

RULE 464 ORGANIC CHEMICAL MANUFACTURING OPERATIONS

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100 GENERAL

- 101 **PURPOSE:** To limit emissions of volatile organic compounds (VOC) from organic chemical plants.
- 102 **APPLICABILITY:** The provisions of this rule apply to:
- 102.1 Equipment located in organic chemical plants that emit VOC, including, but not limited, to reactors, distillation columns, crystallizers, evaporators, process tanks, wastewater tanks, centrifuges, filters, separators and air dryers.
- 102.2 The transfer and storage of VOC at organic chemical plants.
- The provisions of this rule do not apply to leaks from process equipment. Organic chemical plants subject to this rule are also subject to the requirements of Rule 443 – LEAKS FROM SYNTHETIC ORGANIC CHEMICAL AND POLYMER MANUFACTURING.
- 103 **SEVERABILITY:** If any section, subsection, sentence, clause, phrase, or portion of this rule is, for any reason, held invalid, unconstitutional, or unenforceable by any court of competent jurisdiction, such portion is deemed to be a separate, distinct, and independent provision, and such holding does not affect the validity of the remaining portions thereof.
- 110 **EXEMPTION, SMALL STATIONARY SOURCE:** The provisions of this rule do not apply to organic chemical plants listed in Sections 110.1 and 110.2, provided the petition requirements in Section 401 and the reporting and recordkeeping requirements in Sections 501.4 and 501.10 are satisfied. For purposes of this exemption, all process emissions, including those from equipment cleanup, must be summed to determine the maximum emission rate.
- 110.1 A pharmaceutical manufacturing plant or a cosmetic manufacturing plant that emits 10 pounds per day or less of maximum uncontrolled VOC emissions, as defined in Section 213; or
- 110.2 Any other organic chemical plant that emits 15 pounds per day or less of maximum uncontrolled VOC emissions, as defined in Section 213.
- 111 **EXEMPTION, VENT STREAM WITH LOW UNCONTROLLED VOC EMISSIONS:**
- 111.1 At a pharmaceutical manufacturing plant or a cosmetic manufacturing plant, any reactor, distillation column, evaporator, crystallizer or centrifuge with a total maximum uncontrolled VOC emissions, as defined in Section 213, of 10 pounds per day or less is exempt from Section 301, provided the petition requirements in Section 401 and the reporting recordkeeping requirements in Sections 501.5 and 501.10 are satisfied.
- 111.2 At an organic chemical plant that is not a pharmaceutical manufacturing plant or a cosmetic manufacturing plant, any reactor, distillation column, evaporator, crystallizer or centrifuge with a total maximum uncontrolled VOC emissions, as defined in Section 213, of 15 pounds per day or less is exempt from Section 301, provided the petition requirements in Section 401 and the reporting and recordkeeping requirements in Sections 501.5 and 501.10 are satisfied.
- 112 **EXEMPTION, NON-PHARMACEUTICAL/NON-COSMETIC SEPARATION OPERATION WITH \leq 15 POUNDS/DAY UNCONTROLLED VOC EMISSIONS:** At an organic chemical plant that is not a pharmaceutical manufacturing plant or a cosmetic manufacturing plant, any separation device with a total maximum uncontrolled VOC emissions, as defined in Section 213, of 15 pounds per day or less is exempt from Section 302.2, provided the petition requirements in Section 401 and the reporting and recordkeeping requirements in Sections 501.5 and 501.10 are satisfied.
- 113 **EXEMPTION, PROCESS TANK WITH \leq 15 POUNDS/DAY UNCONTROLLED VOC EMISSIONS:** Any process tank with a total maximum uncontrolled VOC emissions, as

defined in Section 213, of 15 pounds per day or less is exempt from Section 304.2, provided the petition requirements in Section 401 and the reporting and recordkeeping requirements in Sections 501.5 and 501.10 are satisfied.

- 114 **EXEMPTION, STATIONARY SOURCE WITH \leq 15 POUNDS/DAY UNCONTROLLED VOC EMISSIONS FROM RESEARCH AND DEVELOPMENT OPERATIONS:** Except for the recordkeeping requirement under Sections 501.6 and 501.10, the provisions of this rule do not apply to bench scale laboratory and pilot plant operations at a stationary source that cumulatively emit, at design production rating, 15 pounds per day or less of maximum uncontrolled VOC emissions, as defined in Section 213, and whose primary purpose is to conduct research and development of new processes and products. Bench scale research and development operations at a stationary source that cumulatively emit greater than 15 pounds per day of maximum uncontrolled VOC emissions must comply with the provisions of this rule.
- 115 **EXEMPTION, LABORATORY EQUIPMENT SOLVENT CLEANING:** The provisions of Section 308.4 do not apply to solvent cleaning of bench scale laboratory equipment used exclusively for chemical or physical analyses.
- 116 **EXEMPTION, SOLVENT CLEANING OF OPERATION REGULATED BY FOOD AND DRUG ADMINISTRATION WITH \leq 15 POUNDS/DAY OF UNCONTROLLED VOC EMISSIONS:** Except for the recordkeeping requirements in Sections 501.7 and 501.10, the provisions of Section 308.4 do not apply to solvent cleaning of operations subject to Food and Drug Administration (FDA) regulation, 21 CFR Parts 210 and 211, that cumulatively emit 15 pounds per day or less of maximum uncontrolled VOC emissions at a stationary source, provided the source provides documentation to the Air Pollution Control Officer that demonstrate that the solvent used is required by FDA for the cleanliness requirement of 21 CFR Parts 210 and 211 and that there is no available compliant solvent that meets FDA requirements.

