For each interval:

43.5.6.1 The reading from each measurement instrument shall be recorded.

43.5.6.2 The volume exhausted and the average total organic compounds concentration upstream and downstream of the control device shall be determined, as specified in the appropriate test method. The average total organic compounds concentration shall correspond to the volume measurement by taking into account the sampling system response time.

43.5.7 The mass emitted during each testing interval shall be calculated as follows:

$$M_{ei} = 10^{-6} K V_{es} C_e$$

(43-1)

where:

M_{ei} = Mass of total organic compounds (milligrams [mg]) emitted during testing interval i.

V_{es} = Volume of air-vapor mixture exhausted (cubic meters [m^3]), at standard conditions.

C_e = Total organic compounds concentration (measured as carbon) at the exhaust vent (ppmv).

K = Density of calibration gas (milligrams/cubic meter [mg/m^3]) at standard conditions.

= 1.83×10^6 for propane

= 2.41×10^6 for butane

s = Standard conditions, 20°C and 760 millimeters of mercury (mm Hg).

43.5.8 The total organic compounds mass emission rate before and after the control device shall be calculated as follows:

$$E = \frac{\sum_{i=1}^{n} M_i}{T}$$

(43-2)

where:

E = Mass of total organic compounds emitted, kilograms per hour (kg/hr).

M_i = Mass of total organic compounds emitted during testing interval i, kg.

T = Total time of all testing intervals, hr.

n = Number of testing intervals.

43.5.9 The percent reduction across the control device shall be calculated as follows:

$$R = \frac{E_b - E_a}{E_b} \times 100$$

(43-3)

where:

R = Efficiency of control device, %

E_b = Mass flow of total organic compounds prior to control device, kg/hr

E_a = Mass flow of total organic compounds after control device, kg/hr

43.5.10 The owner or operator may adjust the emission results to exclude the methane and ethane content in the exhaust vent by any method approved by the Department.

43.5.11 When a flare is used to seek to comply with 43.3.3.2 of this regulation, the flare shall comply with the requirements of 40 CFR 60.18 (7/1/92).

43.5.12 The test procedure for determining compliance with 43.3.7 of this regulation is as follows:

43.5.12.1 Calibrate and install a pressure measurement device that is capable of measuring up to the relief set pressure of the pressure-vacuum vents.

43.5.12.2 Connect the pressure measurement device to a pressure tap in the bulk gasoline marine tank vessel loading facility vapor collection system, located as close as possible to the connection with the marine tank vessel.

43.5.12.3 During the performance test, record the pressure every five record the highest instantaneous pressure that occurs during each loading cycle.

43.6 Test methods and procedures for marine tank vessels. The following test methods shall be used to comply with the marine tank vessel vapor tightness requirements specified in 43.3.4 of this regulation:

43.6.1 Each marine tank vessel shall be pressurized with dry air or inert gas to not less than 1.0 psig and not more than the pressure of the lowest relief valve setting.

43.6.2 Once the pressure is obtained, the dry air or inert gas source shall be shut off and the pressure reading recorded.

43.6.3 At the end of 30 minutes, the pressure in the marine tank vessel and piping shall be measured and recorded. The change in pressure shall be calculated as follows:

$$\Delta P = P_i - P_f \qquad (43\text{-}4)$$

where:

ΔP = Change in pressure, inches of water (in. H_2O).
P_i = Initial pressure in marine tank vessel after air/gas is shut off, in. H_2O.
P_f = Pressure in marine tank vessel at the end of the 30 minute period, in. H_2O.

43.6.4 The change in pressure, P, shall be compared to the pressure calculated as follows:

$$\Delta PM = 0.861 P_{ia} \frac{L}{V} \qquad (43\text{-}5)$$

where:

ΔPM = Maximum allowable pressure change, in. H_2O.
P_{ia} = Initial pressure in marine tank after air/gas is shut off, pounds per square inch absolute (psia).
L = Maximum permitted loading rate of vessel, barrels per hour.
V = Total volume of marine tank, barrels.

43.6.5 If $\Delta P \leq \Delta PM$, the marine tank vessel is vapor tight.

43.6.6 If $\Delta P > \Delta PM$, the marine tank vessel is not vapor tight and the source of the leak Must be identified and repaired prior to retesting.

43.7 Recordkeeping. The owner or operator of a bulk gasoline marine tank vessel loading facility subject to 43.0 of this regulation shall keep the records specified in 43.7 of this regulation in a readily accessible location for at least five years. These records shall be made available to the Department immediately upon verbal or written request.

43.7.1 An operator or owner subject to 43.0 of this regulation seeking to demonstrate compliance with 43.3.3.1 of this regulation through using either a thermal or catalytic incinerator shall record:

43.7.1.1 The average firebox temperature of the incinerator (or the average temperature upstream and downstream of the catalyst bed), measured at least every two minutes of the loading cycle if the time period of the loading cycle is less than three hours or every 15 minutes if the total time period of the loading cycle is equal to or greater than three hours. The measured temperature shall be averaged over the loading cycle.

43.7.1.2 The percent reduction of total organic compounds determined as specified in 43.5.8 and 43.5.9 of this regulation.

43.7.1.3 The duration of each loading cycle.

43.7.2 An operator or owner subject to 43.0 of this regulation seeking to demonstrate compliance with 43.3.3.1 of this regulation through use of a boiler or process heater shall record:

43.7.2.1 A description of the location at which the vent stream is introduced into the boiler or process heater.

43.7.2.2 The average combustion temperature of the boiler or process heater with a design capacity of less than 44 MW (150 million BTU/hr) measured at least every two minutes of the loading cycle if the time period of the loading cycle is less than three hours or every 15 minutes if the total time period

of the loading cycle is equal to or greater than three hours. The measured temperature shall be averaged over the loading cycle.

43.7.2.3 The duration of each loading cycle.

43.7.3 An operator or owner subject to 43.0 of this regulation seeking to demonstrate compliance with 43.3.3.2 of this regulation through use of a smokeless flare or other flare design (i.e., steam-assisted, air-assisted or nonassisted) shall record:

43.7.3.1 All visible emission readings, heat content determinations, flow rate measurements, and exit velocity determinations made during the compliance test.

43.7.3.2 Continuous records of the flare pilot flame monitoring.

43.7.3.3 Records of all periods of operation during which the pilot flame is absent during the loading cycle.

43.9.3.4 The duration of each loading cycle.

43.7.3.5 Any flare system that is designed to cease operation upon loss of pilot and that automatically shuts down vessel loading and isolates the vessel vent stream from the flare by closing automatic block valves shall be exempt from the requirements of 43.9.3.2 and 43.9.3.3 of this regulation.

43.7.4 An operator or owner subject to 43.0 of this regulation seeking to demonstrate compliance with 43.3.3.3 of this regulation through use of a carbon adsorber where an organic monitor is not used shall record:

43.7.4.1 The total steam mass flow measured at least every 15 minutes and averaged over each loading cycle or the continuous records of the vacuum during regeneration.

43.7.4.2 The duration of the carbon bed regeneration cycle.

43.7.4.3 Continuous records of the carbon bed temperature after regeneration.

43.7.4.4 The duration of each loading cycle.

43.7.5 An operator or owner subject to 43.0 of this regulation seeking to demonstrate compliance with 43.3.3.3 of this regulation through use of a carbon adsorber where an organic monitor is used shall record:

43.7.5.1 Continuous records of the organic compounds concentration in the exhaust gases.

43.7.5.2 The duration of each loading cycle.

43.7.6 The owner or operator subject to 43.0 of this regulation shall keep up-to-date, readily accessible, continuous records of the equipment operating parameters specified to be monitored under 43.4 of this regulation, as well as permanent, up-to-date, readily accessible, continuous records of periods of operation during which the parameter boundaries established during the most recent performance test are exceeded. The Department may at any time require a report of these data. Periods of operation during which parameter boundaries established during the most recent performance test are exceeded are defined as follows:

43.7.6.1 For thermal incinerators, all periods during the loading cycle during which the average combustion temperature was more than 28°C below the average loading cycle temperature during the most recent performance test at which compliance with 43.3.3.1 of this regulation was determined.

43.7.6.2 For catalytic incinerators, all periods during the loading cycle during which the average temperature of the vent stream immediately before the catalyst bed is more than 28°C below the average temperature of the vent stream during the most recent performance test at which compliance with 43.3.3.1 of this regulation was determined.

43.7.6.3 All periods of operation during the loading cycle during which the average combustion temperature was more than 28°C below the average loading cycle temperature during the most recent performance test at which compliance with 43.3.3.1 of this regulation was determined for boilers or process heaters with a designed heat input capacity of less than 44 MW (150 million BTU/hr).

43.7.6.4 For boilers or process heaters, whenever there is a change in the location at which the vent stream is introduced into the flame zone as required under 43.3.3.1 of this regulation.

43.7.6.5 For carbon adsorbers where an organic monitor is used, all three-hour periods during the loading cycle during which the average organic compounds concentration or readings of organics in the exhaust gases is more than 20% greater than the average organic compounds concentration or reading measured by the organic monitoring device during the most recent performance test at which compliance with 43.3.3.3 of this regulation was determined.

43.7.6.6 For carbon adsorbers where an organic monitor is not used:

43.7.6.6.1 All carbon bed regeneration cycles during which the total mass steam flow was below 10% of the total mass steam flow during the most recent compliance test that demonstrated that the facility was in compliance.

43.7.6.6.2 All carbon bed regeneration cycles during which the temperature of the carbon bed after regeneration (and after completion of any cooling cycle or cycles) was greater than 10% of the

carbon bed temperature (in degrees Celsius) during the most recent compliance test that demonstrated that the facility was in compliance.

43.7.7 Each owner or operator subject to the provisions of 43.0 of this regulation using a boiler or process heater with a design heat input capacity of 44 MW (150 million BTU/hr) or greater to comply with 43.3.3.1 of this regulation shall keep up-to-date, readily accessible records of all periods of operation of the boiler or process heater.

43.7.8 Each owner or operator subject to the provisions of 43.0 of this regulation shall keep up-to-date, readily accessible, continuous records of the flare pilot flame monitoring data specified in 43.4.2 of this regulation as well as up-to-date, readily accessible, records of all periods of operation in which the pilot flame is absent except as exempted under 43.7.3.5 of this regulation.

43.7.9 Each owner or operator subject to the provisions of 43.0 of this regulation that uses a vent system with valves that could divert the vent stream from the control device shall keep readily accessible records of:

43.7.9.1 All periods when flow is indicated if flow monitors are installed under 43.4.6.1 of this regulation.

43.7.9.2 All times when maintenance is performed on car-sealed valves, when the car seal is broken, and when the valve position is changed (i.e., from open to closed for valves leading to the control device and closed to open for valves that vent the stream directly or indirectly to the atmosphere bypassing the control device) if valves are monitored under 43.4.6.2 of this regulation.

43.7.10 The owner or operator of a bulk gasoline marine tank loading facility subject to 43.0 of this regulation shall keep up-to-date documentation of each marine tank vessel's vapor tightness test results by 43.3.4.1 of this regulation to include as a minimum the following:

43.7.10.1 Marine tank vessel owner or owners, name or names and address.

43.7.10.2 Marine tank vessel identification number.

43.7.10.3 Date and location of test.

43.7.10.4 Test results.

43.8 Reporting requirements. The owner or operator of a bulk gasoline marine tank loading facility subject to 43.0 of this regulation shall:

43.8.1 Comply with the initial compliance certification requirements of 5.1 of this regulation.

43.8.2 Comply with the requirements of 5.2 of this regulation regarding excess emissions related to the control devices required to comply with 43.0 of this regulation, as well as any other State of Delaware exceedance reporting requirements.

44.0 Batch Processing Operations.

11/29/1994

44.1 Applicability.

44.1.1 The provisions of 44.0 of this regulation apply to process vents associated with batch processing operations in the following affected manufacturing facilities with the corresponding primary Standard Industrial Classification ("SIC") Codes:

44.1.1.1 Plastic Materials & Resins (SIC 2821).

44.1.1.2 Medical Chemicals & Botanical Products (SIC 2833).

44.1.1.3 Gum & Wood Chemicals (SIC 2861).

44.1.1.4 Cyclic Crudes & Intermediates (SIC 2865).

44.1.1.5 Industrial Organic Chemicals (SIC 2869).

44.1.1.6 Agricultural Chemicals (SIC 2879).

44.1.2 The requirements of 44.0 of this regulation do not apply to pharmaceutical industry operations covered under 35.0 of this regulation.

44.1.3 Except for the recordkeeping and reporting requirements listed in 44.6 and 44.7 of this regulation, the requirements of 44.0 of this regulation do not apply to the following operations:

44.1.3.1 Combined process vents from each batch process train with an annual mass emission total of 4,540 kilograms (kg) (10,000 pounds [lb]) of volatile organic compounds (VOCs) or less; or

44.1.3.2 Single unit operations which have annual mass emissions of 227 kg (500 lb) VOCs or less.

44.1.4 Existing sources affected by 44.0 of this regulation shall comply with the provisions of 44.0 of this regulation as soon as practicable, but no later than April 1, 1996. New, modified, or reconstructed sources affected by 44.0 of this regulation shall comply with the provisions of 44.0 of this regulation upon start up.

44.1.5 Any facility that becomes or is currently subject to the provisions of 44.0 of this regulation by exceeding the applicability threshold in 44.1.3 of this regulation shall remain subject to these provisions even if its emissions later fall below the applicability threshold.

44.1.6 Any facility that is currently subject to a state or federal rule promulgated pursuant to the Clean Air Act Amendments of 1977 by exceeding an applicability threshold is and shall remain subject to these provisions, even if its throughput or emissions later fall below the applicability threshold.

44.2 Definitions. As used in 44.0 of this regulation, all terms not defined herein shall have the meaning given them in the November 15, 1990 Clean Air Act Amendments (CAAA), or in 2.0 of this regulation.

"**Aggregated**" means the summation of all process vents within a process that contain VOCs.

"**Annual mass emissions total**" means the sum of all non-fugitive VOC emissions, evaluated before control, from a vent. Annual mass emissions may be calculated from an individual process vent or from groups of process vents by using the emission estimation equations contained in **Appendix K** of this regulation and then multiplying this result by the expected duration and frequency of the emission or groups of emissions over the course of a year.

"**Average flow rate**" means the flow rate averaged over the amount of time that VOCs are emitted during emission events. For the evaluation of average flow rate from an aggregate of sources, the average flow rate is the weighted average of the average flow rates of the emission events and their annual venting time:

Weighted Average Flow Rate =

$$\frac{\sum(\text{average flowrate per emission event i})(\text{annual duration of emission event i})}{\sum(\text{annual duration of emission event i})}$$

(44-1)

"**Batch cycle**" means a manufacturing event of an intermediate or product from start to finish in a batch process.

"**Batch process**" means a discontinuous process that involves the bulk movement of material through sequential manufacturing steps. Mass, temperature, concentration, and other properties of the material may vary with time and location in the process. Batch processes are typically characterized as "non-steady-state."

"**Batch process train**" means an equipment train that is used to produce a product or intermediate. A typical equipment train consists of equipment used for the synthesis, mixing, and purification of a material.

"**Control device**" means an air pollution abatement device, not a device such as a condenser that operates under reflux conditions, which is required for processing.

"**Emissions before control**" means the VOC emissions total prior to the application of a control device, or if no control device is used, the VOC emissions total. No credit for discharge of VOCs into wastewater shall be considered when the wastewater is further handled or processed with the potential for VOCs to be emitted to the atmosphere.

"**Emission event**" means a discrete venting episode that may be associated with a single unit of operation. For example, a displacement of vapor resulting from the charging of a vessel with VOCs will result in a discrete emission event that will last through the duration of the charge and will have an average flow rate equal to the rate of the charge. If the vessel is then heated, there will also be another discrete emission event resulting from the expulsion of vapor from the expansion caused by heating. Both emission events may occur in the same vessel or unit operation.

"**Process**" means, for the purpose of determining RACT applicability, any equipment within a contiguous area that is connected during the course of a year. "Connected" means a link between equipment, whether it is physical, such as a pipe, or whether it consists of a series of steps from which material is transferred from one unit operation to another unit operation.

"**Process vent**" means a point of emission from a piece of equipment within which a unit operation takes place. Typical process vents from batch processes include condenser vents, vacuum pumps, steam ejectors, and atmospheric vents from reactors and other process vessels. Relief valve discharges and equipment exhaust systems that discharge from unit operations would also be considered process vents.

"**Semi-continuous operation**" means an operation that is conducted in a steady-state mode but only for finite durations during the course of a year. For example, a steady-state distillation operation that functions for one month would be considered a semi-continuous operation.

"**Single unit operation**" means a discrete piece of equipment used in a processing step to prepare reactants, facilitate reactions, separate and purify products, or recycle materials.

"**Volatility**" means a physical property of materials which exhibits the following characteristics: low-volatility materials have a vapor pressure of less than or equal to 75 millimeters (mm) mercury (Hg) (3.0 inches [in] Hg) at 20 degrees Celsius (°C) (68 degrees Fahrenheit [°F]); moderate-volatility materials have a vapor pressure of greater than 75 mm Hg (3.0 in Hg) and less than or equal to 150 mm Hg (6.0 in Hg) at 20°C (68°F); and high-volatility materials have a vapor pressure of greater than 150 mm Hg (6.0 in Hg) at 20°C (68°F). To evaluate VOC volatility for single unit operations that service numerous VOCs or for processes handling multiple VOCs, the weighted average volatility can be calculated using the total amount of each VOC used in a year, and the individual component vapor pressure, as shown in the following equation:

Weighted Average Volatility =

$$\frac{\sum\left[(\text{vapor pressure of VOC component } i)\dfrac{(\text{mass of VOC component } i)}{(\text{molecular weight of VOC component } i)}\right]}{\sum\dfrac{(\text{mass of VOC component } i)}{(\text{molecular weight of VOC component } i)}}$$

(44-2)

44.3 Standards. Individual vents with an actual average flow rate less than the flow rate calculated using the RACT applicability equations (FR) provided in 44.3.3 of this regulation, as a function of uncontrolled annual VOC emissions (AE), shall reduce VOC emissions by 90%. Vents in aggregate within a batch process having an actual weighted-average flow rate less than FR calculated using the RACT applicability equations in 44.3.3 of this regulation, as a function of AE, shall reduce process VOC emissions by 90%.

44.3.1 Determination of Uncontrolled Annual VOC Emissions (AE). Determination of the uncontrolled annual VOC emissions (AE) may be achieved by developing engineering estimates of the uncontrolled emissions on a batch basis from a process vent, or from a group of process vents within a batch process train, and multiplying these estimates by the potential number of batch cycles per year. Engineering estimates shall follow the guidance provided in **Appendix K** of this regulation. Alternatively, if an emissions measurement is to be used to measure vent emissions, the measurement must conform with the requirements for measuring the inlet VOC mass flow rate, as described in 44.4.2.2, 44.4.2.3.1 and 44.4.2.3.2 of this regulation.

44.3.2 Determination of Average Flow Rate. To obtain a value for the actual average flow rate of individual vents or the actual weighted-average flow rate of aggregated vents in a batch process, an owner or operator may measure the flow rates or may estimate the flow rates using the estimation guidelines provided in **Appendix K** of this regulation. If measurements are used to estimate the flow rates, the measurements must conform with the requirements for measuring the incoming volumetric flow rates, as described in 44.4.2.2 of this regulation. If flow rates are estimated using manifold design parameters, the owner or operator shall demonstrate that equipment design accurately reflects actual operating conditions.

44.3.3 RACT Applicability Equations. RACT applicability equations are specific to VOC volatility and are presented below:

$$FR = [0.07 \times (AE)] - 1{,}821$$

$$FR = [0.031 \times (AE)] - 494$$

$$FR = [0.013 \times (AE)] - 301$$

(44-3)

where:

FR = Calculated Flow Rate (standard cubic feet per minute [scfm])

AE = Uncontrolled Annual VOC Emissions (pounds per year [lb/yr])

An owner or operator shall compare the calculated flow rate (FR) with the actual average flow rate or the actual weighted-average flow rate determined using the procedures

described in 44.3.2 of this regulation, and if FR exceeds the actual average flow rate, the owner or operator shall reduce VOC emissions by 90%.

44.4 Performance Testing.

44.4.1 For the purpose of demonstrating compliance with the control requirements of 44.0 of this regulation, unit operations shall be performed at full operating conditions and flow rates during any performance test.

44.4.2 The following methods in 40 Code of Federal Regulations (CFR) Part 60, **Appendix A** (July 1, 1992), shall be used to demonstrate that the process vent or vents comply with the control efficiency requirement listed in 44.3 of this regulation.

44.4.2.1 Method 1 or 1A, as appropriate, for the selection of the sampling sites if the flow measuring device is a rotameter. No traverse is necessary when the flow measuring device is an ultrasonic probe. The control device inlet sampling sites for the determination of vent stream VOC composition reduction efficiency shall be located before and after the control device.

44.4.2.2 Method 2, 2A, 2C, or 2D, as appropriate, for the determination of the gas stream volumetric flow rate; flow measurements shall be made continuously.

44.4.2.3 Method 25A or Method 18, if applicable, for the determination of VOC concentration in the control device inlet and outlet.

44.4.2.3.1 The sampling time for each run shall be the entire length of the batch cycle in which readings will be taken continuously, if Method 25A is used, or as often as is possible using Method 18, with a maximum of one-minute intervals between measurements throughout the batch cycle.

