IMPORTANT: Read Instructions on bottom of Certification Page before completing this form. Failure to comply with instructions may cause disapproval of proposed Regulations.

3537

STATE OF CONNECTICUT

REGULATION

OF

NAME OF AGENCY

DEPARTMENT OF ENVIRONMENTAL PROTECTION

Concerning

SUBJECT MATTER OF REGULATION

ABATEMENT OF AIR POLLUTION

20(x)

SECTION _____

Section 1

Section 22a-174-20 of the Regulations of Connecticut State Agencies is amended by the addition of subsection (x) as follows:

(NEW)

(x) Control of Volatile Organic Compound Leaks from Synthetic Organic Chemical & Polymer Manufacturing Equipment.

(1) Definitions.

For purposes of this subsection:

"Fugitive emission source" means each pump, valve, safety/relief valve, open-ended valve, flange or other connector, seals, compressor, or sampling system;

"Gaseous VOCs" means VOCs which are or will become entirely gaseous before reaching the ambient air;

"Hydrocarbon detector" means a portable hydrocarbon analyzer for identifying leaks of VOC and meets the criteria given in EPA Reference Method 21;

"In light liquid service" means that a component is in contact with a fluid containing 10% or greater light liquid by weight.

"In VOC service" means that a component is in contact with a fluid containing 10% or greater VOC by weight.

"Light liquids" means a fluid whose vapor pressure is greater than 0.044 psia (0.3 kilopascals) at 20 °C;

"Quarter" means a consecutive three month period beginning in either January, April, July or October;

"Synthetic Organic Chemical and Polymer Manufacturing" means the industry that produces methyl tert-butyl ether (MTBE), polyethylene, polypropylene, polystyrene, one or more of the chemicals listed in 40 CFR Part 60.489 or such other industries as the Commissioner may determine to be sources of significant VOC leakage;

(2) Applicability.

Except as provided in subdivision (x)(13) of section 22a-174-20, on or after the effective date of this subsection, the provisions of subsection 22a-174-20(x) apply to synthetic organic chemical and polymer manufacturing facilities.

(3) Leak prevention.

The owner or operator of a synthetic organic chemical or polymer manufacturing facility shall not cause, allow, or permit any evidence of leakage as determined through the use of test methods required in subdivision (x)(8) of section 22a-174-20.

(4) Pump repair.

Except as provided in subparagraph (x)(13)(F) of section 22a-174-20, the owner or operator shall visually inspect every pump in light liquid service each week. If indications of liquid leakage are found, the pump shall be repaired within fifteen (15) days after detection except as provided in subdivision (x)(12) of section 22a-174-20. Record keeping under this subsection shall be required only for those pumps found leaking.

(5) Monitoring.

(A) Except as provided in subdivisions (x)(9) and (x)(13) of section 22a-174-20, the owner or operator shall monitor each pump, valve, compressor, and safety/relief valve in gas/vapor service or in light liquid service for gaseous leaks at least once each quarter. The owner or operator shall notify the Department's Air Compliance Unit of such monitoring at least ten (10) days prior to the scheduled monitoring. If there is evidence of leakage, the owner or operator shall repair the component within fifteen (15) days of detection, except as provided in subdivision (x)(12) of section 22a-174-20. The monitoring procedure shall be in accordance with EPA Method 21.

(B) Safety/relief valves shall be monitored after each over-pressure relief to ensure the valve has been properly reseated so that a concentration of volatile organic compounds is less than 1000 ppm. The monitoring procedure shall be in accordance with EPA Method 21.

(6) Requirements for an open-ended valve.

The owner or operator shall install on each open-ended valve or line a cap, a blind flange, a plug, or a second closed valve which must remain attached to seal the open ended valve at all times except during operations requiring process fluid flow through the open line unless this may cause a safety problem.

(7) Leak detection.

The owner or operator of any fugitive emission source which appears to be leaking on the basis of sight, smell, or sound shall repair such leak within fifteen (15) days after detection except as provided in subdivision (x)(10) of section 22a-174-20.

(8) Test methods.