200 DEFINITIONS

- 201 **AIR POLLUTION CONTROL DEVICE:** Equipment installed on a process vent, storage tank, production equipment exhaust system, or combination thereof that reduces the mass of VOC emitted to the atmosphere. Examples include incinerators, carbon adsorption units, condensers, and gas absorbers. Process condensers are not considered air pollution control devices.
- 202 **BATCH PROCESS:** Batch process is any noncontinuous operation in which a discrete quantity or batch of feed is charged into a unit operation and processed at one time. Batch process includes noncontinuous operations in which the equipment is fed intermittently or discontinuously. Addition of raw material and withdrawal of product do not occur simultaneously in a batch process. After each batch operation, the equipment is generally emptied before a fresh batch is started.
- 203 **CLEANUP MATERIAL:** A material (e.g., solvent) that contains VOC as defined in Section 231 used to clean parts and equipment used in organic chemical manufacturing operations.
- 204 **CLOSED CONTAINER:** A container that has a cover where the cover meets with the main body of the container without any visible gaps between the cover and the main body of the container.
- 205 **CONTAINER:** As used in the wastewater provisions, container means any portable waste management unit that has a capacity greater than or equal to 0.1 m³ in which a material is stored, transported, treated, or otherwise handled. A container includes, but is not limited to, drums, barrels, tank trucks, barges, dumpsters, tank cars, dump trucks, and ships.

- 206 **CONTINUOUS PROCESS:** A continuous process is characterized by steady-state conditions in which reactants are added and products are removed simultaneously.
- 207 **COSMETICS MANUFACTURING PLANT:** Any stationary source producing or blending chemicals for use in cosmetic products and/or manufacturing cosmetic products by chemical processes.
- 208 **EMISSION PROFILE:** An emission profile, developed for a vent or an air pollution control device, is the VOC emission rate (in lb/hr) versus time in a period of time that is sufficient to include all emission episodes during a production run. It must be based on either process knowledge, engineering analyses, or collected test data.
- 209 **EXEMPT COMPOUND:** For the purposes of this rule, "exempt compound" has the same meaning as in Rule 101 – GENERAL PROVISIONS AND DEFINITIONS.
- 210 **INDIVIDUAL DRAIN SYSTEM:** A stationary system used to convey wastewater to a waste management unit. The system includes hard piping, all process drains and junction boxes, manholes, sumps, and lift stations conveying wastewater. A segregated storm water sewer system, which is a drain and collection system designed and operated for the sole purpose of collecting rainfall-runoff at a facility and is segregated from all other individual drain systems, is excluded from this definition.
- 211 **LEAK:** For the purposes of Section 305, WASTEWATER, a leak is:
211.1 The dripping of liquid containing VOC in excess of three drops per minute; or
211.2 A reading as methane on a portable hydrocarbon detection instrument of 500 parts per million pursuant to Sections 305.5 and 305.6 as applicable or greater above background when measured within one centimeter of the source; or
211.3 The appearance of a visible mist.
- 212 **MAINTENANCE WASTEWATER:** Wastewater generated by the draining of process fluid from components in the chemical manufacturing process unit into an individual drain system prior to or during maintenance activities. Maintenance wastewater can be generated during planned and unplanned shutdowns and during periods not associated with a shutdown. Examples of activities that can generate maintenance wastewater include descaling of heat exchanger tubing bundles, cleaning of distillation column traps, draining of low legs and high point bleeds, draining of pumps into an individual drain system, and draining of portions of the chemical manufacturing process unit for repair.
- 213 **MAXIMUM UNCONTROLLED VOC EMISSIONS:** The maximum quantity of VOC emissions, based on maximum physical and operational design capacity including limitations contained in an Authority to Construct that has been or will be incorporated into a Permit to Operate issued pursuant to Rule 201 – GENERAL PERMIT REQUIREMENTS, that has exited the last recovery device, such as a process condenser, but has not yet been introduced into an air pollution control device to reduce the mass of VOC in the stream.
- 214 **ORGANIC CHEMICAL MANUFACTURING PROCESS UNIT:** Equipment, such as reactors, product separators, recovery devices, distillation units, receivers, and feed, intermediate and product storage vessels, that are assembled and connected by pipes or ducts to process raw materials and to manufacture an intended organic chemical product. An organic chemical manufacturing process unit includes pumps, compressors, agitators, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, connectors, instrumentation systems, and air pollution control devices or systems.
- 215 **ORGANIC CHEMICAL PLANT:** Any facility or operation that is engaged in producing organic chemicals and/or manufacturing products by chemical processes using organic chemicals and that has 28 as the first two digits in their Standard Industrial Classification Code as determined from the Standard Industrial Classification Manual, 1987 Edition,

published by the Office of Management and Budget. Organic chemical plants may include, but are not limited, to the manufacture of: industrial organic chemicals; plastic and synthetic resins, synthetic rubber, synthetic and other man made fibers; pharmaceuticals; soap, detergents and cleaning preparations, perfumes, cosmetics and other toilet preparations; paints, varnishes, lacquers, enamels and allied products; agricultural chemicals; safflower and sunflower oil extracts; and re-refining.