44.4.2.3.2 The VOC emission rate of the process vent at the inlet to the control device shall be determined by combining continuous concentration and flow rate measurements at simultaneous points throughout the batch cycle.

44.4.2.3.3 The VOC emission rate of the process vent at the outlet of the control device shall be obtained by combining continuous concentration and flow rate measurements at simultaneous points throughout the batch cycle.

44.4.2.3.4 The efficiency of the control device shall be determined by integrating the mass rates obtained using the procedures specified in 44.4.2.3.2 and 44.4.2.3.3 of this regulation, over the time of the batch cycle, and dividing the difference in the inlet and outlet mass flow totals by the inlet mass flow total.

44.5 Monitoring Requirements.

44.5.1 An owner or operator of an affected facility that uses an incinerator to seek compliance with the VOC control requirement specified under 44.3 of this regulation shall install, calibrate, maintain, and operate, according to the manufacturer's specifications, a temperature monitoring device that is equipped with a continuous recorder and that has an accuracy of ± 0.5°C.

44.5.1.1 Where an incinerator other than a catalytic incinerator is used, a temperature monitoring device shall be installed in the firebox.

44.5.1.2 Where a catalytic incinerator is used, temperature monitoring devices shall be installed in the gas stream immediately before and after the catalyst bed.

44.5.2 An owner or operator of an affected facility that uses a flare to seek compliance with the VOC control requirement specified under 44.3 of this regulation shall install, calibrate, maintain, and operate, according to the manufacturer's specifications, a heat sensing device, such as an ultraviolet sensor or thermocouple, at the pilot light to indicate the continuous presence of a flame.

44.5.3 An owner or operator of an affected facility that uses an absorber to seek compliance with the VOC control requirement specified under 44.3 of this regulation shall install, calibrate, maintain, and operate, according to the manufacturer's specifications, at least one of the following devices:

44.5.3.1 A scrubbing liquid temperature monitoring device that has an accuracy of ± 1% of the temperature being monitored, expressed in °C, or ± 0.02 specific gravity units, and that is equipped with a continuous recorder; or

44.5.3.2 An organic monitoring device that indicates the concentration level of organic compounds exiting the recovery device based on a detection principle such as infrared photoionization or thermal conductivity, and that is equipped with a continuous recorder.

44.5.4 An owner or operator of an affected facility that uses a condenser or refrigeration system to seek compliance with the VOC control requirement specified under 44.3 of this regulation shall install, calibrate, maintain, and operate, according to the manufacturer's specifications, at least one of the following devices:

44.5.4.1 A temperature monitoring device located at the condenser's vapor exit side that is equipped with a continuous recorder and that has an accuracy of ±1% of the temperature being monitored, expressed in °C or ±0.5°C, whichever is greater; or

44.5.4.2 An organic monitoring device that indicates the concentration level of organic compounds exiting the recovery device based on a detection principle such as infrared photoionization or thermal conductivity, and that is equipped with a continuous recorder.

44.5.5 An owner or operator of an affected facility that uses a carbon adsorber to seek compliance with the VOC control requirements specified under 44.3 of this regulation shall install, calibrate, maintain, and operate, according to the manufacturer's specifications, at least one of the following devices:

44.5.5.1 An integrating stream flow monitoring device that has an accuracy of ±10%, and a carbon bed temperature monitoring device that has an accuracy of ±1% of the temperature being monitored, expressed in °C or ±0.5 °C, whichever is greater, both equipped with a continuous recorder; or

44.5.5.2 An organic monitoring device that indicates the concentration level of organic compounds exiting the recovery device based on a detection principle such as infrared photoionization or thermal conductivity, and that is equipped with a continuous recorder.

44.6 Recordkeeping Requirements.

44.6.1 Each facility with a batch processing operation subject to 44.0 of this regulation shall keep records for a minimum of five years of the following emission stream parameters for each process vent contained in the batch process:

44.6.1.1 The annual mass emission total, and documentation verifying these values. If emission estimation equations are used, the documentation shall be the calculations coupled with the number of emission events per year. If the annual mass emission total is obtained from measurement in accordance with the performance testing specifications under 44.4 of this regulation, VOC emission results may be submitted.

44.6.1.2 The average flow rate in scfm and documentation verifying these values.

44.6.2 Each facility with a batch processing operation subject to 44.0 of this regulation shall keep records of the following parameters, which are required to be measured during the performance test described under 44.4 of this regulation, and are required to be monitored under 44.5 of this regulation:

44.6.2.1 Where an owner or operator subject to the provisions of 44.0 of this regulation seeks to demonstrate compliance with 44.3 of this regulation through the use of either a thermal or catalytic incinerator, records must be maintained on the average firebox temperature of the incinerator (or the average temperature upstream and downstream of the catalyst bed for a catalytic incinerator), measured continuously and averaged over the same time period of the performance testing.

44.6.2.2 Where an owner or operator subject to the provisions of 44.0 of this regulation seeks to demonstrate compliance with 44.3 of this regulation through the use of a smokeless flare, flare design (i.e., steam-assisted, air-assisted, or non-assisted), records must be maintained on all visible emission readings, heat-content determinations, flow rate measurements, and exit velocity determinations made during the performance test; on the continuous flare pilot flame monitoring; and on all periods of operations during which the pilot flame is absent.

44.6.2.3 Where an owner or operator subject to the provisions of 44.0 of this regulation seeks to demonstrate compliance with 44.3 of this regulation, the following records must be maintained:

44.6.2.3.1 Where an absorber is the final control device, the exit specific gravity (or an alternative parameter that is a measure of the degree of absorbing liquid saturation, if approved by the Department), and the average exit temperature of the absorbing liquid, measured continuously and averaged over the same time period of the performance testing (both measured while the vent stream is routed normally).

44.6.2.3.2 Where a condenser is the control device, the average exit (product side) temperature, measured continuously and averaged over the same time period of the performance testing while the vent stream is routed normally.

44.6.2.3.3 Where a carbon adsorber is the control device, the total steam mass flow, measured continuously and averaged over the same time period of the performance testing (full carbon bed cycle); the temperature of the carbon bed after regeneration (and within 15 minutes of the completion of any cooling cycle or cycles; and the duration of the carbon bed steaming cycle (all measured while the vent stream is routed normally).

44.6.2.3.4 As an alternative to 44.6.2.3.1, 44.6.2.3.2, and 44.6.2.3.3 of this regulation, the concentration level or reading indicated by the organic monitoring device at the outlet of the absorber,

condenser, or carbon absorber, measured continuously and averaged over the same time period of the performance testing while the vent stream is routed normally.

44.7 Reporting. An owner or operator of any facility containing sources subject to 44.0 of this regulation shall comply with the reporting requirements provided in 5.0 of this regulation.

44.8 Certification. An owner of operator of any facility containing sources subject to 44.0 of this regulation shall submit to the Department an annual compliance certification based on a calendar year. The owner of operator of any new facility containing sources that become subject to 44.0 of this regulation, shall submit an initial compliance certification immediately upon startup of the facility, and every year thereafter, an annual certification.

44.8.1 The annual compliance certification shall provide, at a minimum, the following information:

44.8.1.1 The name and location of the facility.

44.8.1.2 The address and telephone number of the person responsible for the facility.

44.8.1.3 The identification of each batch process train or single unit operations.

44.8.2 For each batch process train and single unit operation, the annual compliance certification shall also provide, at a minimum, the following information:

44.8.2.1 The applicable emission limit, equipment specification, or work practice.

44.8.2.2 The method of compliance.

44.8.2.3 For each batch process train and single unit operation, the annual emissions total.

44.8.2.4 The control system or systems in use.

44.8.2.5 The design performance efficiency of the control system.

44.8.2.6 A certification that each subject source at the facility is in compliance with the standard, equipment specification, or work practice.

44.8.2.7 The time at which the facility's "day" begins if a time other than midnight local time is used to define a "day".

45.0 Industrial Cleaning Solvents.

03/11/11

45.1 Applicability.

45.1.1 The provisions of 45.0 of this regulation apply to all sources that use organic solvents for the purpose of cleaning. The provisions of 45.3, 45.4, and 45.5 of this regulation do not apply to the following sources:

45.1.1.1 Any source that is covered under 33.0, Solvent Metal Cleaning, of this regulation.

45.1.1.2 Any non-manufacturing area cleaning operation.

45.1.1.3 Any non-routine maintenance of manufacturing facilities and equipment.

45.1.1.4 Any source that emits less than 4,540 kilograms (five tons) of volatile organic compounds per year from all cleaning activities at the facility.

45.1.2 Any facility that becomes or is currently subject to the provisions of 45.0 of this regulation by exceeding the applicability threshold in 45.1.1.4 of this regulation shall remain subject to these provisions even if its emissions later fall below the applicability threshold.

45.1.3 Any facility that is currently subject to a state or federal rule promulgated pursuant to the Clean Air Act Amendments of 1977 by exceeding an applicability threshold is and shall remain subject to these provisions, even if its throughput or emissions later fall below the applicability threshold.

45.1.4 Existing sources shall comply with this regulation upon promulgation. New, reconstructed, or modified sources shall comply with the requirements of this regulation beginning fifteen months after startup and shall follow the time schedule for the solvent usage study, screening tests, and trial evaluations as specified in 45.0 of this regulation.

45.2 Definitions. As used in 45.0 of this regulation, all terms not defined herein shall have the meaning given them in the November 15, 1990 Clean Air Act Amendments (CAAA), or in 2.0 this regulation.

"**Cleaning activity**" means the physical removal of foreign material from substrate that is being cleaned.

"**Cleaning of external surface**" means the act of applying a solvent to an external surface for cleaning. The cleaning activities may include, but are not limited to, wiping and spraying. Unit operation systems in this category include, but are not limited to, floor cleaning, equipment cleaning, large manufactured component cleaning, small manufactured component cleaning, and spray-booth cleaning.

"Cleaning of internal surface" means the act of applying a solvent to an interior surface for cleaning. The cleaning activities may include, but are not limited to, flushing, purging, and spraying. Unit operation systems in

this category include, but are not limited to, line cleaning, tank cleaning, spray-gun cleaning, and spray-booth cleaning.

"**Dipping**" means immersing an item in a container of solvent to remove contaminants or residue.

"**Equipment, facility, and procedural change**" means the use of alternative cleaning techniques and procedures, such as the use of high-pressure water equipment to reduce solvent stripping, floor scrubbers, removable or replaceable equipment covers, improved containment of volatile organic compounds (VOCs) from materials in storage/transfer/use, improved reclaim/reuse/recycle procedures, etc.

"**Flushing**" means pumping a solvent from a reservoir through a pipe or hose or through equipment (e.g., pipes, hoses, tanks) to remove contaminants or residue.

"**Material change**" means the use of caustic cleaners, cleaners with a low VOC content or low vapor pressure, peelable-type equipment/structure coatings, etc.

"**Non-manufacturing area cleaning**" means the cleaning of cafeterias, laboratories, pilot facilities, restrooms, office buildings, etc.

"**Parts cleaning**" means the spraying or wiping of solvent on a part or the dipping of a part in solvent for cleaning. Unit operation systems in this category include, but are not limited to, small manufactured component cleaning, tool cleaning, and maintenance equipment cleaning.

"**Purging**" means the cleaning of the interior of a spray gun and other attached equipment (e.g., hoses, paint cups) cleaned simultaneously with the spray gun.

"**Spraying**" means the application of a cleaning solvent to a surface through a nozzle.

"**Unit operation system (UOS)**' means the ensemble of equipment around which a material balance is performed. A UOS includes all possible points/sources that could result in losses to the atmosphere as a result of its being cleaned, including losses during dispensing of solvent, losses from residual solvent on or in cleaning tools (such as rags), losses from solvent storage, etc. An item of equipment used for cleaning parts by definition is a unit operation; therefore, carry-out losses during removal of cleaned parts shall be considered in a material balance. A UOS may include more than one cleaning activity that, by itself, could be classified as a UOS.

45.3 Standards.

45.3.1 Solvent Usage Study. An owner or operator of a source that uses organic solvents for the purpose of cleaning shall conduct a Solvent Usage Study in accordance with the following procedures:

45.3.1.1 Each type of cleaning operation involving the use of an organic solvent shall be categorized as one or more of the following operations:

45.3.1.1.1 Cleaning of internal surfaces.

45.3.1.1.2 Cleaning of external surfaces.

45.3.1.1.3 Parts cleaning.

45.3.1.2 Each type of cleaning operation involving the use of an organic solvent shall be defined as a UOS that has a theoretical system boundary such that all solvent inputs, outputs, and evaporative losses may be calculated using a simple mass balance equation. The owner or operator shall submit the following information for each UOS as part of the Solvent Usage Study:

45.3.1.2.1 Engineering drawings or sketches of all UOSs. The drawings or sketches shall indicate a system boundary, solvent input or inputs, solvent output or outputs, and solvent evaporative loss points.

45.3.1.2.2 One mass balance equation, or equivalent, per UOS. Each equation shall have variables sufficient for calculating total VOC emissions from the UOS.

45.3.1.2.3 A quantification of total VOC emissions from each UOS.

45.3.1.2.4 Any relevant assumptions or approximations made in defining each UOS.

45.3.1.3 The Solvent Usage Study shall be completed and submitted to the Department within three months of the promulgation of 45.0 of this regulation.

45.3.2 Screening Tests. An owner or operator of a source that uses organic solvents for the purpose of cleaning shall conduct Screening Tests to evaluate the performance of alternative (aqueous or lower VOC) cleaning solutions in accordance with the following procedures:

45.3.2.1 Screening Tests shall evaluate alternative cleaning solutions as possible substitutes for the current solvents used in the three cleaning operations, or UOSs, identified as the largest sources (or the number identified, if less than three) of uncontrolled VOC emissions by the Solvent Usage Study described in 45.3.1 of this regulation.

45.3.2.2 Screening Tests shall be performed using one, or a combination of, the test methods presented in 45.4 of this regulation. A Screening Test Plan shall be submitted to the Department for review

within six months of the promulgation of 45.0 of this regulation. The Department will accept, modify, or reject the Screening Test Plan within 90 days of receiving the plan. The Department may refuse to accept any testing for which it has not had an opportunity to review the test protocol or to observe the test.

45.3.2.3 Once an owner or operator has a Screening Test Plan that has been accepted by the Department, Screening Tests shall be conducted. The results of such Screening Tests shall be submitted to the Department for review within twelve months of the promulgation of 45.0 of this regulation. The Department will accept or reject the Screening Tests results within 90 days of receiving the results. The Department may accept the results of tests conducted after January 1, 1990, but started prior to the adoption of 45.0 of this regulation, if review of the test methods and results show that a test protocol consistent with 45.4 of this regulation was used.

45.3.2.4 The Screening Tests results submitted to the Department shall include, at a minimum, the following information for each alternative cleaning solution examined:

45.3.2.4.1 The VOC content.

45.3.2.4.2 The results of the Screening Tests conducted using any of the methods presented in 45.4 of this regulation and accepted by the Department in an approved Screening Test Plan.

45.3.2.4.3 The results of any other relevant evaluations performed.

45.3.2.5 Identical or similar UOSs may be compared, for the purpose of screening tests and trial evaluations, by establishing with the Department such similarity and receiving Department approval, and as such shall not require separate screening tests and trial evaluations. The Department may consider the similarity of UOSs that are maintained by the owner or operator in a comparable facility or simulated pilot operation in another state.

45.3.3 Trial Evaluations. An owner or operator of a source that uses organic solvents for the purpose of cleaning shall conduct Trial Evaluations for the alternative solvents which show the greatest degree of emission reductions, considering technical and economical feasibility, based on the Screening Tests results accepted by the Department. The Trial Evaluations shall be conducted in accordance with the following procedures:

45.3.3.1 Trial data shall compare cleaning solvent usage both before and during the Trial Evaluations.

45.3.3.2 Each test trial shall evaluate potential material and equipment, facility, and procedural changes for reducing VOC emissions from cleaning solvent usage.

45.3.3.3 Following the Trial Evaluations, an owner or operator of the source shall prepare a Summary Report on the results of the Trial Evaluations. The Summary Report shall include the following information:

45.3.3.3.1 A brief description of the steps taken under 45.3.1 through 45.3.3 of this regulation to identify cleaning solvent usage and to evaluate material and equipment, facility, and procedural changes to reduce VOC emissions.

45.3.3.3.2 The results of the Trial Evaluations. The Department may accept the results of any Trial Evaluations conducted after January 1, 1990, but started prior to the adoption to 45.0 of this regulation, if review of the test methods and results show that a test protocol consistent with 45.4 of this regulation was used.

45.3.3.3.3 A Cleaning Solvent Proposal for the adoption of those material and equipment, facility, and procedural changes demonstrated to be feasible and reasonable in reducing VOC emissions. The Summary Report shall include a proposed schedule for implementing the Cleaning Solvent Proposal as soon as practicable, but no later than November 1, 1996.

45.3.3.4 Trial Evaluations shall be completed, and the Summary Report and the Cleaning Solvent Proposal shall be submitted to the Department for review, within twenty months of the promulgation of 45.0 of this regulation, unless an owner or operator demonstrates to the Department that such timing is unreasonable.

45.3.3.5 Identical or similar UOSs may be compared, for the purpose of screening tests and trial evaluations, by establishing with the Department such similarity and receiving Department approval, and as such shall not require separate screening tests and trial evaluations. The Department may consider the similarity of UOSs that are maintained by the owner or operator in a comparable facility or simulated pilot operation in another state.

45.3.3.6 After receipt of the Summary Report and the Cleaning Solvent Proposal, the Department shall approve the report as soon as practicable, or shall notify the owner or operator of any concerns to be addressed.

45.3.3.7 After final Department approval of the Summary Report, the changes will be incorporated into the permit conditions. The owner or operator shall implement the Cleaning Solvent Proposal and the approved schedule. Implementation shall be completed no later than November 1, 1996, unless the owner or operator demonstrates to the Department that such timing is unreasonable.

45.3.3.8 An owner or operator may implement changes to its cleaning solvent proposal that have been approved and implemented under 45.3.3.6 and 45.3.3.7 of this regulation, if the change results in no increase in emissions. In such case, no notification to the Department shall be required. The change, however, shall still be subject to any preconstruction permitting and operating permit approvals that may apply.

45.4 Test Methods. Compliance with 45.3.2.4 of this regulation shall be achieved by applying any of the following test methods:

45.4.1 American Society for Testing and Materials (ASTM) Method D-4828 for determining the practical washability of organic coatings.

45.4.2 Method for determining the performance of alternative cleaning fluids found in **Appendix M** of this regulation.

45.4.3 Any site-specific evaluation test, accepted by the Department, that is designed to compare cleaning solvent usage through material or procedural changes to potentially reduce VOC emissions.

45.5 Recordkeeping. An owner or operator of a source that uses organic solvents for the purpose of cleaning shall maintain the following records in a readily accessible location for at least five years and shall make these records available to the Department upon verbal or written request:

45.5.1 Detailed records of organic solvent usage for each UOS incorporated in a permit in accordance with the requirements listed in 45.3 of this regulation.

45.5.2 Records of organic solvent usage and monthly VOC emission calculations for each UOS incorporated in a permit.

45.6 Reporting and Certification. An owner or operator of a source that uses organic solvents for the purpose of cleaning shall initially report to the Department the total quantity of solvent that it used for the calendar year prior to the promulgation date of 45.0 of this regulation. This initial report shall be submitted to the Department within three months of the promulgation of 45.0 of this regulation. Each year, the owner or operator shall submit subsequent reports to the Department by the promulgation date (month, day) of 45.0 of this regulation. The initial and subsequent reports shall include the following information:

45.6.1 The name and location of the facility.

45.6.2 The address and telephone number of the person responsible for the facility.

45.6.3 The tons of solvent used during the calendar year prior to the promulgation date of 45.0 of this regulation and a copy of the calculations that were performed to estimate the amounts.

45.6.4 A certification that the source is in compliance with 45.3, 45.4, and 45.5 of this regulation or that these paragraphs do not apply based on the exclusions of 45.1.1 of this regulation.

14 DE Reg. 902 (03/01/11)

46.0 Crude Oil Lightering Operations.

05/11/2007

46.1 Applicability.

46.1.1 The requirements in 46.0 of this regulation, with the exception of 46.3.7 of this regulation, apply to the owner or operator of a lightering service that carries out crude oil lightering operations in the waters of the State. The requirement in 46.3.7 of this regulation applies to the owner of the crude oil being lightered in the waters of the State.

46.1.2 While carrying out emergency lightering operations, the owner or operator of a lightering service subject to 46.0 of this regulation is subject only to the requirements of 46.8 of this regulation.

46.1.3 The owner or operator of a lightering service subject to 46.0 of this regulation may be required to obtain, revise, or amend permits issued by the Department pursuant to 7 **DE Admin. Code** 1102, 1125, and 1130, where applicable.

46.1.4 The requirements of 46.0 of this regulation are in addition to all other applicable State and Federal rules and regulations.

46.1.5 Nothing in 46.0 of this regulation shall be construed to require any act or omission that would be in violation of any rules or regulations of the United States Coast Guard or to prevent any act that is necessary to secure the safety of personnel, property, or the environment.

46.2 Definitions.

As used in 46.0 of this regulation, all terms not defined herein shall have the meaning given them in 7 **DE Admin. Code** 1101 or in 2.0 of this regulation.