The owner or operator of the source shall either use:

(A) a soap solution to detect gaseous VOCs leaks at all points of potential leakage where this test method is determined to be valid by the Commissioner or his representative and where any bubble formation during a three (3) minute observation period is deemed evidence of leakage; or

(B) a hydrocarbon detector test to detect gaseous VOCs and light liquid leaks where any measured concentration in excess of ten thousand (10,000) ppm is deemed to be evidence of leakage.

(9) Exemption from Quarterly Testing.

If after four consecutive quarters of monitoring less than two percent of the valves in gas/vapor or light liquid service show evidence of leakage then the owner or operator may monitor the valves for gaseous leaks only once a year during the third or fourth quarter. If the number of valves showing evidence of leakage remains at two percent or less, then these valves need only be monitored once a year during the third or fourth quarter. However, if more than two percent of these valves show evidence of leakage, they shall be monitored every quarter until four consecutive quarters are monitored which have no more than two percent of these valves showing evidence of leakage.

(10) Delaying repairs.

A request to delay a repair of a fugitive emission source until the next turnaround if the repair is infeasible for technical or safety reasons without a complete or partial shutdown of the process unit can be made to the Commissioner.

(11) Record keeping.

The owner or operator of the facility shall maintain for two (2) years records which will be available to Department personnel on request and shall include:

A) identification of the source being inspected or monitored;

B) dates of inspection or monitoring;

C) result of inspection or monitoring;

D) what action was taken if a leak was detected;

E) type of repair made and date of repair;

F) if the repair was delayed, an explanation as to why; and

G) test method.

(12) Notice and retests.

Any evidence of leakage as described in this subsection shall also be treated as a malfunction of control equipment or methods as described in section 22a-174-7. Corrective actions shall be taken in accordance with the provisions of subsection 22a-174-7(c). A retest in accordance with the provisions of subdivision (x)(8) of section 22a-174-20 must be performed immediately after all required repairs are complete.

(13) Exemptions.

(A) The owner or operator of any facility exempted under 40 CFR Part 60.480(d) shall be exempt from subsection (x) of section 22a-174-20.

(B) When a fugitive emission source is unsafe to monitor because of extreme temperatures, pressure, or because it is more than 12 feet above a permanent support surface, or other reasons, the owner or operator may request a waiver from quarterly testing from the Commissioner who may allow monitoring less frequently than each quarter provided the source is monitored once a year.

(C) No monitoring will be required under conditions where no leakage can occur such as fugitive emission sources under vacuum. If such tests are run, leak free conditions will not be counted toward reductions in testing frequency.

(D) Safety relief valves that are isolated from the process by a frangible disc or rupture disc are exempted from the quarterly monitoring requirements of subparagraph (x)(5)(A) of section 22a-174-20 provided they are monitored on an annual basis.

(E) Canned pumps which have demonstrated compliance with 40 CFR Part 60.482-2(e)(2) may be exempted from the requirements of subparagraph (x)(5)(A) of section 22a-174-20 provided they meet the requirements of 40 CFR Part 60.482-2(e)(3).

(F) Canned pumps which have demonstrated compliance with 40 CFR Part 60.482-2(e)(2)are exempted from the provisions of subdivision (x)(4) of section 22a-174-20 provided they meet the requirements of 40 CFR Part 60.482-2(e)(3).

Section 2

(NEW)

Section 22a-174-20 of the Regulations of Connecticut State Agencies is amended by the addition of subsection (y) as follows:

(y) Manufacture of Polystyrene Resins.

(1) Definitions.

For purposes of this subsection:

"Continuous polystyrene resin manufacturing facility" means a facility that utilizes a continuous, co-polymerization process for the manufacture of polystyrene resin from styrene and other monomers and/or polymers.

"Styrene condenser vent stream" means the exhaust stream from the vacuum system on the vacuum devolatilizer condenser.

"Styrene recovery unit condenser vent stream" means the exhaust stream from a vacuum system on a styrene recovery system.

(2) Emission Standards.

On or after the effective date of this subsection the owner or operator of a continuous polystyrene resin manufacturing facility subject to this subsection shall not cause or permit the discharge of any volatile organic compounds in excess of 0.12 kg of VOC/1000 kg of product (0.24 lbs. of VOC/2000 lbs. of product) in total from:

(A) the styrene condenser vent stream; and

(B) the styrene recovery unit condenser vent stream.