- 216 **PHARMACEUTICAL MANUFACTURING PLANT:** Any stationary source producing or blending chemicals for use in pharmaceutical products and/or manufacturing pharmaceutical products by chemical processes.
- 217 **POINT OF DETERMINATION:** Used in determining the initial point of evaluation for wastewater stream, point of determination is the location where the wastewater exits the process or processes, often the last recovery device. The point of determination for wastewater from research and development operations is the waste management unit.
- 218 **POTENTIAL TO EMIT:** The maximum physical and operational design capacity to emit a pollutant during each calendar year. Limitations on the physical or operational design capacity, including air pollution control devices and limitations on hours of operation, may be considered only if such limitations are federally enforceable. The potential to emit includes both directly emitted and fugitive emissions.
- 219 **PROCESS:** A process is a logical grouping of processing equipment that collectively functions to produce a product or isolated intermediate. A process may consist of one or more unit operations. A process includes all or a combination of reaction, recovery, separation, purification, or other activity, operation, manufacture, or treatment that are used to produce a product or isolated intermediate. The physical boundaries of a process are flexible, providing a process ends with a product or isolated intermediate, or with cessation of on-site processing. A nondedicated solvent recovery or nondedicated formulation operation that serves more than one process to recover or formulate numerous materials and/or products is considered as a single process.
- 220 **PROCESS CONDENSER:** A condenser whose primary purpose is to recover material as an integral part of a unit operation. To be considered as an integral part of a unit operation, the recovered material must be used in a subsequent operation at the stationary source or is a primary product of the operation. The condenser must support a vapor-to-liquid phase change for periods of source equipment operation that are above the boiling or bubble point of substance(s). Examples of process condensers include distillation condensers, reflux condensers, process condensers in line prior to the vacuum source, and process condensers used in stripping or flashing operations.
- 221 **PROCESS TANK:** A process tank is a tank, located within the bounds of a process, that is used for mixing, separating, blending, heating, treating and/or collecting material discharged from a feedstock storage tank or unit operation within the process and that transfers this material to another unit operation within the process or a product storage tank. A separating tank is a process tank if it is covered and has no exposed liquid surface; otherwise, it is a separation operation subject to Section 302. Examples of process tanks include surge control vessels, bottoms receivers, enclosed oil-water separators, and enclosed gravity separators.
- 222 **PROCESS VENT:** A vent from a unit operation that releases or has the potential to release a VOC-containing gas stream into the atmosphere. Examples of process vents include, but are not limited to, vents on bottom receivers, surge control vessels, reactors, filters, centrifuges, wastewater tanks, process tanks and condensers used for product recovery.
- 223 **PROCESS WASTEWATER:** Wastewater that, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material,

intermediate product, finished product, by-product, or waste product. Examples are product tank drawdown or feed tank drawdown; water formed during a chemical reaction or used as a reactant; water used to wash impurities from organic products or reactants; water used to cool or quench organic vapor streams through direct contact; and condensed steam from jet ejector systems pulling vacuum on vessels containing organics.

- 224 **PRODUCTION EQUIPMENT EXHAUST SYSTEM:** An arrangement of hood, ductwork and/or stack that collects one or more process vents and discharges into the atmosphere. For the purposes of Section 303, the emission is the total amount of VOC collected and released to the atmosphere.
- 225 **RECOVERY DEVICE:** Recovery device means an individual unit of equipment capable of and used for the purpose of recovering chemicals for use, reuse, or sale. Recovery devices include, but are not limited to, absorbers, carbon adsorbers, and condensers.
- 226 **RESEARCH AND DEVELOPMENT OPERATION:** An operation, whose primary purpose is for research and development of new processes and products, 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.
- 227 **STATIONARY SOURCE:** Any building, structure, facility, or emissions unit that emits or may emit any regulated air pollutant.
- 227.1 Building, structure, facility, or emissions unit includes all pollutant emitting activities that:
- Belong to the same industrial grouping, and
 - Are located on one property or on two or more contiguous properties, and
 - Are under the same or common ownership, operation, or control, or are owned or operated by entities that are under common control.
- 227.2 Pollutant emitting activities are considered as part of the same industrial grouping if:
- They belong to the same two-digit standard industrial classification code, or
 - They are part of a common production process (Common production process includes industrial processes, manufacturing processes and any connected processes involving a common material).
- 227.3 The emissions from loading and unloading of cargo carriers at the stationary source are considered emissions from the stationary source.
- 228 **STORAGE TANK:** A tank or other vessel that is used to store organic liquids that contain one or more VOC. The following are not considered storage tanks for the purposes of this rule:
- 228.1 Vessels that are:
- Attached to motor vehicles such as trucks, railcars, barges, or ships, and
 - Used for transporting raw materials and products in and out of the plant;
- 228.2 Pressure vessels designed to operate in excess of 204.9 kilopascals and have no leak;
- 228.3 Process tanks; and
- 228.4 Wastewater tanks.
- 229 **SURFACE IMPOUNDMENT:** A waste management unit, which is a natural topographic depression, manmade excavation, or diked area formed primarily of earthen materials (although it may be lined with manmade materials), that is designed to hold an accumulation of liquid wastes or water containing free liquids. A surface impoundment is used for the purpose of treating, storing, or disposing of wastewater or residuals, and does not include injection wells. Examples of surface impoundments are equalization, settling, and aeration pits, ponds, and lagoons.