"**Baseline volume**" means the average annual volume, in barrels per year, of crude oil lightered in the waters of the State during calendar years 2004 and 2005. If an existing lightering service did not carry out lightering operations throughout 2004 and 2005, the baseline volume for that existing lightering service shall be the average annual volume of crude oil lightered in the waters of State during the 24 month period beginning with its first lightering operation after December 31, 2003.

"**Controlled lightering operation**" means a lightering operation in which the VOC emissions are being controlled by the use of a vapor balancing system.

"**Depressurization venting**" means the release of vapors to the atmosphere from the ship to be lightered, the service vessel or the vapor balancing system during controlled lightering operations.

"**Emergency lightering operations**" means the transfer of crude oil cargo to mitigate or prevent a cargo spill, to stabilize a vessel whose integrity has been compromised, or to comply with the requirements of a Coast Guard Captain of the Port Order issued under the authority of the Ports and Waterways Safety Act, 33 USC 1221, as implemented by 33 CFR 160.111.

"**Existing lightering service**" means any lightering service that carried out a lightering operation in the waters of the State with an operating permit prior to the effective date of 46.0 of this regulation.

"**Existing service vessel**" means a service vessel that has been used in a lightering operation in the waters of the State prior to the effective date of 46.0 of this regulation.

"Lightering operation" means the transfer of crude oil from the cargo tank of a ship to be lightered to the cargo tank of a service vessel. Transfers of crude oil from the cargo tanks of a lightering service's marine tank vessel to the cargo tanks of another marine tank vessel or reverse lightering is exempt from the requirements of 46.0 of this regulation.

"Lightering service" means any owner or operator that, under contract, carries out a lightering operation.

"**Marine tank vessel**" means any marine vessel, which is specifically constructed or converted to carry liquid bulk cargo in cargo tanks.

"**New lightering service**" means any lightering service that is not an existing lightering service.

"**New service vessel**" means a service vessel that is not an existing service vessel.

"**Ozone Action Day**" means a day that is predicted, based on forecasted weather conditions, to reach unhealthy ozone concentrations. Frequently called a Code Red Day, an Ozone Action Day is declared prior to 1430 hours (local time) for the following day.

"**Service vessel**" means the marine tank vessel receiving crude oil during a lightering operation.

"**Ship to be lightered**" means the marine tank vessel delivering crude oil during a lightering operation.

"Uncontrolled lightering" means the period or periods when VOC emissions are vented from the service vessel to the atmosphere during a lightering operation.

"Uncontrolled lightering operation" means a lightering operation conducted without vapor balancing.

"Vapor balancing" means the collection and transfer of vapors displaced by the incoming crude oil from the cargo tank of a service vessel into a cargo tank of the ship to be lightered.

"**Vapor control system**" means an arrangement of piping and equipment used to control vapor emissions collected from a marine tank vessel. For the purposes of 46.0 of this regulation, vapor control system, also, includes vapor balancing.

"**Vapor leak**" means a gaseous leak that is detectable by sight, sound, or smell.

"Vapor tight service vessel" means a marine tank vessel that has successfully demonstrated vapor tightness using the method in either paragraph (c)(1) or (c)(2) of 40 CFR 63.565 within the preceding twelve months.

"**Waters of the State**" means those waters within the boundaries of the State, including the 12 mile circle described from New Castle and extended to the low water mark on the eastern side of the Delaware River and extending below the 12 mile circle with the middle of the shipping channel through the Delaware River and Bay and extending to the Atlantic Ocean and including those waters of the territorial sea which are in direct contact with the coast of Delaware, extending from the line of ordinary low water seaward for a distance of three geographical miles. This definition shall include any waters beyond the three-mile mark as authorized by Federal Law.

46.3 Standards.

46.3.1 When carrying out a lightering operation, the owner or operator of a lightering service subject to 46.0 of this regulation shall collect and transfer the VOC emissions from the service vessel to the ship to be lightered by vapor balancing.

46.3.2 When vapor balancing, the owner or operator of a lightering service subject to 46.0 of this regulation shall only use vapor tight service vessels.

46.3.3 Prior to vapor balancing, the owner or operator of a lightering service subject to 46.0 of this regulation shall verify that all valves in the vapor balancing system of the service vessel are correctly positioned to allow the collection and control of VOC emissions.

46.3.4 During vapor balancing, the owner or operator of a lightering service subject to 46.0 of this regulation shall verify that there are no vapor leaks in the vapor balancing system of the service vessel. Whenever a vapor leak is detected:

46.3.4.1 A first attempt at repair shall be made prior to the completion of the lightering operation.

46.3.4.2 If a vapor leak in the vapor balancing system of the service vessel can not be repaired prior to the completion of the lightering operation, the leak shall be tagged and recorded.

46.3.4.3 The vapor leak shall be repaired prior to the date that the service vessel is next used in a lightering operation.

46.3.4.4 Following completion of the repair, the service vessel shall be leak tested using the method in either paragraph (c)(1) or (c)(2) of 40 CFR 63.565.

46.3.5 During lightering operations, the owner or operator of a lightering service subject to 46.0 of this regulation shall only use service vessels equipped with submerged fill pipes.

46.3.6 When vapor balancing, the owner or operator of a lightering service subject to 46.0 of this regulation shall request information from the operator of the ship to be lightered on the total number of depressurization ventings by the ship to be lightered during each lightering operation. The owner or operator of the lightering service is not responsible for enforcing the requirement that the operator of the ship to be lightered provide the depressurization venting information or for any inaccuracies in the information provided by the operator of the ship to be lightered.

46.3.7 When vapor balancing, the owner of the crude oil shall require the owner or operator of the ship to be lightered to provide the owner or operator of the lightering service the total number of depressurization ventings by the ship to be lightered at the conclusion of each lightering operation. The owner of the crude oil is not responsible for enforcing the requirement that the operator of the ship to be lightered provide the depressurization venting information or for any inaccuracies in the information provided by the operator of the ship to be lightered.

46.4 Compliance schedule.

46.4.1 The owner or operator of a lightering service subject to 46.0 of this regulation shall comply with the following requirements.

46.4.1.1 The owner or operator of an existing lightering service shall provide the following information to the Department not later than 90 days after the effective date of 46.0 of this regulation.

46.4.1.1.1 The name or identification of existing service vessels that are expected to be used in lightering operations in the waters of the State after 2006.

46.4.1.1.2 The expected date that the vapor balancing system will be installed on each existing service vessel or the date the vapor balancing system was first used, if the existing service vessel is equipped with a vapor balancing system.

46.4.1.2 The owner or operator of a lightering service shall provide the following information to the Department upon the initial use of a new service vessel in the waters of the State.

46.4.1.2.1 The name or identification of the new service vessel.

46.4.1.2.2 The date that the new service vessel commenced lightering operations in the waters of the State.

46.4.1.2.3 A statement of whether the new service vessel is equipped with a vapor balancing system. If not equipped with a vapor balancing system, a statement on the expected date that the vapor balancing system will be installed on the new service vessel or the reason that a vapor balancing system will not be installed on that new service vessel.

46.4.1.3 Compliance with standards.

46.4.1.3.1 The owner or operator of a new lightering service shall comply with the requirements of 46.3 of this regulation upon initial lightering operation or the effective date of this regulation, whichever is later.

46.4.1.3.2 The owner or operator of an existing lightering service shall comply with the requirements of 46.3.1 of this regulation to the greatest extent practicable and shall comply with the requirements of 46.3.2 through 46.3.6 of this regulation when vapor balancing.

46.4.1.4 Maximum allowable uncontrolled lightering volume.

46.4.1.4.1 Beginning 12 months after the initial lightering operation or the effective date of this regulation, whichever is later, a new lightering service's 12-month rolling total volume of uncontrolled lightering shall not exceed 5% of the new lightering service's total volume lightered for that same 12-month period.

46.4.1.4.2 Beginning May 1, 2008, the 12-month rolling total volume of uncontrolled lightering shall not exceed an existing lightering service's baseline volume multiplied by the percentages listed in Table 46-1 of this regulation.

Table 46-1

Beginning on	Maximum allowable uncontrolled lightering volume
May 1, 2008	80 %
May 1, 2010	61 %
May 1, 2012	43 %

46.4.1.5 The total volume of uncontrolled lightering for any given lightering operation shall be calculated using the following equation.

$$TUV = \sum_{i=1}^{m}(V)_i + \sum_{j=1}^{n}(EV)_j$$

(46-1)

where,

TUV = the total uncontrolled volume for each given lightering operation. This total volume is used in the determination of 12-month rolling total volume of uncontrolled lightering in 46.4.1.4 of this regulation.

V = the volume of crude oil transferred to the service vessel when displaced vapors are emitted directly to the atmosphere rather than collected and controlled by vapor balancing.

EV = the equivalent volume of crude oil transferred corresponding to the collected and controlled vapors emitted from the service vessel to the atmosphere as a result of depressurization venting.The equivalent volume of crude oil shall be calculated using paragraph (d)(2)(i)(D)(10) of 40 CFR 63.1257 or a method approved by the Department.

i = the individual uncontrolled venting when transferring crude oil.

j = the individual depressurization venting.

m = the total number of uncontrolled ventings of displaced vapors when transferring crude oil for each given lightering operation.

n = the total number of depressurization ventings for each given lightering operation.

46.4.1.6 VOC emissions reduction and audits.

Beginning in February 2010, the Department shall conduct an annual audit of lightering service records to identify the frequency and duration of VOC ventings from the ships to be lightered. If the Department finds that ventings from the ships to be lightered reduce the VOC emission reductions achieved by the lightering services to a level below the maximum allowable uncontrolled lightering volume required in Table 46-1 of this regulation, the Department shall implement solutions, which could include amending 46.0 of this regulation.

46.4.2 Ozone Action Day limitations.

Beginning May 1, 2007, uncontrolled lightering operations shall be curtailed as follows on any day that the Department declares an Ozone Action Day.

46.4.2.1 Uncontrolled lightering operations shall not be carried out from 0230 hours until 1630 hours (local time) of the declared Ozone Action Day. However, if uncontrolled lightering operations have begun prior to the declaration of the Ozone Action Day, those lightering operations may continue until 0230 hours (local time) or until the service vessel is fully loaded, whichever is later.

46.4.2.2 If the Department declares consecutive Ozone Action Days, the owner or operator of a lightering service shall, to the greatest extent practicable, minimize uncontrolled lightering operations on the second and subsequent consecutively declared Ozone Action Days as follows:

46.4.2.2.1 Carrying out controlled lightering operations, if vapor balancing compatible service vessels and ships to be lightered are available.

46.4.2.2.2 Rescheduling the uncontrolled lightering operations to the periods of 1630 hours to 0230 hours (local time) of the second and subsequent consecutively declared Ozone Action Days.

46.4.3 No later than January 1, 2014 and every five years thereafter, the Department, owners or operators of existing lightering services subject to 46.0 of this regulation, and owners of crude oil subject to 46.3.7 of this regulation shall determine the feasibility of achieving a 5% maximum allowable uncontrolled lightering volume. If a 5% maximum allowable uncontrolled lightering volume is determined to be feasible, the Department shall amend the requirements of Table 46-1 of this regulation within two years. The amended requirements shall establish a maximum allowable uncontrolled lightering volume of 5%

46.4.4 If the feasible maximum allowable uncontrolled lightering volume determined in 46.4.3 of this regulation is greater than 5%, the Department shall amend the requirements of Table 46-1 of this regulation within two years. The amended requirements shall establish the feasible maximum allowable uncontrolled lightering volume determined in 46.4.3 of this regulation.

46.4.5 Any changes to the requirements of Table 46-1 of this regulation shall be made in accordance with the requirements of 7 **Del.C.** Ch 60.

46.5 Compliance Plan.

46.5.1 Within 120 days after the effective date of 46.0 of this regulation or upon initial startup of each vapor balancing system, whichever is later, the owner or operator of a lightering service shall develop and implement a compliance plan that describes how initial and ongoing compliance will be demonstrated. The owner or operator of a lightering service shall make the compliance plan for each vapor balancing system available for inspection, upon request, by the Department.

46.5.2 Initial Compliance.

To demonstrate initial compliance, the owner or operator of a lightering service shall provide the Department with the information specified in 46.5.2.1 and 46.5.2.2 of this regulation.

46.5.2.1 A copy of the service vessel's vapor control system Approval Letter issued by or on behalf of the United States Coast Guard in accordance with 46 CFR 39.10-13 and 46 CFR 31.01-03 or United States Coast Guard approved equivalent.

46.5.2.2 A copy of the service vessel's initial test certification demonstrating vapor tightness using the method in either paragraph (c)(1) or (c)(2) of 40 CFR 63.565.

46.5.3 Ongoing Compliance.

The ongoing compliance demonstration plan shall include, at a minimum, the information specified in 46.5.3.1 through 46.5.3.5 of this regulation.

46.5.3.1 The recommended instrumentation for the continuous measurement and recording of the operating pressure of the service vessel.

46.5.3.2 The recommended operating and maintenance procedures for the vapor balancing system.

46.5.3.3 The recommended startup, shutdown, and malfunction plan for the vapor balancing system, which shall include the approved calculation methodology to determine the total uncontrolled volume in 46.4.1.5 of this regulation.

46.5.3.4 The recommended operating procedures to prevent inadvertent uncontrolled VOC emissions to demonstrate compliance with 46.3.3 of this regulation.

46.5.3.5 The recommended leak testing procedures to demonstrate compliance with 46.3.4 of this regulation.

46.5.4 To the extent practical, the lightering service's standard operating and maintenance manuals and standard log sheets may be used to satisfy the requirements of the compliance plan, provided these manuals and log sheets contain all of the data necessary to meet the individual requirements of 46.5.3 of this regulation.

46.6 Equivalent methods of control.

46.6.1 Non-vapor balancing control technologies can be installed to control VOC emissions during lightering operations. New and existing lightering services may apply for the approval of an alternative control technology by submitting a complete request in accordance with the requirements of 46.6.2 and 46.6.3 of this regulation.

46.6.2 Upon receipt of a written request, the Department may approve the use of an alternative control technology to satisfy the requirements of 46.3.1 of this regulation.

46.6.3 The written request must contain a complete description of the alternative control technology, proposed compliance demonstration plan, proposed testing procedures, proposed recordkeeping requirements, and the expected startup date.

46.7 Recordkeeping.

The owner or operator of a lightering service subject to 46.0 of this regulation shall keep the records specified in 46.7 of this regulation in a readily accessible location for at least five years. These records shall be made immediately available to the Department on verbal or written request. For the purposes of 46.7 of this regulation, the terms “readily accessible location” and “immediately available” may apply to records located on a service vessel.

46.7.1 The owner or operator of an existing lightering service subject to 46.0 of this regulation shall keep calculations, including documentation of data, required to determine the baseline volume of the lightering service.

46.7.2 The owner or operator of an existing lightering service subject to 46.0 of this regulation shall keep calculations, including documentation of data, required to determine the 12-month rolling total volume of uncontrolled lightering of their lightering service in accordance with 46.4.1.4 of this regulation.

46.7.3 Beginning on the effective date of 46.0 of this regulation or upon initial lightering operation in the waters of Delaware, whichever is later, the owner or operator of a lightering service subject to 46.0 of this regulation shall keep the following information for each lightering operation.

46.7.3.1 The dates and times that the lightering operation began and ended.

46.7.3.2 The lightering location.

46.7.3.3 The name or identification of the service vessel or vessels involved.

46.7.3.4 The name or identification of the ship to be lightered.

46.7.3.5 The name or identification of the owner of the crude oil to be transferred.

46.7.3.6 The total volume of crude oil transferred during the lightering operation.

46.7.3.7 The total uncontrolled volume of crude oil transferred during the lightering operation, including documentation of the data required to calculate the total uncontrolled volume in accordance with 46.4.1.5 of this regulation.

46.7.4 Beginning on the effective date of 46.0 of this regulation or upon the initial startup of a service vessel’s vapor balancing system, whichever is later, the owner or operator of a lightering service shall keep the following information.

46.7.4.1 Vapor tightness documentation for the service vessel in accordance with 46.3.2 of this regulation. The documentation shall include, at a minimum, the information specified in 46.7.4.1.1 through 46.7.4.1.6 of this regulation.

46.7.4.1.1 The service vessel name or identification.

46.7.4.1.2 The name and address of the owner or operator of the service vessel.

46.7.4.1.3 The date and location of vapor tightness test.

46.7.4.1.4 The vapor tightness test method used.

46.7.4.1.5 The test results.

46.7.4.1.6 The tester’s name and signature.

46.7.4.2 Records of the total number of depressurization ventings by the ship to be lightered in accordance with 46.3.6 of this regulation, when vapor balancing.

46.7.4.3 Operating logs and the pressure monitoring results for the vapor balancing system of the service vessel, when vapor balancing.

46.7.4.4 Records of the occurrence and duration of a malfunction of the vapor balancing system of the service vessel, when vapor balancing.

46.7.4.5 Records of any corrective action taken, as a result of a malfunction, that was inconsistent with the startup, shutdown, and malfunction plan, when vapor balancing.

46.7.4.6 Records or logs of inspections conducted to prevent inadvertent uncontrolled VOC emissions in accordance with 46.3.3 of this regulation, when vapor balancing.

46.7.4.7 Records or logs of leak test inspections conducted in accordance with 46.3.4 of this regulation, when vapor balancing.

46.7.4.8 Maintenance logs and records of any repairs made in accordance with 46.3.4 of this regulation.

46.7.4.9 Records identifying whether vapor balancing was or was not conducted.

46.7.4.10 If vapor balancing was not conducted, records identifying the reason that vapor balancing was not attempted.

46.7.4.11 If vapor balancing was conducted and there was an uncontrolled volume of crude oil transferred during the lightering operation, records identifying the reasons the lightering operation was not fully controlled.

46.8 Emergency lightering operation exemption.

The owner or operator of a lightering service shall be exempted from the requirements of 46.0 of this regulation while carrying out emergency lightering operations, except for the requirements of 46.8.1 and 46.8.2 of this regulation.

46.8.1 The owner or operator of a lightering service that carried out emergency lightering operations shall submit a written notification to the Department within 24 hours of the completion of the emergency lightering operations. The notification shall include, at minimum, the following information.

46.8.1.1 A brief description of the emergency, which may be limited to the following:

46.8.1.1.1 The name, organization, and telephone number of the individual requesting the emergency lightering operation,

46.8.1.1.2 The name and location of ship to be lightered, and

46.8.1.1.3 The circumstances of concern.

46.8.1.2 The name, organization, and telephone number of the individual submitting the written notification.

46.8.1.3 The written notification may be submitted to the Department by fax or electronic mail.

46.8.2 The owner or operator of a lightering service that carried out emergency lightering operations shall submit a written report to the Department within 30 days following the completion of the emergency lightering operations. The report shall include, at minimum, the following information.

46.8.2.1 A brief description of the emergency, which may be limited to the following:

46.8.2.1.1 The name, organization, and telephone number of the individual requesting the emergency lightering operation,

46.8.2.1.2 The name and location of the ship to be lightered, and

46.8.2.1.3 The circumstances of concern.

46.8.2.2 The names or identifications of the service vessels involved in the emergency lightering operations.

46.8.2.3 The dates and times that the emergency lightering operations started and ended.

46.8.2.4 The total volume of crude oil transferred during the emergency lightering operations.

46.8.2.5 A certification by a responsible official as to the truth, accuracy, and completeness of the written report.

46.8.2.6 The name and signature of the responsible official certifying the written report.

46.9 Reporting requirements.

46.9.1 The owner or operator of a lightering service subject to 46.0 of this regulation shall submit to the Department an initial compliance certification not later than 90 days after the effective date of 46.0 of this regulation or upon the initial startup of a vapor balancing system for each service vessel, whichever is later. The initial compliance notification shall provide, at a minimum, the following information.

46.9.1.1 The name, address, and telephone number of the owner or operator of the service vessel.

46.9.1.2 The name or identification of the service vessel.

46.9.1.3 A copy of the service vessel's vapor control system Approval Letter issued by or on behalf of the United States Coast Guard in accordance with 46 CFR 39.10-13 and 46 CFR 31.01-03 or United States Coast Guard approved equivalent.

46.9.1.4 A copy of the service vessel's initial test certification demonstrating vapor tightness using the method in either paragraph (c)(1) or (c)(2) of 40 CFR 63.565.

46.9.2 Reports of excess emissions.

The owner or operator of a lightering service subject to 46.0 of this regulation shall, for each occurrence of an excess emission, submit a report to the Department within 30 calendar days of becoming aware of such occurrence. Excess emissions can include, but are not limited to, failing to operate the vapor balancing system when practicable, inadvertently or knowingly venting VOCs from the vapor balancing system to the atmosphere during controlled lightering operations, conducting uncontrolled lightering operations on an Ozone Action Day during prohibited times, exceeding the maximum allowable uncontrolled lightering volume percentages in Table 46-1 of this regulation, etc. The report shall contain the following information, in addition to complying with any other reporting requirements required by the Department.

46.9.2.1 The name of the owner or operator of the lightering service.

46.9.2.2 The name or identification of the service vessel.

46.9.2.3 The date and time of first observation of the excess emission.

46.9.2.4 The cause and duration of the excess emission.

46.9.2.5 The corrective actions taken or the schedule to correct the conditions that caused the excess emission.

46.9.2.6 The estimated quantity of excess emission (pounds per lightering operation) and the operating data and calculations used in determining the magnitude of the excess emission.