(3) Control Methods.

The owner or operator of a continuous polystyrene resin manufacturing facility subject to this subsection shall achieve the emission limitation by the use of:

(A) surface condensers; or

(B) a system demonstrated to have a control efficiency equivalent to or greater than the above, and approved by the Commissioner.

(4) Testing.

The owner or operator of the source shall determine compliance with this subsection by means of an emissions test made in accordance with the methods in subdivision (y)(6) of section 22a-174-20 and which has been approved by the Commissioner under the provisions of section 22a-174-5.

(5) Test Conditions.

The production rate during emission testing shall be determined from the current plant production records. If the plant production records show minor variation in the rate of polymer production, than an average or typical value may be assumed.

(6) Test Methods.

The emission rate for total volatile organic compounds measured as organic carbon per quantity of polystyrene produced shall be determined using either of the methods described in subparagraphs (y)(6)(A) or (y)(6)(B) of section 22a-174-20 as follows:

(A)

$$M = \frac{(C)(Qsd)(0.50 \times 10^{-3})}{S}$$

Where:

M = Emission of volatile organic compound emissions per quantity of product produced (Kg VOC/1000 Kg product).

C = Total gaseous non-methane organic concentration of the effluent (ppm carbon equivalent).

Qsd = Dry volumetric stack gas flow rate corrected to standard conditions (dcsm/hr).

S = Production rate during the emission test (Kg/hr).

(B)

$$M = \frac{(2.494 \times 10^{-3})(\sum_{i=1}^{n} Ci\ Wi)(Qs)}{S}$$

Where:

M = Emission of volatile organic compound emissions per quantity of product produced (Kg VOC/1000 Kg product).

Ci = Concentration of sample component i, (ppm).

Wi = Molecular weight of sample component i, (g VOC/gmole VOC).

Qs = Volumetric stack gas flow rate corrected to standard conditions (scm/min).

S = Production rate during the emission test (Kg/hr).

(7) Record keeping.

(A) The owner or operator of the source shall monitor the operating parameters of the air pollution control equipment on the polystyrene production operation. The parameters monitored shall included, but not be limited to, the outlet temperature of the styrene condenser vent and the styrene recovery unit condenser vent or the outlet temperature of all condensers used to control these exhaust streams. The Commissioner may allow periodic monitoring if continuous monitoring is technologically or economically infeasible. The Commissioner may require additional monitoring as needed.

(B) The owner or operator of the source shall maintain monitoring records for a period of two years and shall make the records available to Department personnel upon request.

Section 3

Subsection 22a-174-20(bb) of the Regulations of Connecticut State Agencies is amended to read as follows:

(bb) Compliance methods.

(1) The owner or operator of a stationary source subject to subsections (m) through [(v)] (s) OF SECTION 22a-174-20 inclusive, [and (ee)] shall achieve the emission limit under the appropriate paragraph by:

[(i)] (A) The application of low solvent content coating technology; or,

[(ii)] (B) Incineration, provided that A MINIMUM OF ninety (90) percent of the non-methane volatile organic compounds (measured as total combustible carbon) which enter the incinerator are oxidized to carbon dioxide and water [;or,] AND WHERE THE OVERALL REQUIRED EFFICIENCY IS DETERMINED PURSUANT TO SUBDIVISION (bb)(3) OR (bb)(4); OR,

[(iii)](C) A system demonstrated to have control efficiency equivalent to or greater than the above and approved by the Commissioner.

(2) A CAPTURE SYSTEM USED IN CONJUNCTION WITH THE EMISSION CONTROL SYSTEMS IN SUBPARAGRAPHS (bb)(1)(B) AND (bb)(1)(C) OF SECTION 22a-174-20 MUST BE CAPABLE OF COLLECTING A MINIMUM OF NINETY (90) PERCENT OF THE VOLATILE ORGANIC COMPOUND EMISSIONS FROM THE PROCESS SOURCE.