- 230 **VAPOR-TIGHT:** The concentration of volatile organic compound (VOC), measured one centimeter from the source pursuant to Section 502.5, does not exceed 500 parts per million (expressed as methane) above background.
- 231 **VOLATILE ORGANIC COMPOUND (VOC):** For the purposes of this rule, “volatile organic compound” has the same meaning as in Rule 101 – GENERAL PROVISIONS AND DEFINITIONS.
- 232 **WASTEWATER:** Wastewater is VOC-containing water, raw material, intermediate, product, by-product, co-product, or waste material that is discarded from an organic chemical manufacturing process unit and either:
- 232.1 Contains a total VOC concentration of at least 5 parts per million by weight and has a flow rate of 0.02 liter per minute or greater; or
- 232.2 Contains a total VOC concentration of at least 10,000 parts per million by weight at any flow rate.
- Wastewater includes process wastewater and maintenance wastewater. For the purposes of this rule, noncontact cooling water is not considered a wastewater.
- 233 **WASTE MANAGEMENT UNIT:** A piece of equipment, structure, or transport mechanism used in handling, storage, treatment, or disposal of waste. Examples of a waste management unit include a tank, surface impoundment, container, oil-water separator, individual drain system, steam stripping unit, thin-film evaporation unit, waste incinerator, and landfill.
- 234 **WATER SEAL:** A seal pot, p-leg trap, or other type of trap filled with water that has a design capability to create a water barrier between the sewer and the atmosphere.

300 STANDARDS

- 301 **REACTORS, DISTILLATION COLUMNS, CRYSTALLIZERS, EVAPORATORS OR CENTRIFUGES:**
- 301.1 **AT PHARMACEUTICAL AND COSMETIC MANUFACTURING PLANTS:** At a pharmaceutical manufacturing plant or a cosmetic manufacturing plant, a person may not use any reactor, distillation column, crystallizer, evaporator or enclosed centrifuge that emits more than 15 pounds per day of maximum uncontrolled VOC unless such emission is vented to an air pollution control device that meets the requirements shown below, as determined by the applicable method specified in Section 410, and is permitted pursuant to Rule 201 – GENERAL PERMIT REQUIREMENTS.
- a. Prior to October 28, 2017, a combined system efficiency of at least 85 percent by weight, and a control efficiency of at least 90 percent by weight.
- b. Effective October 28, 2017, a combined system efficiency of at least 90 percent by weight.
- 301.2 Effective October 28, 2017, except as provided in Section 301.3, at a pharmaceutical manufacturing plant or a cosmetic manufacturing plant, a person may not use any reactor, distillation column, crystallizer, evaporator or enclosed centrifuge that emits more than 10 pounds per day but not more than 15 pounds per day of maximum uncontrolled VOC unless such emission is vented to an air pollution control device that has a combined system efficiency of at least 90 percent by weight, as determined by the applicable method specified in Section 410, and is permitted pursuant to Rule 201 – GENERAL PERMIT REQUIREMENTS.
- 301.3 As an alternative to Section 301.2, a person may use a condenser to control emissions from a reactor, distillation column, crystallizer, evaporator or enclosed centrifuge that emits more than 10 pounds per day but not more than 15 pounds per day of maximum uncontrolled VOC. The condenser outlet temperature may not exceed the following:

Absolute Vapor Pressure of VOC at 20°C	Maximum Condenser Outlet Gas Temperature (°C)
0.5 psi to 1.0 psi	25
Greater than 1.0 psi to 1.5 psi	10
Greater than 1.5 psi to 2.9 psi	0
Greater than 2.9 psi to 5.8 psi	-15
Greater than 5.8 psi	-25

301.4 **AT OTHER ORGANIC CHEMICAL PLANTS:** At an organic chemical plant that is not a pharmaceutical manufacturing plant or a cosmetic manufacturing plant, a person may not use any reactor, distillation column, crystallizer, evaporator or enclosed centrifuge that emits more than 15 pounds per day of maximum uncontrolled VOC unless such emission is vented to an air pollution control device that has a combined system efficiency of at least 85 percent by weight, and a control efficiency of at least 90 percent by weight, as determined by the applicable method specified in Section 410, and is permitted pursuant to Rule 201 – GENERAL PERMIT REQUIREMENTS.