46.9.3 The owner or operator of an existing lightering service subject to 46.0 of this regulation shall submit its baseline volume to the Department before May 1, 2007.

46.9.4 Beginning on February 1, 2008 and annually thereafter, the owner or operator of an existing lightering service subject to 46.0 of this regulation shall submit a report to the Department identifying the total volume of crude oil transferred for both controlled and uncontrolled lightering operations for each month of the previous calendar year.

47.0 Offset Lithographic Printing and Letterpress Printing.

04/11/2011

47.1 Applicability.

47.1.1 The provisions of 47.0 of this regulation apply to any offset lithographic or letterpress printing press. Except as provided in 47.1.2 of this regulation, every owner or operator of any offset lithographic or letterpress printing press shall comply with the provisions of 47.0 of this regulation on and after April 11, 2011.

47.1.2 Transition period for existing permitted sources. Every owner or operator of any offset lithographic printing press that is subject to a permit issued pursuant to 7 **DE Admin Code** 1102 or 1130 containing all applicable conditions of 47.0 of this regulation, as that regulation existed on November 29, 1994, shall comply with those permit conditions for up to one year after the effective date of this revision of 47.0 of this regulation. Every owner or operator of any letterpress printing press that is subject to a permit issued pursuant to 7 **DE Admin. Code** 1102 or 1130 shall comply with the permit's conditions for letterpress printing for up to one year after the effective date of this regulation. On and after the date one year after the effective date of this revision of 47.0 of this regulation, every such owner or operator of any offset lithographic or letterpress printing press shall comply with the provisions of 47.0 of this regulation.

47.1.3 Except as specified in 47.6.1 of this regulation, the provisions of 47.0 of this regulation do not apply to any offset lithographic and letterpress printing press within a facility whose total actual volatile organic compound (VOC) emissions from all offset lithographic and letterpress printing operations (including emissions from cleaning solutions used on lithographic printing presses) are less than 6.8 kilograms (kg) (15 pounds [lb]) VOCs per day before application of capture systems and control devices.

47.1.4 Any facility that becomes or is currently subject to the provisions of 47.0 of this regulation by exceeding the applicability threshold in 47.1.3 of this regulation shall remain subject to 47.0 of this regulation even if its emissions later fall below the applicability threshold.

47.1.5 Any facility that is currently subject to a state or federal rule promulgated pursuant to the Clean Air Act Amendments of 1977 by exceeding an applicability threshold is and shall remain subject to these provisions, even if its throughput or emissions have fallen or later fall below the applicability threshold.

47.2 Definitions. As used in 47.0 of this regulation, all terms not defined herein shall have the meaning given them in the November 15, 1990 Clean Air Act Amendments (CAAA), or in 2.0 of this regulation.

"**Alcohol**" means a chemical compound consisting of the hydroxyl (OH) group attached to an alkyl radical and having the general formula $C_nH2_{n+1}OH$, such as ethanol, n-propanol, and iso-propanol.

"**Alcohol substitute**" means a non-alcohol additive that contains VOCs and is used in the fountain solution to reduce the surface tension of water or to prevent piling (ink build-up).

"**Batch**" means a supply of fountain solution that is prepared continuously or as a batch and that is used without alteration until completely used or removed from the printing process.

"**Cleaning solution**" means a liquid that is used to remove ink, including dried ink, and debris from the operating surfaces of the printing press and its parts.

"**Fountain solution**" means a mixture of water and non-volatile printing chemicals, and additives which reduce the surface tension of the water. The fountain solution wets the non-image areas so that the ink is maintained within the image areas.

"**Heatset**" means any operation in which heat is required to evaporate ink oil from the printing ink.

"**Letterpress printing**" means a printing process in which the image is raised relative to the non-image area and the paste ink is transferred to the substrate directly from the image surface.

"**Lithography**" or "**lithographic printing**" means a printing process in which the image and non-image areas are chemically differentiated; the image area is oil-receptive and the non-image area is water-receptive. This method differs from other printing methods, in which the image is a raised or recessed surface.

"**Non-heatset**" or "**coldset**" means any operation in which printing inks are set without the use of heat. For the purposes of 47.0 of this regulation, ultraviolet-cured and electron beam-cured inks are considered non-heatset operations.

"**Offset lithographic printing**" means a printing process that transfers the ink film is transferred from the lithographic plate to an intermediary surface (blanket), which, in turn, transfers the ink film to the substrate.

"**Press**" means a printing production assembly that is composed of one or many units to produce a printed sheet or web.

"**Sheet-fed**" means a printing operation in which individual sheets of substrate are fed to the press sequentially.

"**Total actual VOC emissions**" means the quantity of VOCs emitted from all lithographic and letterpress printing operations, including VOC emissions from cleaning materials and activities, during a particular time period.

"**Unit**" means the smallest complete printing component of a printing press.

"**Web**" means a continuous roll of paper used as the printing substrate.

47.3 Standards.

47.3.1 No owner or operator of a heatset offset lithographic printing press or a heatset letterpress printing press shall operate the printing press unless the owner or operator installs a control device to reduce VOC emissions from the press dryer exhaust vent by complying with 47.3.1.1, or 47.3.1.2, or 47.3.1.3 at all time the press operates:

47.3.1.1 At least 90% by weight, if the first installation date of the control device is prior to April 11, 2011.

47.3.1.2 At least 95%, by weight, if the first installation date of the control device is on or after April 11, 2011.

47.3.1.3 Maintaining a maximum press dryer exhaust outlet VOC concentration of 20 parts per million by volume (ppmv) as carbon (C1) on a dry basis,

47.3.2 No owner or operator of an offset lithographic printing press shall operate the printing press unless the owner or operator meets the requirements listed under 47.3.2.1, 47.3.2.2, or 47.3.2.3 of this regulation.

47.3.2.1 For any heatset web offset lithographic printing press:

47.3.2.1.1 When the fountain solution contains alcohol, the fountain solution on-press (as applied) VOC content shall be maintained:

47.3.2.1.1.1 At 1.6% or less (by volume), or

47.3.2.1.1.2 At 3.0% or less (by volume) and the temperature of the fountain solution shall be maintained at or below 15.5 degrees Celsius (°C) (60 degrees Fahrenheit [°F]).

47.3.2.1.2 When the fountain solution contains no alcohol, the fountain solution on-press (as-applied) VOC content shall be maintained at 3.0% or less (by volume).

47.3.2.2 For any non-heatset web offset lithographic printing press:

47.3.2.2.1 There shall be no alcohol in the fountain solution, and

47.3.2.2.2 The fountain solution on-press (as-applied) VOC content shall be maintained at 3.0% or less (by volume).

47.3.2.3 For any sheet-fed offset lithographic printing press, the fountain solution on-press (as-applied) VOC content shall be maintained.

47.3.2.3.1 At 5.0% or less (by volume), or.

47.3.2.3.2 At 8.5% or less (by volume) and the temperature of the fountain solution shall be maintained at or is refrigerated to below 15.65°C (60°F).

47.3.3 No owner or operator of an offset lithographic printing press or a letterpress printing press shall operate the printing press unless the owner or operator reduces VOC emissions from cleaning solutions by meeting requirements in 47.3.3.1, or 47.3.3.2 and 47.3.3.3, of this regulation:

47.3.3.1 Using a cleaning solution with a 30% or less (as used) VOC content.

47.3.3.2 Using of cleaning solutions with a VOC composite partial vapor pressure less than 10 millimeters (mm) mercury (Hg) (0.4 inches [in] Hg) at 20°C (68°F). The VOC composite partial vapor pressure is calculated as follows:

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

(47-1)

Where:

W_i = Weight of the ith VOC compound, in grams (g);

W_w = Weight of water, in g;

W_e = Weight of exempt compound, in g;

MW_i = Molecular weight of the ith VOC compound, in grams per gram-mole;

$$\left(\frac{g}{g-mole}\right)$$

MW_w = Molecular weight of water, in;

MW_e = Molecular weight of exempt compound, in;

PP_C = VOC composite partial pressure at 20°C, in mmHg

VP_i = Vapor pressure of the ith VOC compound at 20°C, in mmHg

47.3.3.3 Keeping all cleaning solutions and used shop towels or cloths in closed containers.

47.4 Control Devices. An owner or operator of an offset lithographic printing press or a letterpress printing press equipped with a control system shall ensure that:

47.4.1 The capture system and control device are operated at all times when the printing press is in operation, and compliance with 47.0 of this regulation is demonstrated through the applicable coating analysis and capture system and control device efficiency test methods specified in **Appendix B**, **Appendix D**, and **Appendix E** of this regulation and in accordance with the capture efficiency test methods specified in **Appendix D** of this regulation.

47.4.2 The control device is equipped with the applicable monitoring equipment specified in 2.0 of **Appendix D** of this regulation, and the monitoring equipment is installed, calibrated, operated, and maintained according to the vendor's specifications at all times the control device is in use.

47.5 Test Methods and Procedures.

47.5.1 The VOC content of each ink, the alcohol content of each fountain solution, and the efficiency of each capture system and control device shall be determined by the applicable test methods and procedures specified in **Appendix A** through **Appendix D** of this regulation to establish the records required under 47.6 of this regulation.

47.5.2 To demonstrate compliance with the emission control requirements of 47.0 of this regulation, the facility affected by 47.0 of this regulation shall be run at maximum operating conditions and flow rates during any emission testing.

47.5.3 Emission tests for facilities using an add-on dryer exhaust control device shall include an initial test when the control device is installed and in operation that demonstrates compliance with 47.3.1 of this regulation.

47.5.4 To determine compliance with 47.3.2 of this regulation, the owner or operator of an offset lithographic printing facility shall perform the following procedures:

47.5.4.1 A sample shall be taken of the fountain solution (as used) from the fountain tray or reservoir that contains a fresh batch of fountain solution (after mixing), for each unit or centralized reservoir, to determine the alcohol content of the fountain solution in accordance with 47.3.2.1 through 47.3.2.4 of this regulation, before the fountain solution is used.

47.5.4.2 A direct measurement of the alcohol content of the fountain solution sample or samples shall be performed in accordance with the method specified in **Appendix L** of this regulation.

47.5.4.3 Alternatively, a sample of the fountain solution (as used) may be taken from the fountain tray or reservoir of fountain solution during use and measured with a hydrometer or refractometer that has been standardized with tests performed in accordance with 47.5.4.1 and 47.5.4.2 of this regulation. The unit shall be considered in compliance with 47.3.2.1 through 47.3.2.4 of this regulation if the refractometer or hydrometer measurement is less than or equal to the measurement obtained by the method specified in **Appendix L** of this regulation plus 10%.

47.5.4.4 The VOC content of a fountain solution containing alcohol substitutes or non-alcohol additives shall be established with proper recordkeeping and the manufacturer's technical information of the VOC content of the concentrated alcohol substitute and included in facility records. Records shall include the amount of concentrated substitute added per quantity of fountain water; the date and time of preparation if the fountain solution is mixed as a batch; and the calculated VOC content of the final solution to fulfill the requirements listed in 47.3.2 of this regulation.

47.5.5 To determine compliance with 47.3.2.1.1.2 and 47.3.2.3.2 of this regulation, an owner or operator of an offset lithographic printing facility shall use a thermometer or other temperature detection device capable of reading to 0.28°C (0.5°F) accuracy to ensure that a refrigerated fountain solution containing alcohol is below 15.5°C (60°F) at all times.

47.5.6 To determine compliance with 47.3.3 of this regulation, an owner or operator of an offset lithographic printing press or a letterpress printing press shall:

47.5.6.1 Take a sample of the cleaning solution (as used) to demonstrate compliance with the cleaning solution VOC content limitations listed in 47.3.3 of this regulation. If the cleaning solution is used as received from the supplier without dilution or alteration, the manufacturer's technical information may be used to demonstrate compliance.

47.5.6.2 Use the method specified in **Appendix L** of this regulation to determine the VOC content of the cleaning solution (as used). Alternatively, the VOC content and VOC partial pressure of the cleaning solution may be established using the manufacturer's technical data. If the cleaning solution is prepared through the dilution of concentrated materials, the blending ratio and VOC content of the concentrate may be used to determine the "as used" VOC content of the cleaning solution.

47.6 Recordkeeping and Reporting.

47.6.1 Requirements for Sources Below Threshold Emission Limit. Any owner or operator of any offset lithography printing facility, any letterpress printing facility, or any facility with both offset lithographic and letterpress printing operations, that emits less than the threshold limit according to 47.1 of this regulation shall comply with the following requirements:

47.6.1.1 Initial Certification. Within six months after April 11, 2011, or upon initial startup of a new printing press, the owner or operator shall certify to the Department that the facility emits less than the threshold limit according to 47.1 of this regulation. Such certification shall include the following information:

47.6.1.1.1 The name and location of the facility.

47.6.1.1.2 The address and telephone number of the person responsible for the facility.

47.6.1.1.3 A declaration that the facility is not subject to the requirements of 47.0 of this regulation because of the criteria listed in 47.1 of this regulation.

47.6.1.1.4 The calculations demonstrating that total actual VOC emissions from all offset lithographic and letterpress printing presses at the facility are and will be less than 6.8 kg (15 lb) per day before the application of capture systems and control devices.

47.6.1.1.5 A description of the instrument or method by which the owner or operator accurately measured or calculated the volume of ink applied and the amount that can potentially be applied each year on each printing press.

47.6.1.2 Recordkeeping. On and after April 11, 2011, the owner or operator shall collect and record all of the following information each year for each offset lithographic printing press and each letterpress printing press and maintain the information at the facility for a period of five years:

47.6.1.2.1 The name and identification number of each ink, as applied, each year on each printing press.

47.6.1.2.2 The total actual VOC emissions as calculated in 47.6.1.1.4 of this regulation using the VOC content for that year.

47.6.1.3 Reporting. On and after April 11, 2011, any record showing that total actual emissions of VOCs from all offset lithographic printing presses and all letterpress printing presses exceed 6.8 kg (15 lb) per day before the application of capture systems and control devices shall be reported by sending a copy of the record to the Department within 45 calendar days after the exceedance

occurs. This requirement is in addition to any other State of Delaware exceedance reporting requirements.

47.6.2 Requirements for Sources Above Threshold Emission Limit. Any owner or operator of any offset lithography printing facility, or any letterpress printing facility, or any facility with both offset lithographic and letterpress printing operations, that emits greater than the threshold limit according to 47.1 of this regulation shall comply with the following requirements:

47.6.2.1 Initial Certification. Within six months after April 11, 2011, or upon initial startup of a new printing press, the owner or operator shall certify to the Department that the facility emits greater than the threshold limit according to 47.1 of this regulation. Such certification shall include the following information:

47.6.2.1.1 The name and location of the facility.

47.6.2.1.2 The address and telephone number of the person responsible for the facility.

47.6.2.1.3 The calculations demonstrating that total actual VOC emissions from all aspects of printing operations at the facility are and shall be greater than 15 lb (6.8 kg) per day before the application of capture systems and control devices.

47.6.2.1.4 A description of the instrument or method by which the owner or operator accurately measured or calculated the volume of ink applied and the amount that can potentially be applied each year on each printing press.

47.6.2.2 Recordkeeping. On and after April 11, 2011, the owner or operator shall collect and record all of the following information each year for each offset lithographic printing press and each letterpress printing press and maintain the information at the facility for a period of five years:

47.6.2.2.1 The name and identification number of each ink, as applied, each year on each printing press.

47.6.2.2.2 The weight of VOCs per volume of coating solids and the volume of solids of each ink, as applied, each year on each printing press.

47.6.2.2.3 The total actual VOC emissions as calculated in 47.6.2.1.3 of this regulation using the VOC content for that year.

47.6.3 Requirements for Sources Using an Add-On Dryer Exhaust Control Device.

47.6.3.1 Within six months after April 11, 2011, or upon initial startup of a new printing press, the owner or operator of a heatset offset lithographic printing press, or a heatset letterpress printing press, shall install, calibrate, maintain, and operate a temperature monitoring device, according to the manufacturer's instructions, at the outlet of the control device or at a location approved by the Department and the EPA. The monitoring temperature shall be set during the testing required to certify compliance with the requirements of 47.4 of this regulation. Monitoring shall be performed only when the unit is operational.

47.6.3.2 The temperature monitoring device shall be equipped with a continuous recorder and shall have an accuracy of 0.28°C (0.5°F).

47.6.3.3 The dryer pressure shall be maintained lower than the press room area pressure such that air flows into the dryer at all times when the press is operating. A 100% emissions capture efficiency for the dryer shall be demonstrated using an air flow direction measuring device.

47.6.4 Requirements for Monitoring Fountain Solution VOC Concentration. On and after April 11, 2011, the alcohol concentration in the fountain solution shall be monitored to provide data that can be correlated to the amount of material used when the fountain solution complies with the limits listed in 47.3.2.1 through 47.3.2.3 of this regulation. One of the following methods shall be used to frequently measure the concentration of alcohol in the fountain solution:

47.6.4.1 The owner or operator of any offset lithographic printing press shall monitor the alcohol concentration of the fountain solution with a refractometer that is corrected for temperature at least once per 8-hour shift or once per batch, whichever is longer. The refractometer shall have a visual, analog, or digital readout with an accuracy of 0.5%. A standard solution shall be used to calibrate the refractometer for the type of alcohol used in the fountain. Alternatively, the refractometer shall be standardized with measurements performed to determine compliance, according to the procedures described in 47.5.4.1 and 47.5.4.2 of this regulation.

47.6.4.2 Alternatively, the owner or operator of any offset lithographic printing press shall monitor the alcohol concentration of the fountain solution with a hydrometer equipped with a temperature correction at least once per eight-hour shift or once per batch, whichever is longer. The hydrometer shall have a visual, analog, or digital readout with an accuracy of 0.5%. A standard solution shall be used to calibrate the hydrometer for the type of alcohol used in the fountain.

Alternatively, the hydrometer shall be standardized with measurements performed to determine compliance, according to the procedures described in 47.5.4.1 and 47.5.4.2 of this regulation.

47.6.4.3 The VOC content of the fountain solution may be monitored with a conductivity meter if it is determined that a refractometer or hydrometer cannot be used for the type of VOCs in the fountain solution. The conductivity meter reading for the fountain solution shall be referenced to the conductivity of the incoming water.

47.6.4.4 If, through recordkeeping for a period of 6 months or more, the printing process is shown to consistently meet the requirements in 47.3.2 and 47.5.4 of this regulation, the monitoring requirement may be waived or extended to a longer period of time upon prior approval by the Department.

47.6.5 Requirements for Monitoring Fountain Solution Temperature. On and after April 11, 2011:

47.6.5.1 The owner or operator of any offset lithographic printing press using refrigeration equipment on the fountain solution shall install, maintain, and continuously operate a temperature monitor of the fountain solution reservoir.

47.6.5.2 The temperature monitor shall be attached to a continuous recording device such as a strip chart, recorder, or computer.

47.6.6 Requirements for Monitoring Cleaning Solution. On and after April 11, 2011, for any offset lithographic printing press or any letterpress printing press with continuous cleaning equipment, flow meters shall be used to monitor the water and cleaning solution flow rates. The flow meters shall be calibrated so that the VOC content of the mixed solution is accurately measured to fulfill the requirements of 47.3.3 of this regulation.

47.6.7 Requirements for Monitoring Other Key Parameters. On and after April 11, 2011, the owner or operator of any offset lithographic printing press or any letterpress printing press shall record daily, and make available to the Department within 45 calendar days upon the Department's verbal or written request, the following key parameters:

47.6.7.1 The type of control device operating on any heatset offset lithographic printing press or any heatset letterpress printing press and the operating parameters specified in 47.3.1 of this regulation.

47.6.7.2 The operating standard selected to comply with the requirements listed in 47.3.2.1 through 47.3.2.3 and 47.3.3 of this regulation.

47.6.7.3 The VOC content of the fountain solutions and cleaning solutions, to comply with the requirements listed in 47.5.4, 47.6.4, and 47.6.6 of this regulation.

47.6.7.4 The temperature of the fountain solution, to comply with the requirements listed in 47.6.5 of this regulation, if applicable.

47.6.7.5 For manual cleaning methods, the amount of cleaning solution and the amount of water added per batch of cleaning solution mixed.

47.6.7.6 For automatic cleaning methods, the flow rates of water and cleaning solution concentrate, as specified in 47.6.6 of this regulation.

47.6.7.7 Corrective actions taken when exceedances of any parameters monitored according to the requirements of 47.4 or 47.5 of this regulation, occur.

14 DE Reg. 1083 (04/01/11)

48.0 Reactor Processes and Distillation Operations in the Synthetic Organic Chemical Manufacturing Industry.
11/29/1994

48.1 Applicability.

48.1.1 The provisions of 48.0 of this regulation apply to any vent stream that originates from a process unit in which a reactor process or distillation operation is located at a facility within the synthetic organic chemical manufacturing industry (SOCMI).

48.1.2 The provisions of 48.0 of this regulation do not apply to the following operations:

48.1.2.1 Any reactor process or distillation operation that is designed and operated in a batch mode is not subject to the provisions of 48.0 of this regulation.

48.1.2.2 Any reactor process or distillation operation that is part of a polymer manufacturing operation is not subject to the provisions of 48.0 of this regulation.