(3) IN CASES WHERE CONTROL TECHNOLOGY IS THE SELECTED COMPLIANCE OPTION, THE MINIMUM OVERALL REDUCTION OF VOLATILE ORGANIC COMPOUNDS, REQUIRED TO DEMONSTRATE COMPLIANCE WITH SUBSECTIONS (m) THROUGH (s) OF SECTION 22a-174-20 INCLUSIVE, SHALL BE DETERMINED BY COMPARING THE PROCESS SOURCE EMISSIONS TO THE VOLATILE ORGANIC COMPOUND EMISSIONS WHICH WOULD EXIST IF THE PROCESS UTILIZED CONFORMING COATINGS. THIS COMPUTATION SHALL BE ON A SOLIDS APPLIED BASIS TO DETERMINE THE NET OVERALL REDUCTIONS REQUIRED. THE COMMISSIONER SHALL USE THE MOST STRINGENT EMISSION LIMIT IN ALL CASES.

(4) IF EITHER THE MINIMUM CAPTURE SYSTEM EFFICIENCY REQUIREMENT OR THE MINIMUM CONTROL EFFICIENCY REQUIREMENT, SPECIFIED ABOVE, CANNOT BE REASONABLY DEMONSTRATED, THE COMMISSIONER MAY ACCEPT AN AVERAGED SYSTEM EFFICIENCY PROVIDED THE NET EMISSION RATE IS EQUAL TO OR LESS THAN THE EMISSION RATE WHICH WOULD RESULT THROUGH COMPLIANCE WITH THE CONTROL SYSTEM AND CAPTURE SYSTEM MINIMUM EFFICIENCIES REQUIRED BY SUBDIVISIONS (bb)(1) AND (bb)(2) OF SECTION 22a-174-20.

(5) COMPLIANCE PROPOSALS PURSUANT TO SUBSECTION (cc) OF SECTION 22a-174-20, ALTERNATIVE EMISSION REDUCTION PLANS, MUST UTILIZE THE CALCULATION METHODS DESCRIBED BY SUBDIVISION (bb)(3) OF SECTION 22a-174-20 CONCERNING SOLIDS-APPLIED BASIS COMPUTATIONS AND THE SYSTEM EFFICIENCY REQUIREMENTS OF SUBSECTIONS (bb)(1)(B) AND (bb)(2) OF SECTION 22a-174-20. FOR PURPOSES OF SUBSECTION (cc) OF SECTION 22a-174-20, ALLOWABLE EMISSIONS ARE BASED ON THE SOLIDS-APPLIED BASIS EMISSIONS RATHER THAN THE MINIMUM REQUIRED SYSTEM EFFICIENCY. IF THE EMISSIONS AFTER THE APPLICATION OF CONTROL EQUIPMENT, REPRESENT A GREATER NET REDUCTION OF VOLATILE ORGANIC COMPOUND EMISSIONS, THE INCREASED REDUCTION MAY BE USED AS A CREDIT TO OFFSET EXCESS EMISSIONS FROM NON-CONFORMING SOURCES AT THE PREMISE.

(6) FOR THE PURPOSES OF SUBDIVISIONS (bb) AND (cc) OF SECTION 22a-174-20 SOLIDS-APPLIED BASIS MEANS A COMPARISON BETWEEN THE CURRENT VOLATILE ORGANIC COMPOUND EMISSIONS GENERATED BY A GALLON OF SOLIDS APPLIED OR CONSUMED BY A NON-CONFORMING COATING USED IN A PROCESS SOURCE AND THE THEORETICAL VOLATILE ORGANIC COMPOUND EMISSIONS WHICH WOULD RESULT WHEN A GALLON OF SOLIDS IS APPLIED OR CONSUMED BY THE SAME PROCESS SOURCE USING A CONFORMING COATING. THIS NUMERICAL COMPARISON IS THE BASIS FOR DETERMINING THE MINIMUM NET OVERALL VOLATILE ORGANIC COMPOUND REDUCTIONS REQUIRED.

STATEMENT OF PURPOSE: To adopt regulations to control volatile organic compounds from polymer manufacturing operations consistent with federal guidelines and to require minimum capture efficiency requirements for air pollution sources which use control equipment.