301.5 An air pollution control device controlling more than two process vents located at an organic chemical plant that is not a pharmaceutical manufacturing plant or a cosmetic manufacturing plant may be used to meet the control requirement of Section 301.4 as long as:

- a. It has an overall combined system efficiency of at least 85 percent by weight, and an overall control efficiency of at least 90 percent by weight across its inlet and outlet, as determined by the applicable method specified in Section 410, and is permitted pursuant to Rule 201 – GENERAL PERMIT REQUIREMENTS; or
- b. The combined VOC emissions from all process vents are reduced to below 33 pounds per day, as determined by the applicable method specified in Section 410, and is permitted pursuant to Rule 201 – GENERAL PERMIT REQUIREMENTS.

302 **SEPARATION OPERATIONS:**

302.1 **AT PHARMACEUTICAL AND COSMETIC MANUFACTURING PLANTS:** At a pharmaceutical manufacturing plant or a cosmetic manufacturing plant, a person may not use any centrifuge, rotary vacuum filter, or other filter or device that has an exposed liquid surface where the liquid contains VOC having a VOC composite partial vapor pressure, as determined pursuant to Section 405, of 26 mm Hg (0.5 psi) or more at 20 °C (68 °F), unless it incorporates a hood or enclosure with a delivery system or ductwork to collect VOC emissions, exhausting to a carbon adsorber, or equivalent control method approved by the Air Pollution Control Officer and the U.S. EPA.

302.2 **AT OTHER ORGANIC CHEMICAL PLANTS:** At an organic chemical plant that is not a pharmaceutical manufacturing plant or a cosmetic manufacturing plant, a person may not use any centrifuge, rotary vacuum filter, or other filter or device that has an exposed liquid surface where the liquid contains VOC having a VOC composite partial vapor pressure, as determined pursuant to Section 405, of 26 mm Hg (0.5 psi) or more at 20 °C (68 °F), and that emits more than 15 pounds per day of maximum uncontrolled VOC, unless such emission is vented to an air pollution control device that has a combined system efficiency of at least 85 percent by weight, and a control efficiency of at least 90 percent by weight, as determined by the applicable method specified in Section 410, and is permitted pursuant to Rule 201 – GENERAL PERMIT REQUIREMENTS.

303 **DRYERS OR PRODUCTION EQUIPMENT EXHAUST SYSTEMS:**

303.1 **AT PHARMACEUTICAL AND COSMETIC MANUFACTURING PLANTS:** At a pharmaceutical manufacturing plant or a cosmetic manufacturing plant:

- a. Prior to October 28, 2017, a person may not use any dryer or other production equipment exhaust system that emits 330 pounds per day or more of maximum uncontrolled VOC unless such emission is vented to an air pollution control device that has a combined system efficiency of at least 90 percent by weight, as determined by the applicable method specified in Section 410, and is permitted pursuant to Rule 201 – GENERAL PERMIT REQUIREMENTS.
 - b. Prior to October 28, 2017, a person may not use any dryer or production equipment exhaust system that emits less than 330 pounds per day of maximum uncontrolled VOC unless such emission is reduced to less than 33 pounds per day.
 - c. Effective October 28, 2017, a person may not use any dryer or other production equipment exhaust system that emits more than 10 pounds per day of maximum uncontrolled VOC unless such emission is vented to an air pollution control device that has a combined system efficiency of at least 90 percent by weight, as determined by the applicable method specified in Section 410, and is permitted pursuant to Rule 201 – GENERAL PERMIT REQUIREMENTS.
- 303.2 **AT OTHER ORGANIC CHEMICAL PLANTS:** At an organic chemical plant that is not a pharmaceutical manufacturing plant or a cosmetic manufacturing plant:
- a. A person may not use any dryer or other production equipment exhaust system that emits 330 pounds per day or more of maximum uncontrolled VOC unless such emission is vented to an air pollution control device that has a combined system efficiency of at least 85 percent by weight, and a control efficiency of at least 90 percent by weight, as determined by the applicable method specified in Section 410, and is permitted pursuant to Rule 201 – GENERAL PERMIT REQUIREMENTS.
 - b. A person may not use any dryer or production equipment exhaust system that emits less than 330 pounds on any day of maximum uncontrolled VOC unless such emission is reduced to less than 33 pounds per day.
- 304 **PROCESS TANKS:**
- 304.1 A person may not use any process tank that contains material with a VOC composite partial vapor pressure, as determined pursuant to Section 405, of greater than 26 mm Hg at 20 °C (0.5 psi at 68 °F), unless it is a closed container, as defined in Section 204, that is kept tightly covered at all times except when accessing the container.
 - 304.2 A person may not use any process tank that contains material with a VOC composite partial vapor pressure, as determined pursuant to Section 405, of greater than 26 mm Hg at 20 °C (0.5 psi at 68 °F), and that emits more than 15 pounds per day of maximum uncontrolled VOC, unless such emission is vented to an air pollution control device that has a combined system efficiency of at least 85 percent by weight, and a control efficiency of at least 90 percent by weight, as determined by the applicable method specified in Section 410, and is permitted pursuant to Rule 201 – GENERAL PERMIT REQUIREMENTS.
- 305 **WASTEWATER:** A person may not use any equipment, such as a stationary wastewater tank, container, surface impoundment, individual drain system, or oil-water separator, that receives, manages, or treats wastewater at the point of determination, as defined in Section 217, with a VOC concentration of 500 parts per million by weight or higher and a flow rate of greater than or equal to one liter per minute, or with a VOC concentration of 10,000 parts per million per weight or higher at any flow rate, unless the equipment meets the applicable equipment standard listed below:
- 305.1 A person must install a fixed roof on any stationary wastewater tank that is not used for wastewater mixing, heating, or treating with an exothermic reaction.