48.1.2.3 Any reactor process or distillation operation that operates in a process unit with a total design capacity of less than one gigagram per year (1,100 tons per year) for all chemicals produced

within that unit is not subject to the provisions of 48.0 of this regulation except for the reporting/ recordkeeping requirements listed in 48.5.4 of this regulation.

48.1.2.4 Any vent stream for a reactor process or distillation operation with a flow rate less of than 0.0085 standard cubic meters per minute (scmm) or a total volatile organic compound (VOC) concentration of less than 500 parts per million by volume (ppmv) is not subject to the provisions of 48.0 of this regulation except for the performance testing requirement listed in 48.4.4.2 and 48.4.9 of this regulation, and the reporting/recordkeeping requirements listed in 48.5.3 of this regulation.

48.1.3 Existing sources affected by 48.0 of this regulation shall comply with the provisions of 48.0 of this regulation as soon as practicable, but no later than April 1, 1996. New, modified, or reconstructed sources affected by 48.0 of this regulation shall comply with the provisions of 48.0 of this regulation upon start-up.

48.1.4 Any facility that becomes or is currently subject to the provisions of 48.0 of this regulation by exceeding the applicability threshold in 48.1.2 of this regulation shall remain subject to these provisions even if its emissions later fall below the applicability threshold.

48.1.5 Any facility that is currently subject to a state or federal rule promulgated pursuant to the Clean Air Act Amendments of 1977 by exceeding an applicability threshold is and shall remain subject to these provisions, even if its throughput or emissions have fallen or later fall below the applicability threshold.

48.2 Definitions. As used in 48.0 of this regulation, all terms not defined herein shall have the meaning given them in the November 15, 1990 Clean Air Act Amendments (CAAA), or in 2.0 of this regulation.

"**Batch mode**" means a non-continuous operation or process in which a discrete quantity or batch of feed is charged into a process unit and distilled or reacted at one time.

"**Boiler**" means any enclosed combustion device that extracts useful energy in the form of steam.

"**By compound**" means by individual stream components, not carbon equivalents.

"**Continuous recorder**" means a data recording device that records an instantaneous data value at least once every 15 minutes.

"**Distillation operation**" means an operation in which one or more feed stream or streams are separated into two or more exit stream or streams. Each exit stream has component concentrations different from those in the feed stream or streams. The separation is achieved by the redistribution of the components between the liquid and vapor phase as they approach equilibrium within the distillation unit.

"**Distillation unit**" means a device or vessel in which distillation operations occur, including all associated internal components (such as trays or packing) and accessories (such as reboilers, condensers, vacuum pumps, stream jets, etc.), plus any associated recovery system.

"**Engineering assessment**" means the use of documented estimation methods or procedures or sound judgment. Engineering assessment includes, but is not limited to, previous test results that are representative of current operating practices at the process unit, bench-scale or pilot-scale test data that are representative of the process under representative operating conditions, a specification or implication of the maximum flow rate within a permit limit applicable to the process vent, a design analysis based on accepted chemical engineering principles, measurable process parameters, or physical or chemical laws or properties. Examples for analytical methods include, but are not limited to, the use of material balances based on process stoichiometry to estimate the maximum VOC concentration, the estimation of the maximum flow rate based on physical equipment design parameters such as pump or blower capacities, the estimation of the total organic compound (TOC) concentration based on saturation conditions, and the estimation of the maximum expected net heating value based on the stream concentration of each organic compound, or, alternatively, as if all TOCs in the stream were the compound with the highest heating value. All data, assumptions, and procedures used in engineering assessments shall be documented.

"**Flame zone**" means the portion of the combustion chamber in a boiler that is occupied by the flame envelope.

"**Flow indicator**" means a device that indicates whether gas flow is present in a vent stream.

"**Halogenated vent stream**" means any vent stream that is determined to have a total concentration of halogen atoms (by volume) contained in organic compounds of 200 ppmv or greater, as determined by Method 18 in **Appendix E** of this regulation or by engineering assessment or process knowledge that no halogenated organic compounds are present. For example, 150 ppmv of ethylene dichloride would contain 300 ppmv of total halogen atoms.

"**Primary fuel**" means the fuel that provides the principal heat input to the device. To be considered primary, the fuel must be able to sustain operation without the addition of other fuels.

"**Process heater**" means a device which transfers heat that is liberated by burning fuel to fluids contained in tubes, including all fluids except water that is heated to produce steam.

"**Process unit**' means equipment that is assembled and connected by pipes or ducts to produce, as intermediates or final products, one or more SOCMI chemicals. A process unit can operate independently if it is supplied with sufficient feed or raw materials and sufficient product storage facilities.

"**Product**" means any compound or SOCMI chemical that is produced as that chemical for sale as a product, by-product, co-product, or intermediate, or for use in the production of other chemicals or compounds.

"**Reactor process**" means a unit operation in which one or more chemicals, or reactants other than air, are combined or decomposed in such a way that their molecular structures are altered and one or more new organic compounds are formed.

"**Recovery device**" means an individual unit of equipment, such as an adsorber, a carbon adsorber, or a condenser, that is capable of and used for the purpose of recovering chemicals for use, reuse, or sale.

"**Recovery system**" means an individual recovery device or series of such devices applied to the same vent stream.

"**Synthetic organic chemical manufacturing industry**" or "SOCMI" means the industry that produces, as intermediates or final products, one or more of the chemicals listed at 40 Code of Federal Regulations (CFR) Part 60.489 (July 1, 1992).

"**Total organic compounds**" or "**TOC**" means those compounds measured according to the procedures of Method 18 in **Appendix E** of this regulation.

"**Total resource effectiveness index value**" or "**TRE index value**" means a measure of the supplemental total resource requirement per unit reduction of VOCs associated with a process vent stream, based on the vent stream flow rate, the emission rate of VOCs, the net heating value, and the corrosion properties (whether or not the vent stream contains halogenated compounds), as quantified by the equations provided in 48.4 of this regulation. The TRE index is a decision tool used to determine if the annual cost of controlling a given vent gas stream is acceptable when considering the emissions reduction achieved.

"**Vent stream**" means any gas stream which discharges directly from a distillation operation or reactor process to the atmosphere or which discharges indirectly to the atmosphere after diversion through other process equipment. The definition of vent stream excludes relief valve discharges and equipment leaks including, but not limited to, pumps, compressors, and valves.

48.3 Standards.

48.3.1 For individual vent streams within a process unit with a TRE index value of less than or equal to 1.0, the owner or operator shall comply with the standards in 48.3.1.1, 48.3.1.2, or 48.3.1.3 of this regulation.

48.3.1.1 Reduce emissions of TOC (less methane and ethane) by 98 weight-%, or to 20 ppmv, on a dry basis corrected to 3% oxygen, whichever is less stringent. If a boiler or process heater is used to comply with this standard, the vent stream shall be introduced into the flame zone of the boiler or process heater.

48.3.1.2 Combust emissions in a flare. Flares used to comply with this standard shall comply with the requirements of 40 CFR Part 60.18 (July 1, 1992). This flare operation requirement does not apply if a process, not subject to 48.0 of this regulation, vents an emergency relief discharge into a common flare header and causes the flare servicing the process subject to 48.0 of this regulation to be out of compliance with one or more of the provisions of 40 CFR Part 60.18 (July 1, 1992).

48.3.1.3 Use a product recovery device or process modification to increase the TRE index value to greater than 1.0 at the outlet of the final recovery device.

48.3.2 For each individual vent stream within a process unit with a TRE index value of greater than 1.0, the owner or operator shall maintain vent stream parameters that result in a calculated TRE index value of greater than 1.0 without the use of a VOC control device. The TRE index shall be calculated at the outlet of the final recovery device.

48.4 Test Methods and Procedures for Total Resource Effectiveness Index Value Determination, Performance Testing, and Exemption Testing. The following methods shall be used as reference methods to demonstrate compliance with 48.3 of this regulation:

48.4.1 The TRE index value of the vent shall be calculated using the following equation:

$$TRE = \frac{1}{E_{TOC}}\left[a + b(Q_s) + c(H_T) + d(E_{TOC})\right]$$

(48-1)

where:

TRE = TRE index value.

Q_s = Vent stream flow rate standard cubic meters per minute at a standard temperature of 20 degrees Celsius (°C).

H_T = Vent stream net heating value (megajoules per standard cubic meter), as calculated in 48.4.6.6 of this regulation.

E_{TOC} = Hourly emission rate of TOC (minus methane and ethane) (kilograms per hour), as calculated in 48.4.6.4 of this regulation.

a,b,c,d = Coefficients presented in Table 48-1 of 48.0 of this regulation.

48.4.1.1 The owner or operator of a vent stream shall use the applicable coefficients in Table 48-1 of this regulation to calculate the TRE index value based on a flare, a thermal incinerator with 0% heat recovery, and a thermal incinerator with 70% heat recovery, and shall select the lowest TRE index value.

48.4.1.2 The owner or operator of a unit with a halogenated vent stream, determined as any stream with a total concentration of halogen atoms contained in organic compounds of 200 ppmv or greater, shall use the applicable coefficients in Table 48-1 of this regulation to calculate the TRE index value based on a thermal incinerator and a scrubber.

Table 48-1. Coefficients For Total Resource Effectiveness For Nonhalogenated And Halogenated Vent Streams

Type of Stream	Control Device Basis	Value of Coefficients			
		a	b	c	d
Non-halogenated	Flare	2.219	0.183	-0.005	0.359
	Thermal incinerator 0% heat recovery	3.075	0.021	-0.037	0.018
	Thermal incinerator 70% heat recovery	3.803	0.032	-0.042	0.007
Halogenated	Thermal incinerator and scrubber	5.470	0.181	-0.040	0.004

48.4.2 For the purpose of demonstrating compliance with the TRE index value, engineering assessment may be used to determine the process vent stream flow rate, the net heating value, and the TOC emission rate for the representative operating condition expected to yield the lowest TRE index value.

48.4.2.1 If the TRE index value calculated using such engineering assessment is greater than 4.0, the owner or operator shall not be required to perform the test methods and procedures specified in 48.4.4 of this regulation.

48.4.2.2 If the TRE value calculated using such engineering assessment is less than or equal to 4.0, the owner or operator shall perform the test methods and procedures specified in 48.4.4 of this regulation.

48.4.3 For the purpose of demonstrating compliance with the control requirements of 48.0 of this regulation, the process unit shall be run at representative operating conditions and flow rates during any performance test.

48.4.4 The following methods in **Appendix E** of this regulation, shall be used to demonstrate compliance with the emission limit or percent reduction efficiency requirement listed in 48.3.1.1 of this regulation.

48.4.4.1 Method 1 or 1A, as appropriate, shall be used for the selection of the sampling sites. The control device inlet sampling site for the determination of vent stream molar composition or TOC (less methane and ethane) reduction efficiency shall be located after the last recovery device but prior to the inlet of the control device, prior to any dilution of the process vent stream, and prior to release to the atmosphere.

48.4.4.2 Method 2, 2A, 2C, or 2D, as appropriate, shall be used for the determination of the gas stream volumetric flow rate.

48.4.4.3 The emission rate correction factor, integrated sampling, and analysis procedure of Method 3 shall be used to determine the oxygen concentration ($\%O_{2d}$) for the purpose of determining compliance with the 20 ppmv limit. The sampling site shall be the same as that of the TOC samples, and samples shall be taken during the same time in which the TOC samples are taken. The TOC concentration (C_c), corrected to 3% oxygen, shall be computed using the following equation:

$$C_c = C_{TOC} \times \frac{17.9}{20.9 - \%O_{2d}}$$

(48-2)

where:

C_c = Concentration of TOC (minus methane and ethane), corrected to 3% oxygen on a dry basis (parts per million by volume).

C_{TOC} = Concentration of TOC (minus methane and ethane) on a dry basis (parts per million by volume).

$\%O_{2d}$ = Concentration of oxygen on a dry basis (% by volume).

48.4.4.4 Method 18 shall be used to determine the concentration of TOC (less methane and ethane) at the outlet of the control device when determining compliance with the 20 ppmv limit, or at both the control device inlet and the outlet when the reduction efficiency of the control device is to be determined.

48.4.4.4.1 The minimum sampling time for each run shall be 1 hour, in which either an integrated sample or four grab samples shall be taken. If grab sampling is used, the samples shall be taken at 15-minute intervals.

48.4.4.4.2 The emission reduction (R) of TOC (less methane and ethane) shall be determined using the following equation:

$$R = \frac{E_i - E_o}{E_i} \times 100$$

(48-3)

where:

R = Emission reduction (percent by weight).

E_i = Mass rate of TOC (minus methane and ethane) entering the control device (kilograms of TOC per hour).

E_o = Mass rate of TOC (minus methane and ethane) discharged to the atmosphere (kilograms of TOC per hour).

48.4.4.4.3 The mass rates of TOC (E_i, E_o) shall be computed using the following equations:

$$E_i = K_2 \left(\sum_{j=1}^{n} C_{ij} M_{ij} \right) Q_i$$

(48-4)

$$E_o = K_2 \left(\sum_{j=1}^{n} C_{oj} M_{oj} \right) Q_o$$

(48-5)

where:

C_{ij}, C_{oj} = Concentration of sample component J of the gas stream at the inlet and outlet of the control device, respectively, on a dry basis (parts per million by volume).

M_{ij}, M_{oj} = Molecular weight of sample component J of the gas stream at the inlet and outlet of the control device, respectively (grams per gram-mole).

Q_i, Q_o = Flow rate of the gas stream at the inlet and outlet of the control device, respectively (dry standard cubic meters per minute).

K_2 = Constant, 2.494×10^{-6} (parts per million)$^{-1}$(gram-moles per standard cubic meter)(kilograms per gram)(minutes per hour), where standard temperature for (gram-moles per standard cubic meter) is 20°C.

48.4.4.4.4 The TOC concentration (C_{TOC}) is the sum of the individual components and shall be computed for each run using the following equation:

$$C_{TOC} = \sum_{j=1}^{n} C_j$$

(48-6)

where:

C_{TOC} = Concentration of TOC (minus methane and ethane) on a dry basis (parts per million by volume).

C_j = Concentration of sample component J on a dry basis (parts per million by volume).

n = Number of components in the sample.

48.4.4.5 When a boiler or process heater with a design heat input capacity of 44 megawatts or greater, or a boiler or process heater into which the process vent stream is introduced with the primary fuel, is used to comply with the control requirements in 48.3.1.1 of this regulation, an initial performance test shall not be required.

48.4.5 When a flare is used to comply with the control requirements of 48.3.1.2 of this regulation, the flare shall comply with the requirements of 40 CFR Part 60.18 (July 1, 1992).

48.4.6 The following test methods found in **Appendix E** of this regulation shall be used to determine compliance with the TRE index value.

48.4.6.1 Method 1 or 1A, as appropriate, shall be used for the selection of the sampling sites.

48.4.6.1.1 The sampling site for the vent stream molar composition determination and flow rate described in 48.4.6.2 and 48.4.6.3 of this regulation shall be, except for the situations outlined in 48.4.6.1.2.1 of this regulation, after the final recovery device, if a recovery system is present, prior to the inlet of any control device, and prior to any post-reactor or post-distillation unit introduction of halogenated compounds into the process vent stream. No traverse site selection method is needed for vents smaller than 10 centimeters (3.9 inches) in diameter.

48.4.6.1.2 If any gas stream other than the reactor or distillation vent stream is normally conducted through the final recovery device:

48.4.6.1.2.1 The sampling site for the vent stream flow rate and molar composition shall be prior to the final recovery device and prior to the point at which any non-reactor or non-distillation stream or stream from a non-affected reactor or distillation unit is introduced. Method 18 shall be used to measure organic compound concentrations at this site.

48.4.6.1.2.2 The efficiency of the final recovery device is determined by measuring the organic compound concentrations using Method 18 at the inlet to the final recovery device, after the introduction of all vent streams, and at the outlet of the final recovery device.

48.4.6.1.2.3 The efficiency of the final recovery device determined according to 48.4.6.1.2.2 of this regulation shall be applied to the organic compound concentrations measured according to 48.4.6.1.2.1 of this regulation to determine the concentrations of organic compounds from the final recovery device attributable to the reactor or distillation vent stream. The resulting organic compound concentrations shall then be used to perform the calculations outlined in 48.4.1 of this regulation.

48.4.6.2 The molar composition of the vent stream shall be determined as follows:

48.4.6.2.1 Method 18 shall be used to measure the concentration of organic compounds, including those containing halogens.

48.4.6.2.2 American Society for Testing and Materials (ASTM) Method D1946-77 shall be used to measure the concentration of carbon monoxide and hydrogen.

48.4.6.2.3 Method 4 shall be used to measure the content of water vapor.

48.4.6.3 The volumetric flow rate shall be determined using Method 2, 2A, 2C, or 2D, as appropriate.

48.4.6.4 The emission rate of TOC (minus methane and ethane) (E_{TOC}) in the vent stream shall be calculated using the following equation:

$$E_{TOC} = K_2 \left(\sum_{j=1}^{n} C_j M_j \right) Q_s$$

(48-7)

where:

E_{TOC} = Emission rate of TOC (minus methane and ethane) in the sample (kilograms per hour).

K_2 = Constant, 2.494×10^{-6} (parts per million)$^{-1}$(gram-moles per standard cubic meter)(kilograms per gram)(minutes per hour), where standard temperature for (gram-moles per standard cubic meter) is 20°C.

C_j = Concentration of compound J, on a dry basis (parts per million), as measured by Method 18, as indicated in 48.4.4.4 of this regulation.

M_j = Molecular weight of sample J (grams per gram-mole).

Q_s = Vent stream flow rate (standard cubic meters per minute) at a temperature of 20°C.

48.4.6.5 The total process vent stream concentration (by volume) of compounds containing halogens (ppmv by compound) shall be summed from the individual concentrations of compounds containing halogens that were measured by Method 18.

48.4.6.6 The net heating value of the vent stream shall be calculated using the following equation:

$$H_T = K_1 \sum_{j=1}^{n} C_j H_j (1 - B_{ws})$$

(48-8)

where:

H_T = Net heating value of the sample (megajoules per standard cubic meter), where the net enthalpy per mole of vent stream is based on combustion at 25°C and 760 millimeters of mercury, but the standard temperature for determining the volume corresponding to one mole is 20°C, as in the definition of Qs (vent stream flow rate).

K_1 = Constant, 1.740×10^{-7} (parts per million)$^{-1}$(gram-moles per standard cubic meter)(megajoules per kilocalorie), where standard temperature for (gram-moles per standard cubic meter) is 20°C.

B_{ws} = Water vapor content of the vent stream, proportion by volume; except that if the vent stream passes through a final steam jet and is not condensed, it shall be assumed that B_{ws} = 0.023 in order to correct to 2.3% moisture.

C_j = Concentration on a dry basis of compound J (parts per million), as measured for all organic compounds by Method 18 and measured for hydrogen and carbon monoxide by the ASTM Method D1946-77.

H_j = Net heat of combustion of compound J (kilocalories per gram-mole), based on combustion at 25°C and 760 millimeters of mercury. The heats of combustion of vent stream components shall be determined using ASTM Method D2382-76 if published values are not available or cannot be calculated.

48.4.7 Each owner or operator of an affected facility seeking to comply with 48.3.1.1 or 48.3.2 of this regulation shall recalculate the flow rate and TOC concentration for that affected facility whenever process changes are made. Examples of process changes include changes in production capacity, feedstock type, or catalyst type, or whenever there is replacement, removal, or addition of recovery equipment. The flow rate and VOC concentration shall be recalculated based on test data, or on best engineering estimates of the effects of the change to the recovery system.

48.4.8 Where the recalculated values yield a TRE index of less than or equal to 1.0, the owner or operator shall notify the Department within one week of the recalculation and shall conduct a performance test according to the methods and procedures specified in 48.4.4 of this regulation.

48.4.9 For the purpose of demonstrating that a process vent stream has a VOC concentration of less than 500 ppmv, the following procedures shall be used:

48.4.9.1 The sampling site shall be selected as specified in 48.4.4.1 of this regulation.

48.4.9.2 Method 18 or Method 25A in **Appendix E** of this regulation shall be used to measure the VOC concentration; alternatively, any other method or data that has been validated according to the protocol in Method 301 of 40 CFR, Part 63, Appendix A may be used.

48.4.9.3 Where Method 18 is used, the following procedures shall be used to calculate ppmv TOC concentrations:

48.4.9.3.1 The minimum sampling time for each run shall be 1 hour, in which either an integrated sample or four grab samples shall be taken. If grab sampling is used, the samples shall be taken at approximately equal intervals of time, such as at 15-minute intervals during the run.

48.4.9.3.2 The concentration of TOC (minus methane and ethane) shall be calculated using Method 18 according to 48.4.4.4 of this regulation.

48.4.9.4 Where Method 25A is used, the following procedures shall be used to calculate (ppmv) TOC concentrations:

48.4.9.4.1 Method 25A shall be used only if a single VOC is greater than 50% of total VOCs, by volume, in the process vent stream.

48.4.9.4.2 The process vent stream composition may be determined by either process knowledge or by test data collected using an appropriate EPA Method or a data collection method validated according to the protocol in Method 301 of 40 CFR Part 63, **Appendix A** (July 1, 1992). Examples of information that could constitute process knowledge include calculations based on material balances, process stoichiometry, or previous test results, provided that the results are still relevant to the current process vent stream conditions.

48.4.9.4.3 The VOC used as the calibration gas for Method 25A shall be the single VOC present at greater than 50% of the total VOC by volume.

48.4.9.4.4 The span value for Method 25A shall be 50 ppmv.

48.4.9.4.5 Use of Method 25A is acceptable if the response from the high-level calibration gas is at least 20 times the standard deviation of the response from the zero calibration gas when the instrument is zeroed on the most sensitive scale.

48.4.9.4.6 The concentration of TOC shall be corrected to 3% oxygen using the procedures and equation provided in 48.4.4.3 of this regulation.

48.4.9.5 The owner or operator shall demonstrate that the concentration of TOC (including methane and ethane) measured by Method 25A is less than 250 ppmv with a VOC concentration of less than 500 ppmv to qualify for the low-concentration exclusion.

48.5 Monitoring Requirements.

48.5.1 The owner or operator of an affected facility that uses an incinerator to seek compliance with the TOC emission limit or the percent reduction specified in 48.3.1.1 of this regulation shall install, calibrate, maintain, and operate, according to manufacturer's specifications, a temperature monitoring device that is equipped with a continuous recorder and that has an accuracy of ±1% of the temperature being measured, expressed in degrees Celsius or ±0.5°C, whichever is greater.

48.5.1.1 Where an incinerator other than a catalytic incinerator is used, a temperature monitoring device shall be installed in the firebox.

48.5.1.2 Where a catalytic incinerator is used, temperature monitoring devices shall be installed in the gas stream immediately before and after the catalyst bed.

48.5.2 The owner or operator of an affected facility that uses a flare to seek compliance with 48.3.1.2 of this regulation shall install, calibrate, maintain, and operate, according to manufacturer's specifications, a heat-sensing device, such as an ultraviolet beam sensor or a thermocouple, at the pilot light to indicate the continuous presence of a flame.

48.5.3 The owner or operator of an affected facility that uses a boiler or process heater with a design heat input capacity of less than 44 megawatts to seek compliance with 48.3.1.1 of this regulation shall install, calibrate, maintain, and operate, according to manufacturer's specifications, a temperature monitoring device in the firebox. The monitoring device shall be equipped with a continuous recorder and shall have an accuracy of ±1% of the temperature being measured, expressed in degrees Celsius or ±0.5°C, whichever is greater. Any boiler or process heater in which all vent streams are introduced with primary fuel is not subject to this requirement.

48.5.4 The owner or operator of an affected facility that seeks to demonstrate compliance with the TRE index value limit specified in 48.3.1.3 or 48.3.2 of this regulation shall install, calibrate, maintain, and operate, according to manufacturer's specifications, the following equipment:

48.5.4.1 Where an absorber is the final recovery device in the recovery system, the following monitoring equipment is required.

48.5.4.1.1 A scrubbing liquid temperature monitor equipped with a continuous recorder.

48.5.4.1.2 A specific gravity monitor equipped with continuous recorders.

48.5.4.2 Where a condenser is the final recovery device in the recovery system, a condenser exit (product side) temperature monitoring device that is equipped with a continuous recorder and that has an accuracy of ±1% of the temperature being monitored, expressed in degrees Celsius or ±0.5°C, whichever is greater.

48.5.4.3 Where a carbon adsorber is the final recovery device unit in the recovery system, an integrating regeneration stream flow monitoring device with an accuracy of ±10%, that is capable of recording the total regeneration stream mass flow for each regeneration cycle; and a carbon bed temperature monitoring device with an accuracy of ±1% of the temperature being monitored, expressed in degrees Celsius, or ±0.5°C, that is capable of recording the carbon bed temperature after each regeneration and within 15 minutes of completing any cooling cycle.

48.5.4.4 Where an absorber is used to scrub halogenated streams after an incinerator, boiler, or process heater, the following monitoring equipment is required for the scrubber.

48.5.4.4.1 A pH monitoring device equipped with a continuous recorder.

48.5.4.4.2 Flow meters equipped with a continuous recorder to be located at the scrubber influent for liquid flow and at the scrubber inlet for gas stream flow.

48.5.5 The owner or operator of a process vent using a vent system that contains bypass lines that could divert a vent stream away from the combustion device shall either:

48.5.5.1 Install, calibrate, maintain, and operate a flow indicator that provides a record of vent stream flow at least once every 15 minutes (the flow indicator shall be installed at the entrance to any bypass line that could divert the vent stream away from the combustion device to the atmosphere); or

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

48.6 Reporting/Recordkeeping Requirements.

48.6.1 Each owner or operator with a reactor process or distillation operation subject to 48.0 of this regulation shall keep records of the following parameters that are measured during a performance test or TRE determination, as specified in 48.4 of this regulation, and that are required to be monitored, as specified in 48.5 of this regulation.

48.6.1.1 Where an owner or operator subject to the provisions of 48.0 of this regulation seeks to demonstrate compliance with 48.3.1.1 of this regulation through the use of either a thermal or catalytic incinerator:

48.6.1.1.1 The average firebox temperature of the incinerator (or the average temperature upstream and downstream of the catalyst bed for a catalytic incinerator), measured at least every 15 minutes and averaged over the same time period of the performance testing.

48.6.1.1.2 The percent reduction of TOC achieved by the incinerator, determined as specified in 48.4.4 of this regulation; or the concentration of TOC (ppmv, by compound) at the outlet of the control device, on a dry basis, corrected to 3% oxygen, determined as specified in 48.4.4 of this regulation.

48.6.1.2 Where an owner or operator subject to the provisions of 48.0 of this regulation seeks to demonstrate compliance with 48.3.1.1 of this regulation through the use of a boiler or process heater:

48.6.1.2.1 A description of the location at which the vent stream is introduced into the boiler or process heater.

48.6.1.2.2 The average combustion temperature of the boiler or process heater with a design heat input capacity of less than 44 megawatts measured at least every 15 minutes and averaged over the same time period of the performance testing.

48.6.1.2.3 Any boiler or process heater in which all vent streams are introduced with primary fuel is not subject to these requirements.

48.6.1.3 Where an owner or operator subject to the provisions of 48.0 of this regulation seeks to demonstrate compliance with 48.3.1.2 of this regulation through the use of a smokeless flare; flare design (i.e., steam-assisted, air-assisted, or non-assisted), all visible emission readings, heat content determinations, flow rate measurements, and exit velocity determinations made during the performance test, continuous records of the flare pilot flame monitoring, and records of all periods of operations during which the pilot flame is absent.

48.6.1.4 Where an owner or operator subject to the provisions of 48.0 of this regulation seeks to demonstrate compliance with 48.3.1.3 or 48.3.2 of this regulation:

48.6.1.4.1 Where an absorber is the final recovery device in the recovery system, the exit specific gravity (or alternative parameter which is a measure of the degree of absorbing liquid saturation, if approved by the Department), and the average exit temperature of the absorbing liquid, measured at least every 15 minutes and averaged over the same time period of the performance testing (both measured while the vent stream is normally routed and constituted).

48.6.1.4.2 Where a condenser is the final recovery device in the recovery system, the average exit (product side) temperature, measured at least every 15 minutes and averaged over the same time period of the performance testing while the vent stream is routed and constituted normally.

48.6.1.4.3 Where a carbon adsorber is the final recovery device in the recovery system, the total stream mass or volumetric flow, measured at least every 15 minutes and averaged over the same time period of the performance testing (full carbon bed cycle), the temperature of the carbon bed after regeneration (and within 15 minutes of completion of any cooling cycle or cycles), and the duration of the carbon bed steaming cycle (all measured while the vent stream is routed and constituted normally).

48.6.1.4.4 As an alternative to 48.6.1.4.1, 48.6.1.4.2, or 48.6.1.4.3 of this regulation, the concentration level or reading indicated by the organics monitoring device at the outlet of the absorber, condenser, or carbon adsorber, measured at least every 15 minutes and averaged over the same time period as the performance testing while the vent stream is normally routed and constituted.

48.6.1.4.5 All measurements and calculations performed to determine the flow rate and the VOC concentration, heating value, and TRE index value of the vent stream.

48.6.2 Each owner or operator with a reactor process or distillation operation seeking to comply with 48.3.1.3 or 48.3.2 of this regulation shall also keep records of the following information:

48.6.2.1 Any changes in production capacity, feedstock type, or catalyst type, or of any replacement, removal, and addition of recovery equipment or reactors and distillation units.

48.6.2.2 Any recalculation of the flow rate, TOC concentration, or TRE index value performed according to 48.4.7 of this regulation.

48.6.3 Each owner or operator with a reactor process or distillation operation seeking to comply with the flow rate or VOC concentration exemption level specified in 48.1.2.4 of this regulation shall keep records to indicate that the stream flow rate is less than 0.0085 scmm or that the VOC concentration is less than 500 ppmv.

48.6.4 Each owner or operator with a reactor process or distillation operation seeking to comply with the production capacity exemption level of one gigagram per year (1,100 tons per year) shall keep records of the design production capacity or of any changes in equipment or process operations that may affect the design production capacity of the affected process unit.

48.6.5 Each owner or operator with a reactor process of distillation operation subject to the provisions of 48.0 of this regulation shall comply with the following requirements:

48.6.5.1 Initial compliance certification as specified in 5.1 of this regulation.

48.6.5.2 Reports of excess emissions as specified in 5.2 of this regulation, in addition to any other excess emissions reporting mandated by the State of Delaware.

49.0 Control of Volatile Organic Compound Emissions from Volatile Organic Liquid Storage Vessels

11/29/1994

49.1 Applicability.

49.1.1 Except as provided for in 49.1.2 of this regulation, the provisions of 49.0 of this regulation apply to each storage vessel with a capacity equal to or greater than 40,000 gallons (gal) that is used to store volatile organic liquids (VOLs).

49.1.2 The provisions of 49.0 of this regulation do not apply to:

49.1.2.1 Storage vessels with a capacity less than 5,000 gal.

49.1.2.2 Storage vessels with a capacity equal to or greater than 5,000 gal and less than 40,000 gal provided that records are maintained consistent with 49.5.2 of this regulation.

49.1.2.3 Storage vessels with a capacity equal to or greater than 40,000 gal storing a liquid with a maximum true vapor pressure less than 1.0 psia provided that records are maintained consistent with 49.5.2 of this regulation.

49.1.2.4 Storage vessels with a capacity equal to or greater than 40,000 gal storing a liquid with a maximum true vapor pressure equal to or greater than 1.0 psia but less than 1.5 psia provided that records are maintained consistent with 49.5.1, 49.5.2, and 49.5.3 of this regulation (if applicable).

49.1.2.5 Storage vessels whose emissions to the atmosphere are covered by:

49.1.2.5.1 Any other section of this regulation.

49.1.2.5.2 Any federal rule.

49.1.2.6 Storage vessels at coke oven by-product plants.

49.1.2.7 Pressure vessels which operate without emissions to the atmosphere.

49.1.2.8 Storage vessels permanently attached to mobile vehicles such as trucks, railcars, barges, or ships.

49.1.2.9 Storage vessels used to store beverage alcohol.

49.1.3 Any owner or operator currently permitted under 7 **DE Admin. Code** 1102 to operate a storage vessel covered by 49.0 of this regulation shall submit to the Department, within 90 days of the effective date of 49.0 of this regulation, an application to amend the current permit and to comply with the provisions of 49.0 of this regulation.

49.1.4 Any owner or operator of a non-permitted storage vessel subject to the provisions of 49.0 of this regulation, on and after the effective date of 49.0 of this regulation, shall immediately submit to the Department an application for a permit to construct, modify, reconstruct or operate the storage vessel.

49.1.5 Any owner or operator of a permitted or a non-permitted storage vessel that becomes subject to the provisions of 49.0 of this regulation after the effective date of 49.0 of this regulation shall submit to the Department an application for a permit or an application to amend the current permit to comply with the provisions of 49.0 of this regulation, and shall receive approval of his application from the Department prior to constructing, modifying, reconstructing or operating the storage vessel.

49.2 Definitions. As used in 49.0 of this regulation, all terms not defined herein shall have the meaning given them in the November 15, 1990 Clean Air Act Amendments, or in 2.0 of this regulation.

"**Fill**" means the introduction of VOL into a storage vessel but not necessarily to complete capacity.

"**Mechanical Shoe Seal**" means a metal sheet held vertically against the wall of the storage vessel by springs or weighted levers and connected by braces to the floating roof.

49.3 Standards.

49.3.1 The owner or operator of each storage vessel with a capacity equal to or greater than 40,000 gal which contains a VOL that, as stored, has a maximum true vapor pressure equal to or greater than 1.5 psia but less than 11.1 psia shall equip the storage vessel with the equipment specified in either 49.3.1.1, 49.3.1.2, 49.3.1.3, or 49.3.1.4 of this regulation; whichever is applicable.

49.3.1.1 Each fixed roof tank shall be equipped with an internal floating roof as specified below, or a vapor control system as specified in 49.3.1.3 of this regulation, or an equivalent system as specified in 49.3.1.4 of this regulation.

49.3.1.1.1 Each internal floating roof shall meet all of the specifications stated in 49.3.1.1.2 through 49.3.1.1.12 of this regulation according to the following schedule:

49.3.1.1.1.1 Each fixed roof tank that is not equipped with an internal floating roof as of the effective date of 49.0 of this regulation shall be in compliance with this standard prior to filling the tank following the next scheduled tank cleaning, and no later than April 1, 1996.

49.3.1.1.1.2 Each fixed roof tank that is equipped with an internal floating roof as of the effective date of 49.0 of this regulation shall be in compliance with this standard prior to filling the tank following the next scheduled tank cleaning, and no later than 10 years after the effective date of 49.0 of this regulation.

49.3.1.1.1.3 Each fixed roof tank for which construction is to commence after the effective date of 49.0 of this regulation shall be in compliance with this standard prior to initially filling the tank.

49.3.1.1.1.4 Each existing fixed roof tank that becomes subject to the provisions of 49.0 of this regulation after the effective date of 49.0 of this regulation shall be in compliance with this standard prior to filling the tank.

49.3.1.1.2 The internal floating roof shall rest or float on the liquid surface, but not necessarily in complete contact with it.

49.3.1.1.3 The internal floating roof shall be floating on the liquid surface at all times except during those intervals when the storage vessel is being completely emptied and subsequently filled.

49.3.1.1.4 When the internal floating roof is resting on the leg supports the process of filling or emptying shall be continuous and shall be accomplished as rapidly as possible.

49.3.1.1.5 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:

49.3.1.1.5.1 A foam-or liquid-filled seal mounted in contact with the liquid (liquid-mounted seal).

49.3.1.1.5.2 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.

49.3.1.1.5.3 A mechanical shoe seal.

49.3.1.1.6 Each opening in a noncontact internal floating roof except for the automatic bleeder vents (vacuum breaker vents) and the rim space vents shall provide a projection below the liquid surface.

49.3.1.1.7 Each opening in the internal floating roof except for leg sleeves, automatic bleeder vents, rim space vents, column wells, ladder wells, sample wells, and stub drains shall be equipped with a cover, seal, or lid which shall 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.

49.3.1.1.8 Covers on each access hatch and automatic gauge float well shall be bolted except when they are in actual use.

49.3.1.1.9 Automatic bleeder vents shall be equipped with a gasket and shall be closed at all times when the roof is floating except when the roof is being floated off or is being landed on the roof leg supports.

49.3.1.1.10 Rim space vents shall be equipped with a gasket and shall be set to open only when the internal floating roof is being floated off the roof leg supports or at the manufacturer's recommended setting.

49.3.1.1.11 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% of the opening.

49.3.1.1.12 Each penetration of the internal floating roof that allows for passage of a ladder shall have a gasketed sliding cover.

49.3.1.2 Each external floating roof tank shall be equipped with an external floating roof as specified below, or a vapor control system as specified in 49.3.1.3 of this regulation, or an equivalent system as specified in 49.3.1.4 of this regulation.

49.3.1.2.1 Each external floating roof tank shall meet all of the specifications stated in 49.3.1.2.2 through 49.3.1.2.9 of this regulation according to the following schedule:

49.3.1.2.1.1 Each existing external floating roof tank shall be in compliance with this standard prior to filling the tank following the next scheduled tank cleaning, and no later than 10 years after the effective date of 49.0 of this regulation.

49.3.1.2.1.2 Each external floating roof tank for which construction is to commence after the effective date of 49.0 of this regulation shall be in compliance with this standard prior to initially filling the tank.

49.3.1.2.1.3 Each existing external floating roof tank that becomes subject to the provisions of 49.0 of this regulation after the effective date of 49.0 of this regulation shall be in compliance with this standard prior to filling the tank.

49.3.1.2.2 The roof shall be floating on the liquid surface at all times except during those intervals when the storage vessel is being completely emptied and subsequently filled.

49.3.1.2.3 When the roof is resting on the leg supports the process of filling or emptying shall be continuous and shall be accomplished as rapidly as possible.

49.3.1.2.4 Each external floating roof shall be equipped with a closure device between the wall of the storage vessel and the roof edge.

49.3.1.2.4.1 The closure device shall 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.

49.3.1.2.4.2 The primary seal shall be either a mechanical shoe seal or a liquid mounted seal.

49.3.1.2.4.3 One end of the mechanical shoe seal, if used, shall extend into the stored liquid, and the other end shall extend a minimum vertical distance of 24 in. above the stored liquid surface.

49.3.1.2.4.4 As determined by the method in 49.4.2.3.1 of this regulation the width of any portion of any gap between the tank wall and:

49.3.1.2.4.4.1 The primary seal shall not exceed 1.5 in.

49.3.1.2.4.4.2 The secondary seal shall not exceed 0.5 in.

49.3.1.2.4.5 As determined by the method in 49.4.2.3.2 of this regulation the accumulated area of gaps between the tank wall and:

49.3.1.2.4.5.1 The primary seal shall not exceed 10 $inch^2$ per foot of tank diameter.

49.3.1.2.4.5.2 The secondary seal shall not exceed 1.0 $inch^2$ per foot of tank diameter.

49.3.1.2.5 Each opening in a noncontact external floating roof except for the automatic bleeder vents (vacuum breaker vents) and the rim space vents shall provide a projection below the liquid surface.

49.3.1.2.6 Each opening in the roof except for leg sleeves, automatic bleeder vents, rim space vents, and roof drains shall be equipped with a cover, seal, or lid which shall 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.

49.3.1.2.7 Automatic bleeder vents shall be equipped with a gasket and shall be closed at all times when the roof is floating except when the roof is being floated off or is being landed on the roof leg supports.

49.3.1.2.8 Rim space vents shall be equipped with a gasket and shall be set to open only when the roof is being floated off the roof leg supports or at the manufacturer's recommended setting.

49.3.1.2.9 Each emergency roof drain is to be provided with a slotted membrane fabric cover that covers at least 90% of the area of the opening.

49.3.1.3 As an alternative to installing the internal floating roof specified in 49.3.1.1, or the external floating roof specified in 49.3.1.2, or as required by 49.3.2.1, or where the control technologies specified in 49.3.1.1 and 49.3.1.2 of this regulation are not appropriate (e.g. horizontal storage vessels), emissions shall be controlled with a closed vent system and a control device.

49.3.1.3.1 Each closed vent system and control device shall meet the specifications stated in 49.3.1.3.2 through 49.3.1.3.4 of this regulation according to the following schedule:

49.3.1.3.1.1 Each fixed roof tank that is not equipped with an internal floating roof as of the effective date of 49.0 of this regulation shall be in compliance with this standard prior to filling the tank following the next scheduled tank cleaning, and no later than April 1, 1996.

49.3.1.3.1.2 Each fixed roof tank that is equipped with an internal floating roof as of the effective date of 49.0 of this regulation, and each external floating roof tank shall be in compliance with this standard prior to filling the tank following the next scheduled tank cleaning, and no later than 10 years after the effective date of 49.0 of this regulation.

49.3.1.3.1.3 Each tank for which construction is to commence after the effective date of 49.0 of this regulation shall be in compliance with this standard prior to initially filling the tank.

49.3.1.3.1.4 Each existing tank that becomes subject to the provisions of 49.0 of this regulation after the effective date of 49.0 of this regulation shall be in compliance with this standard prior to filling the tank.

49.3.1.3.2 The closed vent system shall:

49.3.1.3.2.1 Collect all VOC vapors and gases discharged from the storage vessel.

49.3.1.3.2.2 Operate with no detectable emission as indicated by an instrument reading of less than 500 ppm above background and visual inspections, as determined by the methods specified in **Appendix F** of this Regulation.

49.3.1.3.3 The control device shall reduce the inlet VOC emissions by 95 weight % or greater.

49.3.1.3.4 If a flare is used as the control device, it shall meet the specifications described in 40 CFR Part 60, paragraph 60.18 (July 1, 1992).

49.3.1.4 If, in the Department's judgment, an alternative means of emission limitation will achieve a reduction in emissions at least equivalent to the reduction in emissions achieved by 49.3.1.1, 49.3.1.2, or 49.3.1.3 of this regulation, whichever is applicable, the owner or operator shall:

49.3.1.4.1 Be in compliance with the applicable standard according to the following schedule:

49.3.1.4.1.1 Each fixed roof tank that is not equipped with an internal floating roof as of the effective date of 49.0 of this regulation shall be in compliance with the applicable standard prior to filling the tank following the next scheduled tank cleaning, and no later than April 1, 1996.