- 305.2 A person must install one of the following controls on any stationary wastewater tank that is used for wastewater mixing, heating, or treating with an exothermic reaction:
- a. A fixed roof and closed-vent system that routes VOC to an air pollution control device with a control efficiency of at least 90 percent by weight, as determined by the applicable method specified in Sections 410, and is permitted pursuant to Rule 201 – GENERAL PERMIT REQUIREMENTS; or
 - b. An external floating roof or fixed roof with internal floating roof in compliance with standards described in 40 CFR 63.119(b), (c), (d), and 63.120.
- 305.3 A person must install a cover and submerged fill pipe on any container with a capacity greater than or equal to 112 gallons.
- 305.4 A person must install a cover and closed-vent system that routes VOC to an air pollution control device with a control efficiency of at least 90 percent by weight, as determined by the applicable method in Section 410, and is permitted pursuant to Rule 201 – GENERAL PERMIT REQUIREMENTS, on any surface impoundment.
- 305.5 A person must install a cover and closed-vent system that routes VOC to an air pollution control device with a control efficiency of at least 90 percent by weight, as determined by the applicable method specified in Section 410, and is permitted pursuant to Rule 201 – GENERAL PERMIT REQUIREMENTS, or a solid, vapor-tight, as defined in Section 230, full contact fixed cover that totally encloses the liquid contents on any individual drain system. The cover openings must be closed and sealed, except when the opening is being used for inspection, maintenance, or wastewater sampling. The concentration of VOC must be measured using Section 502.5 at one centimeter from the fixed cover semiannually to ensure that there are no emission leaks greater than 500 parts per million (expressed as methane). Any emission leak greater than 500 parts per million must be reported to the Air Pollution Control Officer as soon as reasonably possible, but not later than one hour after its detection. If the Air Pollution Control Officer cannot be contacted, the report must be made at the commencement of the next regular working day. The leak must be repaired within 15 calendar days.
- 305.6 A person must install one of the following controls on any oil-water separator:
- a. A fixed roof and closed-vent system that routes VOC to an air pollution control device with a control efficiency of at least 90 percent by weight, as determined by the applicable method specified in Section 410, and is permitted pursuant to Rule 201 – GENERAL PERMIT REQUIREMENTS; or
 - b. An external floating roof or fixed roof with internal floating roof in compliance with standards described in 40 CFR 63.119(b), (c), (d), and 63.120; or
 - c. A solid, vapor-tight, as defined in Section 230, full contact fixed cover that totally encloses the liquid contents, with all the cover openings closed and sealed, except when the opening is being used for inspection, maintenance, or wastewater sampling. The concentration of VOC must be measured using Section 502.5 at one centimeter from the fixed cover semiannually to ensure that there are no emission leaks greater than 500 parts per million (expressed as methane). Any emission leak greater than 500 parts per million must be reported to the Air Pollution Control Officer as soon as reasonably possible, but not later than one hour after its detection. If the Air Pollution Control Officer cannot be contacted, the report must be made at the commencement of the next regular working day. The emission leak must be repaired within 15 calendar days; or
 - d. A solid, sealed, gasketed, fixed cover that totally encloses the liquid contents, with all the cover openings closed and sealed, except when the

opening is being used for inspection, maintenance, or wastewater sampling. The cover may include a pressure/vacuum valve. The concentration of VOC must be measured using Section 502.5 at one centimeter from the roof seals, fixed cover, access doors, pressure/vacuum valve, and other openings may not exceed 500 parts per million (expressed as methane) above background. Roof seals, fixed cover, access doors, and other openings must be inspected semiannually to ensure that there are no emission leaks greater than 500 parts per million. Any emission leak greater than 500 parts per million must be reported to the Air Pollution Control Officer as soon as reasonably possible, but not later than one hour after its detection. If the Air Pollution Control Officer cannot be contacted, the report must be made at the commencement of the next regular working day. The leak must be repaired within 15 calendar days.