49.3.1.4.1.2 Each fixed roof tank that is equipped with an internal floating roof as of the effective date of 49.0 of this regulation, and each external floating roof tank shall be in compliance with the applicable standard prior to filling the tank following the next scheduled tank cleaning, and no later than 10 years after the effective date of 49.0 of this regulation.

49.3.1.4.1.3 Each tank for which construction is to commence after the effective date of 49.0 of this regulation shall be in compliance with the applicable standard prior to initially filling the tank.

49.3.1.4.1.4 Each tank that becomes subject to the provisions of 49.0 of this regulation after the effective date of 49.0 of this regulation shall be in compliance with this standard prior to filling the tank.

49.3.1.4.2 Submit to the Department a written application including, at a minimum:

49.3.1.4.2.1 An actual emissions test that uses a full-sized or scale-model storage vessel that accurately collects and measures all VOC emissions from a given control device and that accurately simulates wind and accounts for other emission variables such as temperature and barometric pressure, or

49.3.1.4.2.2 An engineering evaluation that the Department determines is an accurate method of determining equivalence.

49.3.1.4.3 The Department may condition the approval on requirements that may be necessary to ensure operation and maintenance to achieve the same emissions reduction as specified in 49.3.1.1, 49.3.1.2, or 49.3.1.3 of this regulation.

49.3.2 The owner or operator of each storage vessel with a capacity equal to or greater than 40,000 gal which contains a VOL that, as stored, has a maximum true vapor pressure equal to or greater than 11.1 psia shall equip the storage vessel with one of the following:

49.3.2.1 A closed vent system and control device as specified in 49.3.1.3 of this regulation.

49.3.2.2 A alternative system equivalent to the system specified in 49.3.1.3, as provided for in 49.3.1.4 of this regulation.

49.4 Inspections. The owner or operator of each storage vessel subject to 49.3.1.1 through 49.3.1.3 of this regulation shall meet the requirements of 49.4.1 through 49.4.4 of this regulation; whichever is applicable.

49.4.1 After installing the control equipment required to meet 49.3.1.1 of this regulation (fixed roof tank with an internal floating roof), the owner or operator shall, at a minimum:

49.4.1.1 Prior to initially filling the storage vessel, conduct an inspection as specified in 49.4.1.4 of this regulation.

49.4.1.2 Conduct periodic inspections according to the following schedule:

49.4.1.2.1 Inspect the storage vessel once every 12 months as specified in 49.4.1.5 of this regulation, and

49.4.1.2.2 Inspect the storage vessel each time the storage vessel is emptied and degassed, but at no time less frequently than once every 10 years, as specified in 49.4.1.4 of this regulation.

49.4.1.3 For each vessel equipped with both a primary seal and a secondary seal the owner or operator may, in lieu of 49.4.1.2 of this regulation, inspect the storage vessel each time the storage vessel is emptied and degassed, but at no time less frequently than once every five years, as specified in 49.4.1.4 of this regulation.

49.4.1.4 The inspection required by 49.4.1.1, 49.4.1.2.2, or 49.4.1.3 of this regulation shall consist of a visual inspection of the internal floating roof, the primary seal, the secondary seal (if one is in service), gaskets, slotted membranes and sleeve seals (if any).

49.4.1.4.1 If the internal floating roof has defects, the primary seal or the secondary seal is detached, or there are holes, tears, or other openings in the seal or the seal fabric, or the gaskets do not close off the liquid surfaces from the atmosphere, or the slotted membrane has more than 10% open area, the owner or operator shall repair the items as necessary so that none of the conditions specified in 49.4.1.4.1 of this regulation exist.

49.4.1.4.2 The repair shall be made before the storage vessel is filled with VOL.

49.4.1.4.3 The owner or operator shall notify the Department in writing at least 30 days prior to the filling of the storage vessel for which the inspection specified in 49.4.1.4 of this regulation is required to afford the Department the opportunity to inspect the storage vessel prior to filling.

49.4.1.4.3.1 If the inspection described in 49.4.1.4 of this regulation is not planned and the owner or operator could not have known about the inspection 30 days in advance of filling the tank, the owner or operator shall notify the Department at least seven days prior to the filling of the storage vessel.

49.4.1.4.3.2 Notification shall be made by telephone immediately followed by written documentation demonstrating why the inspection was unplanned.

49.4.1.5 The inspection required by 49.4.1.2.1 of this regulation shall consist of a visual inspection of the internal floating roof and the primary seal or the secondary seal (if one is in service) through access and roof hatches on the fixed roof.

49.4.1.5.1 If the internal floating roof is not resting on the surface of the VOL inside the storage vessel, or there is liquid accumulated on the roof, or the seal is detached, or there are holes or tears in the seal fabric, the owner or operator shall repair the item (or items) or empty and remove the storage vessel from service within 45 days.

49.4.1.5.2 If a failure that is detected during inspections required in 49.4.1.5 of this regulation cannot be repaired within 45 days and if the vessel cannot be emptied within 45 days, a 30-day extension may be requested from the Department in the inspection report required by 49.5.4.2 of this regulation.

49.4.1.5.3 Such a request for an extension must document that alternate storage capacity is unavailable and specify a schedule of actions the Company will take that will assure that the control equipment will be repaired or the vessel will be emptied as soon as possible.

49.4.2 After installing the control equipment required to meet 49.3.1.2 of this regulation (external floating roof) the owner or operator shall, at a minimum:

49.4.2.1 Conduct the following inspection and measurement:

49.4.2.1.1 Inspect the tank in accordance with 49.4.2.2 of this regulation prior to the initial fill and each time the storage vessel is emptied and degassed.

49.4.2.1.2 Determine the seal gap widths and the gap areas by the method described in 49.4.2.3 of this regulation according to the following schedule:

49.4.2.1.2.1 Gaps between the tank wall and the primary seal shall be measured during the hydrostatic testing of the vessel or within 60 days of the initial fill with VOL, and at least once every five years thereafter.

49.4.2.1.2.2 Gaps between the tank wall and the secondary seal shall be measured within 60 days of the initial fill with VOL and at least once per year thereafter.

49.4.2.1.2.3 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 49.4.2.1.2.1 and 49.4.2.1.2.2 of this regulation.

49.4.2.2 Visually inspect the external floating roof, the primary seal, the secondary seal, and the fittings.

49.4.2.2.1 If the external floating roof has defects, the primary seal or the secondary seal is detached, or there are holes, tears, or other openings in the seal or the seal fabric, or the gaskets do not close off the liquid surfaces from the atmosphere, or the slotted membrane has more than 10% open area, the owner or operator shall repair the items as necessary so that none of the conditions specified in 49.4.2.2.1 of this regulation exist.

49.4.2.2.2 The repair shall be made before the storage vessel is filled with VOL.

49.4.2.2.3 The owner or operator shall notify the Department in writing at least 30 days prior to the filling of the storage vessel for which the inspection specified in 49.4.2.2 of this regulation is required to afford the Department the opportunity to inspect the storage vessel prior to filling.

49.4.2.2.3.1 If the inspection is not planned and the owner or operator could not have known about the inspection 30 days in advance of filling the tank, the owner or operator shall notify the Department at least seven days prior to the refilling of the storage vessel.

49.4.2.2.3.2 Notification shall be made by telephone immediately followed by written documentation demonstrating why the inspection was unplanned.

49.4.2.3 Seal gap widths and the gap areas shall be determined for the primary seal and for the secondary seal by the following methods:

49.4.2.3.1 Seal gap width.

49.4.2.3.1.1 Measure each seal gap width around the entire circumference of the tank in each place where a 1/8 inch diameter uniform probe passes freely (without forcing or binding) between the seal and the wall of the storage vessel.

49.4.2.3.1.2 The roof shall be floating off the roof leg supports during the measurement.

49.4.2.3.1.3 Each seal gap width shall be measured by using probes of various widths.

49.4.2.3.2 Seal gap surface area.

49.4.2.3.2.1 For each gap measured in accordance with 49.4.2.3.1 of this regulation, measure the corresponding circumferential distance of the gap.

49.4.2.3.2.2 Determine the surface area of each gap by multiplying the gap width by its respective circumferential distance.

49.4.2.3.2.3 Calculate the gap surface area ratio for the tank by adding the gap surface area of each gap, and then dividing the sum by the nominal diameter of the tank.

49.4.2.3.3 The owner or operator shall notify the Department in writing at least 30 days in advance of any gap measurements required by 49.4.2.1.2 of this regulation to afford the Department the opportunity to have an observer present.

49.4.2.3.4 The owner or operator shall make necessary repairs or empty the storage vessel within 45 days if any seals do not meet the standards listed in 49.3.1.2.4.4 and 49.3.1.2.4.5 of this regulation:

49.4.2.3.4.1 If a failure cannot be repaired within 45 days and if the vessel cannot be emptied within 45 days, a 30-day extension may be requested from the Department in the inspection report required by 49.5.5.2 of this regulation.

49.4.2.3.4.2 Such a request for an extension must document that alternate storage capacity is unavailable and specify a schedule of actions the Company will take that will assure that the control equipment will be repaired or the vessel will be emptied as soon as possible.

49.4.3 The owner or operator of each storage vessel that is equipped with a closed vent system and control device, other than a flare, as specified in 49.3.1.3 of this regulation shall:

49.4.3.1 Submit to the Department for approval an operating plan containing all of the information listed below.

49.4.3.1.1 Documentation demonstrating that the control device will achieve the required control efficiency during maximum loading conditions.

49.4.3.1.1.1 This documentation shall 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 the manufacturer's design specifications for the control device.

49.4.3.1.1.2 If the control device or the closed vent capture system receives vapors, gases, or liquids other than fuels from sources that are not covered by 49.0 of this regulation, the efficiency demonstration is to include consideration of all vapors, gases, and liquids received by the closed vent capture system and control device.

49.4.3.1.1.3 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% requirements, documentation that those conditions will exist is sufficient to meet the requirements in 49.4.3.1.1 of this regulation.

49.4.3.1.2 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).

49.4.3.2 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 Department unless the operating plan was modified by the Department during the review process. In this case, the modified plan applies.

49.4.4 The owner or operator of each storage vessel that is equipped with a closed vent system and a flare as described in 49.3.1.3 of this regulation shall meet the requirements as specified in 40 CFR Part 60, paragraph 60.18 (July 1, 1992).

49.5 Recordkeeping. The owner or operator of each storage vessel subject to the standards in 49.3 of this regulation shall keep records consistent with 49.5.1, 49.5.2, and 49.5.3 (if applicable) of this regulation, and the records required by 49.5.4 through 49.5.7 of this regulation, whichever is applicable. All records, except for the records required by 49.5.2 and by 49.5.6.1 of this regulation, shall be kept for at least five years and shall immediately be submitted to the Department upon verbal or written request. The records required by 49.5.2 and by 49.5.6.1 of this regulation shall be kept for the life of the source.

49.5.1 The owner or operator of each storage vessel shall maintain the following records:

49.5.1.1 The type of liquid stored.

49.5.1.2 The period of storage.

49.5.1.3 The maximum true vapor pressure of that VOL during the respective storage period.

49.5.2 The owner or operator of each storage vessel shall maintain records showing the dimensions of the storage vessel and an analysis showing the capacity of the storage vessel.

49.5.3 The owner or operator of each vessel storing a mixture of indeterminate or variable composition shall:

49.5.3.1 Prior to the initial fill of the vessel, determine the maximum true vapor pressure for the range of anticipated liquid compositions to be stored.

49.5.3.2 For vessels in which the vapor pressure of the anticipated liquid composition is greater than 1.0 psia but less than 1.5 psia, conduct an initial physical test of the vapor pressure; and a physical test at least once every six months thereafter as determined by one of the following methods:

49.5.3.2.1 ASTM Method D2879—83; or

49.5.3.2.2 ASTM Method D323—82; or

49.5.3.2.3 As measured by an appropriate method as approved by the Department.

49.5.4 After installing control equipment in accordance with 49.3.1.1 of this regulation (fixed roof tank with an internal floating roof), the owner or operator shall:

49.5.4.1 Keep a record of each inspection performed as required by 49.4.1.1, 49.4.1.2, or 49.4.1.3 of this regulation. Each record shall identify:

49.5.4.1.1 The storage vessel on which the inspection was performed.

49.5.4.1.2 The date the vessel was inspected.

49.5.4.1.3 The observed condition of each component of the control equipment (seals, internal floating roof, and fittings).

49.5.4.2 If any of the conditions described in 49.4.1.4.1 or in 49.4.1.5.1 of this regulation are detected a report shall be furnished to the Department pursuant to 5.2 of this regulation.

49.5.5 After installing control equipment in accordance with 49.3.1.2 of this regulation (external floating roof), the owner or operator shall:

49.5.5.1 Keep a record of each inspection performed as required by 49.4.2.1.1 of this regulation. Each record shall identify:

49.5.5.1.1 The storage vessel on which the inspection was performed.

49.5.5.1.2 The date the vessel was inspected.

49.5.5.1.3 The observed condition of each component of the control equipment (seals, internal floating roof, and fittings).

49.5.5.2 Keep a record of each gap measurement performed as required by 49.4.2.1.2 of this regulation. Each record shall identify:

49.5.5.2.1 The storage vessel in which the measurement was performed.

49.5.5.2.2 The date of measurement.

49.5.5.2.3 The raw data obtained in the measurement.

49.5.5.2.4 The calculations described in 49.4.2.3.2 of this regulation.

49.5.5.3 If any condition stated in 49.4.2.2.1 of this regulation exists or if any measurement or calculation indicates that any gap exceeds the limitations specified in 49.3.1.2.4.4 or 49.3.1.2.4.5 of this regulation, a report shall be submitted to the Department pursuant to 5.2 of this regulation.

49.5.6 After installing control equipment in accordance with 49.3.1.3 of this regulation (closed vent system and control device), other than a flare, the owner or operator shall keep the following records.

49.5.6.1 A copy of the operating plan required in 49.4.3.1 of this regulation.

49.5.6.2 A record of the measured values of the parameters monitored in accordance with 49.4.3.2 of this regulation.

49.5.6.3 If any measurement or calculation indicates that the standard in 49.3.1.3 of this regulation was exceeded, a report shall be provided to the Department pursuant to 5.2 of this regulation.

49.5.7 After installing a closed vent system and a flare to comply with 49.3.1.3 of this regulation (closed vent system and control device) the owner or operator shall meet the following requirements.

49.5.7.1 Submit to the Department a report containing the measurements required by 40 CFR Part 60 paragraph 60.18(f)(1), (2), (3), (4), (5), and (6) (July 1, 1992) as required by 40 CFR Part 60 paragraph 60.8 (July 1, 1992). This report shall be submitted within 6 months of the initial startup date.

49.5.7.2 Records shall be kept of all periods of operation during which the flare pilot flame is absent.

49.5.7.3 If any record indicates that the pilot flame was absent, a report shall be provided to the Department pursuant to 5.2 of this regulation.

49.6 Reporting. The owner or operator of any facility containing sources subject to 49.0 of this regulation shall comply with the requirements of 5.0 of this regulation.

50.0 Other Facilities that Emit Volatile Organic Compounds (VOCs).

11/29/1994

50.1 Applicability.

50.1.1 The provisions of 50.0 of this regulation apply to any facility that emits VOCs and that is not subject to 10.0 through 49.0 of this regulation or to any Federally-approved State rule. A facility is subject to 50.0 of this regulation if it has sources not regulated by the sections or rules listed above or not regulated as specified in 50.1.4 of this regulation or not exempted as specified in 50.1.5 of this regulation that as a group have maximum theoretical VOC emissions of 25 tons or more per calendar year in New Castle or Kent Counties, or 50 tons or more per calendar year in Sussex County, in the absence of control devices.

50.1.2 The owner or operator of a facility whose emissions are below the applicability threshold in 50.1.1 of this regulation shall comply with the appropriate certification, recordkeeping, and reporting requirements of 50.4 of this regulation.

50.1.3

50.1.3.1 Any facility that becomes or is currently subject to the provisions of 50.0 of this regulation by exceeding the applicability threshold in 50.1.1 of this regulation will remain subject to these provisions even if its throughput or emissions later fall below the applicability threshold.

50.1.3.2 Any facility that is currently subject to a state or federal rule promulgated pursuant to the Clean Air Act Amendments of 1977 by exceeding the applicability threshold is and will remain subject to those provisions, even if its throughput or emissions have fallen or later fall below the applicability threshold.

50.1.4 The control requirements in 50.0 of this regulation do not apply to coke ovens (including by-product recovery plants), fuel combustion sources, barge loading facilities, jet engine test cells, vegetable oil processing facilities, wastewater treatment facilities, and iron and steel production.

50.1.5 The control requirements in 50.0 of this regulation do not apply to the following source categories for which the U.S. EPA must issue Control Technique Guidelines (CTGs) by November 15, 1993 under the non-attainment provisions of Title I of the November 15, 1990 Clean Air Act Amendments:

50.1.5.1 Wood furniture coatings.

50.1.5.2 Industrial wastewater.

50.1.5.3 Shipbuilding and repair.

50.2 Standards. The owner or operator of any source at a facility subject to 50.0 of this regulation shall do one of the following:

50.2.1 Install and operate emission capture and control techniques or, if appropriate, use complying coatings that achieve an overall reduction in VOC emissions of at least 81 weight %. For purposes of 50.2 of this regulation, fugitive emissions from leaks of equipment which resemble the equipment found in the Synthetic Organic Chemical Manufacturing Industry (SOCMI) or Petroleum Refinery Equipment shall not be subject to the requirement for 81 weight % overall control or included in the calculation of 81 weight % provided that the controls and technologies specified in 40.0 (pertaining to SOCMI leaks) or 29.0 (pertaining to Petroleum Refinery Equipment leaks) of this regulation, respectively, are followed. A technical support document, adequately justifying the emission capture and control techniques, shall be submitted to the Department.

50.2.2 For any coating unit, limit the daily-weighted average VOC content to 0.40 kilograms VOC per liter (kg VOC/L) (3.5 pounds VOC per gallon [lb VOC/gal]) or less of coating, as applied (excluding water and exempt compounds), as calculated in **Appendix C** of this regulation. A technical support document, adequately justifying the daily-weighted average VOC content, as applied, shall be submitted to the Department.

50.2.3 Comply with an alternative control plan that has been approved by the Administrator of the U.S. EPA as part of a State Implementation Plan (SIP) or Federal Implementation Plan (FIP) revision. The alternative control plan shall:

50.2.3.1 Be submitted within six months of the effective date of the rule.

50.2.3.2 Be accompanied by a demonstration of the technical or economic infeasibility of complying with the requirements in 50.2.1 or 50.2.2 of this regulation.

50.3 Test methods and procedures. The owner or operator of any source subject to 50.0 of this regulation shall demonstrate compliance with 50.2 of this regulation by using the applicable test methods specified in **Appendix A** through **Appendix F** of this regulation.

50.4 Reporting and Recordkeeping Requirements for Exempt Non-Control Technique Guideline (Non-CTG) Sources.

50.4.1 Coating Sources. An owner or operator of a coating unit that is exempt from the emission limitations in 50.2 of this regulation shall comply with the certification, recordkeeping, and reporting requirements in 4.2 of this regulation.

50.4.2 Non-Coating Sources. An owner or operator of a non-coating source that is exempt from the emission limitations in 50.2 of this regulation shall submit, upon request by the Department records that document that the source is exempt from these requirements.

50.4.2.1 These records shall be submitted to the Department within 30 calendar days from the date of request.

50.4.2.2 If such records are not available, the source is considered to be subject to the limits in 50.2 of this regulation.

50.5 Reporting and Recordkeeping Requirements for Subject Non-CTG Coating Sources.

50.5.1 An owner or operator of a coating unit subject to 50.0 of this regulation and complying with 50.2.1 of this regulation by the use of complying coatings shall comply with the certification, recordkeeping, and reporting requirements in 4.3 of this regulation.

50.5.2 An owner or operator of a coating unit subject to 50.0 of this regulation and complying with 50.2.2 of this regulation by daily-weighted averaging shall comply with the certification, recordkeeping, and reporting requirements in 4.4 of this regulation.

50.5.3 An owner or operator of a coating unit subject to 50.0 of this regulation and complying with 50.2.1 or 50.2.3 of this regulation by using control devices shall comply with the testing, reporting, and recordkeeping requirements in 4.5 of this regulation.

50.6 Reporting and Recordkeeping Requirements for Subject Non-CTG, Non-Coating Sources.

50.6.1 The owner or operator of the subject VOC sources shall perform all testing and maintain the results of all tests and calculations required under 50.2 and 50.3 of this regulation to demonstrate that the subject source is in compliance.

50.6.2 The owner or operator of the subject VOC source shall maintain these records in a readily accessible location for a minimum of five years and shall make these records available to the Department immediately upon verbal or written request.

50.6.3 The owner or operator of any facility containing sources subject to 50.0 of this regulation shall comply with the requirements in 5.0 of this regulation.

2 DE Reg. 1387 (02/01/99)
2 DE Reg. 1433 (03/01/99)
5 DE Reg. 1101 (11/01/01)
5 DE Reg. 1478 (01/01/02)
6 DE Reg. 190 (08/01/02)
6 DE Reg. 971 (02/01/03)
10 DE Reg. 867 (11/01/06)
10 DE Reg. 1714 ((05/01/07)
12 DE Reg. 347 (09/01/08)
14 DE Reg. 902 (03/01/11)
20 DE Reg. 556 (01/01/17)
23 DE Reg. 438 (12/01/19) (Prop.)