- 305.7 A person complying with the notification requirements in Section 305.5 or Sections 305.6(c) and (d) is exempt from the provisions of Rule 602 – BREAKDOWN CONDITIONS: EMERGENCY VARIANCE.
- 305.8 One or more safety devices that vent directly to the atmosphere may be used on the wastewater tank, cover, closed-vent system, or air pollution control device provided each safety device meets all of the following conditions:
- a. The safety device is not used for planned or routine venting of organic vapors from the tank or the closed-vent system connected to an air pollution control device; and
 - b. The safety device remains in a closed, sealed position at all times except when an unplanned event requires that the device open for the purpose of preventing physical damage or permanent deformation of the tank, cover, closed-vent system, or air pollution control device in accordance with good engineering and safety practices for handling flammable, combustible, explosive, or other hazardous materials. An example of an unplanned event is a sudden power outage.
- 306 **LIQUID TRANSFER:** A person may not transfer material with a VOC composite partial vapor pressure, determined pursuant to Section 405, of greater than 26 mm Hg at 20 °C (0.5 psi at 68 °F) into any tank truck, trailer, railroad tank car, or storage tank of 2,000 gallons capacity or greater, unless VOC emissions during transfer are controlled with one of the following control systems:
- 306.1 A vapor balance system with all the following components:
- a. A permanent submerged fill pipe that discharges at not more than six inches from the bottom of the tank; and
 - b. A submerged fill pipe that discharges at not more than six inches from the bottom of the tanker truck or railcar; and
 - c. A vapor return line that transfers at least 90 percent by weight of displaced VOC vapor from the stationary storage tank being filled back to the mobile or stationary supply tank; and
 - d. A pressure-vacuum relief valve with relief settings of not less than ± 0.03 psig.
- 306.2 An air pollution control device that is permitted pursuant to Rule 201 – GENERAL PERMIT REQUIREMENTS and meets the following requirements:
- a. At a pharmaceutical manufacturing plant or a cosmetic manufacturing plant, the air pollution control device must have a combined system efficiency of at least 90 percent by weight, as determined by the applicable method specified in Section 410; or
 - b. At an organic chemical plant that is not a pharmaceutical manufacturing plant or a cosmetic manufacturing plant, the air pollution control device must have a combined system efficiency of at least 85 percent by weight, and a control efficiency of at least 90 percent by weight, as determined by the applicable method specified in Section 410.

306.3 An internal or external floating roof that complies with the procedures described in 40 CFR 63.119(b), (c), (d), and 63.120.

307 **STORAGE TANKS:**

307.1 A person must install a pressure/vacuum valve with a minimum pressure setting of 0.03 psi and a minimum vacuum setting of 0.03 psi, or equivalent control method approved in writing by the Air Pollution Control Officer and U.S. EPA and permitted pursuant to Rule 201 – GENERAL PERMIT REQUIREMENTS, on all vents of any storage tank, greater than 55 gallons and less than or equal to 40,000 gallons, that stores material with a VOC composite partial vapor pressure, as determined pursuant to Section 405, of greater than 78 mm Hg at 20 °C (1.5 psi at 68 °F). Storage tanks with capacity greater than 40,000 gallons are subject to Rule 446 – STORAGE OF PETROLEUM PRODUCTS.

307.2 A storage tank with a capacity of 55 gallons or less that stores material with a VOC composite partial vapor pressure of greater than 78 mm Hg at 20 °C (1.5 psi at 68 °F) must be a closed container that is kept tightly covered at all times except when accessing the container.

308 **CLEANUP AND STORAGE REQUIREMENTS:** A person using cleanup material must conform to all the following requirements:

308.1 A person must use closed containers for the storage of disposal of cloth, paper, or sponges used for solvent cleanup; and

308.2 A person must store fresh or spent cleanup materials in closed containers; and

308.3 A person may not use a cleanup material to perform in-line solvent cleaning of process units and piping unless:

a. The VOC emissions are vented to an air pollution control device that has a combined system efficiency of at least 85 percent by weight, and a control efficiency of at least 90 percent by weight; or

b. The solvent complies with a VOC content limit of 200 grams per liter and a vapor pressure limit of less than 45 mmHg at 68 °F.

308.4 Except for laboratory equipment cleaning exempt pursuant to Section 115 and in-line solvent cleaning of process units and piping as provided in Section 308.3, a person may not use a solvent to perform maintenance solvent cleaning including, but not limited to mechanical parts and work areas unless the solvent complies with a VOC content limit of 25 grams per liter (0.21 pounds per gallon).

400 ADMINISTRATIVE REQUIREMENTS

401 **PETITION FOR EXEMPTION:** A person seeking an exemption for an organic chemical plant or a process vent that is exempt pursuant to Section 110, 111, 112, 113, 114, or 116 must submit to the Air Pollution Control Officer a petition for exemption. Each petition must include a process diagram, the maximum uncontrolled VOC mass emission rate determined pursuant to Section 406, and all pertinent information to support the basis for granting the petition. The Air Pollution Control Officer will approve the petition unless it fails to demonstrate that the maximum uncontrolled VOC emission rate is less than or equal to the cutoff level specified in Section 110, 111, 112, 113, 114, or 116. The approved petition will remain in effect until a modification, which results in an application for permit modification pursuant to Rule 201 – GENERAL PERMIT REQUIREMENTS, is made to the plant or process vent. A person must comply with the following petition schedule:

401.1 **EXISTING PLANT OR PROCESS VENT:** The petition for exemption for an organic chemical plant or a process vent in existence prior to April 28, 2016 must be submitted by October 28, 2016.