Appendix B

TECHNICAL RESPONSE MEMORANDUM

To: Theresa Newman, Hearing Officer

Through: Valerie Gray *vag*
Renae Held *rjh*

From: Frank Gao *rjh for fg*

Re: Department's responses to comments received on the proposed amendments to 7 DE Admin. Code 1124 – *Control of Volatile Organic Compound Emissions,* Sections 26.0 and 36.0.

You presided over a public hearing on Wednesday, January 8, 2020 beginning at 6:00 PM in the Auditorium at The Richardson and Robbins Building, 89 Kings Highway, Dover. The subject of the public hearing was the proposed amendments to 7 **DE Admin. Code** 1124 Section 26.0 "Gasoline Dispensing Facility Stage I Vapor Recovery" and Section 36.0 "Vapor Emission Control at Gasoline Dispensing Facilities," and a related Delaware State Implementation Plan (SIP) revision.

At the hearing, the Department received comments from the following:

Name	Affiliation	Position
Sandy Carl	Crompco (testing company)	Company Representative
Josh Worth	Wawa (chain gasoline stations)	Company Representative
Mark Baker	Baker Petroleum (DE gasoline stations)	Company Owner
Ellen Valentino	Mid-Atlantic Petroleum Distribution Association (MAPDA)	Organization Representative

All four commenters gave verbal testimony at the hearing. In addition, all four subsequently submitted written copies of their comments either at the hearing or after the hearing via email.

This memorandum provides a summary of the comments received and the responses of the Division of Air Quality (Department) on behalf of the Department (note that in the comments and the responses below, the term Phase I or Phase II are equivalent to Stage I or Stage II).

Comment 1

Three of the comments received stated that there is a large financial impact of the proposed regulation, with little to no guaranteed improvement in air quality. The commenters requested that a cost-benefit analysis of the new requirements be provided.

Department Response

Since early 1990s, the ambient air quality in Delaware's New Castle County, has been designated nonattainment for the health-based national ambient air quality standard (NAAQS) for the pollutant ground-level ozone (O3). Because gasoline vapors contain mainly volatile organic compounds (VOC) that contribute to the formation of ground-level ozone in the ambient air, Section 182(b)(3) of the Clean Air Act Amendments of 1990 (CAA) requires states with moderate and higher ozone nonattainment areas, including Delaware[1], to revise their State Implementation Plans (SIP) to require "owners or operators of gasoline dispensing systems to install and operate…a system for gasoline vapor recovery of emissions from the fueling of motor vehicles."

To comply with the above CAA requirement, beginning in 1993, Delaware has required gasoline dispensing facilities (GDF) in the state to install Stage II vapor recovery systems (VRS) to control gasoline vapor emissions from motor vehicles during refueling processes. Stage II systems address vapor recovery during vehicle fueling and dispensing operations. Stage II VRS controls gasoline vapor emissions by collecting gasoline vapors displaced from vehicle's gasoline tank during the transfer of gasoline from GDF to vehicle's tanks, and returning the collected vapors to GDF's underground storage tanks (UST) or aboveground storage tanks (AST).

Delaware has also required, since 1993, the GDFs to install Stage I VRS for their gasoline storage tanks to control gasoline vapor emissions during gasoline delivery. Stage I VRS controls gasoline vapor emissions by collecting gasoline vapors displaced from GDF's UST or AST when a delivery truck delivers gasoline into the UST or AST, and returning the collected vapors to the tank of the delivery truck. A properly designed and installed Stage I system will assist in maintaining a vapor tight UST or AST and thereby prevent the release of gasoline vapors at a GDF.

Since 1998, automobile manufacturers in the United States have been required by Section 202(a)(6) of the CAA to install on-board refueling vapor recovery (ORVR) systems on new vehicles. Both Stage II and ORVR systems are effective for controlling gasoline vapor emissions during vehicle refueling. However, the vacuum-assist Stage II systems[2] and the ORVR systems are incompatible. When such Stage

[1] In early 1990s, two counties in Delaware, New Castle and Kent, were designated as "severe non-attainment areas" under the 1-hour ozone national ambient air quality standard.

[2] There are two types of Stage II vapor recovery systems, the vacuum-assist system and the balance system. The Stage II systems installed at Delaware GDFs are all vacuum-assist systems.

II-equipped GDFs are refueling ORVR-equipped vehicles, the ORVR system will force the Stage II's vacuum pump to pull fresh air into the UST or AST, causing vapor pressure growth in the storage tanks. The vapor pressure growth leads to additional vapor emissions from the USTs or ASTs, especially when those tanks are not vapor-tight.

In May 2012, the US Environmental Protection agency (EPA) determined that the ORVR systems were in widespread use nationwide on gasoline-powered vehicles, and issued a final rule to waive Section 182(b)(3) Stage II requirements (*77* ***FR*** *28772*).[3] Under the final rule, states are able to remove their GDF's Stage II vapor recovery requirements.

In addition, the installation of Stage I enhanced vapor recovery systems (EVR) can result in additional VOC emission reductions. Stage I EVR systems contain enhanced components that can further prevent vapor leaks, which results in a higher control efficiency for VOCs.

The Department is proposing amendments to Section 26.0 and Section 36.0 to require any:

(1) new GDF to install a Stage I Enhanced Vapor Recovery (EVR) system, instead of a Stage II vapor recovery system, at construction, and

(2) existing GDF to decommission its Stage II vapor recovery system by December 31, 2021 and to install a Stage I EVR system by December 31, 2025.

Costs of Proposed Changes

Installation of Stage I EVR systems will lead to some increase in costs to GDFs. However, savings from not installing or decommissioning existing Stage II systems should also be taken into consideration. Based on the cost and saving data collected by Department:[4,5]

New Facilities

- The proposed amendment will remove the requirement for the installation of Stage II systems which is projected to result in a capital savings of up to $80,000 per facility. These savings occur from not installing the physical components of a Stage II system including: underground vapor return line,

[4] Department Hearing Exhibit 19, "Technical Support Document", subsections 3.1 and 3.3; for proposed amendments to 7 DE Admin. Code Section 1124, Sections 26.0 and 36.0.
[4] Department Hearing Exhibit 19, "Technical Support Document", subsections 3.1 and 3.3; for proposed amendments to 7 DE Admin. Code Section 1124, Sections 26.0 and 36.0.
[5] Cost estimates were gathered from industry representatives, during the Review Committee meetings for the development of draft regulatory language for Sections 26.0 and 36.0.

dispensers and vacuum assist assemblies, and associated hanging hardware.

- Installation of a CARB approved Stage I EVR system is estimated to cost approximately $3,200.

Existing Facilities

- Installation of Stage I EVR at an existing station is estimated to cost approximately $18,000. These costs occur from labor costs due to breaking of the concrete pad to access the tank top components ($14,800) and the instillation of a CARB approved Stage EVR system ($3,200).

- Maintenance operations costs can be reduced by decommissioning Stage II systems. This amount is highly variable though, depending on the size and age of the facility. This includes repair and replacement of parts. For example replacement of a dispenser mounted vacuum pump for the vacuum assist system can cost up to $5,000 to replace.

Environmental and Health Benefits

Installation of Stage I EVR systems will provide the following emission reduction and health benefits:

- In 2021, 9 tons and 21 tons of VOC emission reduction in the ozone season and annually, respectively. The reduction benefits will offset the Stage II-ORVR incompatibility emissions and help Delaware attain the 2015 ozone national ambient air quality standard.

- In 2026 and thereafter, more than 58 tons of VOC emission reduction every year. The long-term VOC emission reductions will help Delaware maintain the ozone ambient air quality standard.

- Ground-level ozone is formed through the reaction of VOC and other compounds in the air in the presence of sunlight. High levels of ground-level ozone can cause or worsen difficulty in breathing, asthma and other serious respiratory problems.

  People most at risk from breathing air containing ozone include children, older adults, people with asthma or other lung diseases, and people who are active outdoors, especially outdoor workers. Adverse health effects from ground level ozone include: reduced lung function, increased respiratory symptoms and pulmonary inflammation; effects that contribute to emergency department visits or hospital admissions; and mortality. By reducing VOCs, these amendments will help decrease adverse health effects to at risk populations, from ground level ozone.

Comment 2

Three of the comments received stated that the Department's requirement for a complete California Air Resources Board (CARB) Stage I/Phase I Enhanced Vapor Recovery System, without the ability to mix-match components between Executive Orders, will not guarantee improvement in air quality and will come with a significant financial impact.

Department Response

Emission Reduction Benefits

Delaware has calculated expected emission reductions benefits of the regulation change based on a 98% control efficiency of Stage I systems. The expected benefits are:

- In 2021, 9 tons and 21 tons of VOC emission reduction in the ozone season and annually, respectively.

- In 2026 and thereafter, more than 58 tons of VOC emission reduction every year.

The Department believes the proposed amendments to Section 36.4.1, which would require facilities to utilize a CARB certified Stage I system, will guarantee 98% control efficiency and the above emission reductions. CARB guarantees 98% efficiency of a Stage I EVR through its Certification Procedure for Vapor Recovery Systems. During the CARB certification process, Stage I EVR systems are tested as one complete system, components are not tested individually. The systems are tested for 180 days. During that time, the test measures the leak rate of the Pressure/Vacuum (P/V) Vent valve on the system, to determine the control efficiency. CARB then develops an Executive Orders specific to the system. The Executive Orders are written documentation demonstrating compliance with the CARB certification and list the individual components that can be used within a certified system.

The Department believes that allowing the mix-match of components in the Stage I EVR system cannot guarantee a 98% control efficiency. This conclusion is based on the information gathered from Stage I regulations from other states (Massachusetts

and New Jersey)[6], CARB technical staff[7], and a major Stage I EVR system manufacturer[8].

Financial Impacts

In addition, the Department does not believe that requiring a complete system will incur an additional financial impact on industry, for the reasons stated below:

- The Department believes that installing a complete Stage I EVR system specified in one CARB Executive Order will lead to additional cost savings for a GDF due to fewer leaks and less shutdown time for a station:

    - CARB certified systems have already been tested as a complete system, which ensures that the parts are compatible, reducing the likelihood of leaks. In addition, the CARB executive order requires that parts are installed in a specific sequential order, to further maintain the 98% efficiency.

      In contrast, mix-matched parts have not been tested by CARB as a complete system. Therefore, parts may be incompatible with each other and may not seal properly, leading to leaks. Section 36.0 currently requires stations to fix leaks and subsequently conduct quarterly testing to ensure that the leaks are fixed. Therefore, stations can incur costs associated with leak repairs and the resultant required quarterly testing ($250-$300/quarterly test).

    - The Department has directly observed several failed leak tests in the field. Several of these failed tests were the result of failing to complete the Stage I EVR system installation in accordance with CARB Executive Orders. In all cases, repairs and subsequent quarterly testing were required. More information regarding the failed leak tests are stated below:

[6] NJ regulation allows component mix-match for Stage I EVR system but the system must have at least 98% control efficiency, per NJ 7:27-16.3 (d) (Effective 01/16/2018). MA regulation allows component mix-match for Stage I EVR system without specifying 98% control efficiency, per MA 310 CMR 7.24(3) (Effective 03/09/2018).

[7] CARB does not have any studies on mix-match Stage I components so has no data on verifying 98% efficiency of a mix-match EVR system, via personal email communication between F. Gao of DAQ-DNREC and S. Vogt of Vapor Recovery Section-CARB, May 13, 2019.

[8] "If products other than those listed in the Executive Order are used, 98% efficiency performance cannot be guaranteed," in a business communication letter from Wolfgang Sanyer, Product Manager, OPW Retail Fueling, to Peter Rollo, Engineer, Tank Management Section-DNREC, June 5, 2019.

        - One instance where a leak was caused by the improper installation of a jack screw assembly, which resulted in an incompatibility issue.

        - One instance where a leak was caused due to the failure to install a face seal adapter at EVR installation. The repairs required the facility to break concrete, remove the Stage I EVR system to access the tank riser, install the face seal adapter, and reinstall the EVR system.

        - Three instances where facilities failed their annual or quarterly leak test when CARB Order requirements of a complete system installation were not followed. Attempts were made to use automatic tank gauge (ATG) cap and adapter assemblies that were not part of the CARB order component list or reuse ATG components or seal and grommets that were not part of the order component list.

    - In some cases, leak repair can lead to a station having to shut down. Station shutdowns can negatively affect incoming revenue to a facility. This revenue can be affected in two main ways: 1) directly, through decreased gas sales and 2) indirectly, through decreased convenience store sales, due to a reduction in the number of people stopping to buy gas.

- The Department recognizes that allowing mix-matching of EVR parts may result in cost savings from part purchases. However, the Department believes that those cost savings would be minimal; as long as the correct or compatible spill bucket is used at the time of Stage I EVR installation, to avoid multi-time breakings of concrete pad.

Given the information above, the Department proposed that the 2019 amendments to Section 36.0 should require all GDFs to install and operate one complete Stage I EVR system, and not allow mix-match of EVR components from different CARB executive orders.

Comment 3

One commenter stated that the Department should not rely on CARB Executive Orders, because CARB executive orders are constantly changing and being updated. In addition, Delaware law requires the Department to follow a lengthy process to modify any regulations. The commenter stated that using CARB Executive Orders will only serve to cause regulatory and compliance hardships for Department and the industry.

Department Response

CARB's Executive Orders provide Delaware valuable information for regulatory development. Although the Department must modify relevant provisions when CARB updates its Executive Orders, the Department believes testing and certification procedures are beyond its means and resources and would be redundant to CARB Certification. In addition, several other states rely on CARB Executive Orders in their Stage I/II regulations, including: Massachusetts, New Jersey, Connecticut, Georgia (select counties), Arizona (select counties) and Rhode Island (effective 12/25/2020).

Comment 4

One commenter asked why Delaware is attempting to adopt California's requirements when California still uses Stage II.

Department Response

Department is not adopting California requirements for Stage II vapor recovery. California requires GDFs to install Stage I EVR, and Stage II EVR which includes a vapor management components[9].

Delaware is adopting requirements to decommission existing Stage II systems and prohibit the installation of new Stage II systems. Stage I EVR systems operate independently of Stage II systems. Stage II systems address vapor recovery during vehicle fueling and dispensing operations. Stage I EVR systems focus around the filling of a GDF's storage tanks from a tanker truck, and storage tank pressure. Stage I EVR systems are approved and effective at both Stage II and non-Stage II GDFs. The proposed regulation does include the adoption of CARB certified Stage I EVR.

---

[9] California, South Coast Air Quality Management District, Regulation IV. Prohibitions, Rule 461.(c).(2).(A) Gasoline Transfer and Dispensing (Amended April 6, 2012)

California, County of San Diego Air Pollution Control District, Regulation IV. Prohibitions, Rule 61.4.1. (d).(3).(i) Transfer of Gasoline from Stationary Underground Storage Tanks into Vehicle Fuel Tanks (Rev. 03/26/08)

Department believes testing and certification procedures are beyond the means and resources of Department and would be redundant to CARB Certification. Additionally, Department believes that additional certifications and testing would impart an unnecessary cost to industry in the state.

Comment 5

One commenter stated that CARB's efficiency for Stage II systems is based on a 180-day test in the mild and dry climate of California. The commenter stated that the test does not take into consideration the cold temperatures, snow, salt, humidity and seasonal temperature differentials of Delaware.

Department Response

The climate of California is highly variable. California has a number of microclimates, including rainforests in the north and deserts in the south. Therefore, Delaware believes that the CARB tests do take into consideration different weather conditions; such as, extreme temperatures, precipitation (rain/snow), humidity, etc.

Comment 6

One commenter suggested that the Department should provide a breakdown of specific VOCs emission reductions attributed to each individual Stage I EVR component.

Department Response

Because the components are used in a complete working system, Stage I EVR components are certified as a system and not as individual components. VOC savings are estimated on the installation of a complete system, since some components are dependent on the installation of codependent parts and sequential installation of parts. Therefore, CARB has not determined specific emission reductions from individual components.

Comment 7

Two comments were received regarding the likelihood that VOC emissions are unlikely because Stage II tanks are kept under a vacuum. Therefore, requiring Stage I EVR is not necessary to reduce VOC emissions.

Department Response

The Department believes Underground Storage Tanks (USTs) are expected to remain under negative pressure during daytime operation as a result of product dispensing, but may degrade to ambient or positive pressure at night when the station is closed and product dispensing and drawdown cease. A properly designed and installed Stage I system will assist in maintaining a vapor tight UST and thereby prevent the

escape of gasoline vapors at a GDF. When the Stage I system is not vapor tight, the negative pressure at daytime will ingest excessive fresh air into the UST ullage. The fresh air may cause vapor pressure increase, resulting in excess vapor emissions escaping the tank at nighttime.

The proposed amendments to Section 36.0 require the GDFs in Delaware to install a CARB approved Stage I Enhanced Vapor Recovery (EVR) systems by the end of 2025. The Department estimates that installation of Stage I EVR systems would result in a 58 TPY VOC emission reduction after 2025.

Comment 8

One commenter stated: "There is a path forward for Department to only require certain components of the Phase I EVR System that do no not require the tank field to be dug up and a site to be shut down. They can require CARB approved drop tubes and swivel adapters. This will be much more cost effective and feasible. There is also a path to require EVR spill buckets when a tank owner was going to replace the existing buckets anyway during a tank top upgrade due to the condition of the concrete pad. This will reduce the huge financial impact of requiring the tank owner to replace spill buckets in a short timeframe and before the tank top even needed to be addressed. The Division of Air Quality still should do their due diligence and study how many VOCs an EVR spill bucket actually will reduce in a non-Stage II gasoline tank. There are plenty of tank owners who will be willing to participate in this study to actually find out if there is a benefit."

Department Response

The Department appreciates the commenters desire to delay the expense of breaking concrete to a time when non-EVR spill buckets would require replacement because of failure. However, Stage I EVR systems are approved as a system and may, depending on the system selected by the GDF, require that components be installed as a complete system to remain vapor tight. Components may be dependent on the spill bucket, acting as a mating surface to a seal.

CARB systems are certified with a 98% efficiency as a complete installation. Installing incomplete systems will not guarantee the certified efficiency, and may lead to failures during annual testing, resulting in increased cost and extra down time for GDFs. Therefore, the Department does not believe that a study of the VOC reductions from individual components is necessary.

Comment 9

One commenter stated that Department did not incorporate into the proposed regulatory language for Section 26.0 the full scope of testing that would need to be completed, once a facility has decommissioned its Stage II (Phase II) System.

The commenter suggested that adding a list of the testing that is required would clearly instruct all owner/operators of what is required to be tested and the frequency of the testing.

Department Response

The Department acknowledges that 7 DE Admin. Code 1124, Section 26.0 does include the requirements imposed on a GDF to install a Stage I system (26.3.1.2). However, the Department holds that the intent of Section 26.0 is to regulate the recovery of vapor during the delivery of gasoline from a tanker truck to the GDF, as demonstrated in subsection 26.3:

"26.3 Standards

26.3.1 The owner or operator of any stationary storage tank that is subject to the requirements of 26.0 of this regulation shall:

26.3.1.1 Load the stationary gasoline storage tank or tanks by submerged fill using a drop tube that extends to within 150 mm (5.9 in.) from the bottom of the tank.

26.3.1.2 Design, install, operate, and maintain a Stage I Vapor Recovery System that operates such that the vapors displaced by the liquid gasoline are returned to the delivery vessel and transported back to the bulk plant or terminal.

26.3.1.2.1 All hoses in the Stage I Vapor Recovery system shall be properly connected.

26.3.1.2.2 All vapor lines, couplers, and adapters used in the gasoline delivery shall be vaportight.

26.3.1.2.3 All adapters and couplers that attach to any vapor line on the storage vessel shall have closures that seal upon disconnect.

26.3.1.2.4 Reserved.

26.3.1.2.5 All Stage I systems shall utilize dual point vapor connections to return vapors from the storage tank to the delivery truck.

26.3.2 The filling of storage tanks subject to the requirements of 26.0 of this regulation shall be limited to unloading by vapor-tight gasoline tank trucks or delivery trucks which:

26.3.2.1 meet all of the requirements of 27.0 of this regulation; and

26.3.2.2 are equipped with vapor return equipment that is compatible with the Stage I Vapor Recovery System installed on the storage tank."

The Department believes that the proper place to incorporate the testing requirement of the Stage I system is in Section 36.0, where all testing and requirements of a GDF are listed. The following subsections in the proposed Section 36.0, as published in

Delaware Register of Regulations on 12/01/2019 list, the systems that are required to be tested once a facility has decommissioned its Stage II system:

- 7 DE Admin. Code 1124, Sections 36.4.1.1 (for Underground Storage Tank systems) and 36.4.1.2 (for Above Ground Storage Tank systems): These subsections provide a list of the Stage I Enhanced Vapor Recovery (EVR) systems that shall be routinely tested.

- 7 DE Admin. Code 1124, Section 36.11.3 Stage I EVR system maintenance and test requirements: This subsection provides specific references to system maintenance and test requirement documents, which detail the components that are required to be tested and the frequency of the testing.

Department believes that the proposed language in the above subsections of 36.0 provide sufficient information regarding testing for facilities that have decommissioned their Stage II systems.