401.2 **NEW OR MODIFIED PLANT OR PROCESS VENT:** The petition for exemption for a new or modified organic chemical plant or a process vent must be submitted with an Authority to Construct application pursuant to Rule 201 – GENERAL PERMIT REQUIREMENTS. The petition for exemption will be evaluated as part

of the application review process as specified in Rule 202 – NEW SOURCE REVIEW.

- 402 **AUTHORITY TO CONSTRUCT APPLICATION:** Any person installing a new or modifying an existing air pollution control device to control the emissions from a process vent in existence as of April 28, 2016 as a means of complying with the provisions of this rule that become effective on October 28, 2017 must submit an Authority to Construct application pursuant to Rule 201 – GENERAL PERMIT REQUIREMENTS to the Air Pollution Control Officer by October 28, 2016, unless the air pollution control device is currently under a District permit and the use of the existing air pollution control device, without modification to the system, results in compliance with this rule.
- 403 **OPERATION AND MAINTENANCE PLAN:** Any person using an air pollution control device as a means of complying with this rule must submit, with the application for Authority to Construct, pursuant to Rule 201 – GENERAL PERMIT REQUIREMENTS, an Operation and Maintenance Plan for the air pollution control device to the Air Pollution Control Officer for approval. The plan must specify key system operating parameters, such as temperatures, pressures, and/or flow rates, necessary to determine compliance with this rule and describe in detail procedures to maintain the approved air pollution control device and maintenance procedures that demonstrate continuous operation and compliance of the air pollution control device during periods of emissions-producing operations. The plan must also specify which records must be kept to document these operations and maintenance procedures. These records must comply with the requirements of Sections 501.1, 501.2 and 501.10. The plan must be implemented upon approval by the Air Pollution Control Officer or upon commencing operation, whichever occurs first.
- 404 **WASTEWATER REPORT:** A person must submit an annual wastewater report to the Air Pollution Control Officer by February 1 of each year. The report must identify and quantify each wastewater stream at the point of determination, as defined in Section 217, discharged from an organic chemical manufacturing process unit. Information data and supporting test results, records or calculations on location, source of wastewater, VOC concentration as determined pursuant to Section 502.3 or using owner knowledge of the wastewater, and annual average flow rate must be submitted for each wastewater stream. Examples of information that could constitute knowledge include material balances, records of chemical purchases, process stoichiometry, or previous test results provided the results are still representative of current operating practices at the process unit(s). One of the following methods must be used to determine flow rate:
- 404.1 Use the maximum annual production capacity of the process unit, knowledge of the process, and mass balance information to estimate annual average wastewater flow rate.
 - 404.2 Select the highest annual average flow rate of wastewater from historical records representing the most recent year of operation.
 - 404.3 Measure the flow rate of the wastewater at the point of determination during conditions that are representative of average wastewater generation rates.

Notwithstanding the provisions of this section, the Air Pollution Control Officer may require testing pursuant to Section 502.3 to determine the VOC concentration.

- 405 **CALCULATION FOR VOC COMPOSITE PARTIAL VAPOR PRESSURE:** VOC composite partial vapor pressure is the sum of the partial vapor pressures of the compounds defined as VOCs, and must be calculated by the following equation:

$$PP_c = \frac{\sum_{i=1}^n (W_i)(VP_i)/MW_i}{\frac{W_w}{MW_w} + \sum_{i=1}^n \frac{W_{e,i}}{MW_{e,i}} + \sum_{i=1}^n \frac{W_i}{MW_i}}$$

- Where: PP_c = VOC composite partial vapor pressure at 20°C, in mm Hg.
 W_i = Weight of the "i"th VOC compound, in grams, as determined by ASTM E 260-96 (2006).
 W_w = Weight of water, in grams as determined by ASTM D 3792-05.
 $W_{e,i}$ = Weight of the "i"th exempt compound, in grams, as determined by ASTM E 260-96 (2006).
 MW_i = Molecular weight of the "i"th VOC compound, in grams per g-mole, as given in chemical reference literature.
 MW_w = Molecular weight of water, 18 grams per g-mole.
 $MW_{e,i}$ = Molecular weight of the "i"th exempt compound, in grams per g-mole, as given in chemical reference literature.
 VP_i = Vapor pressure of the "i"th VOC compound at 20°C, in mm Hg, as determined by Section 502.4 of this rule.

An alternate method for calculating the composite vapor pressure or determining the variables in the equation above may be allowed if approved in writing by the Air Pollution Control Officer and U.S. EPA.

- 406 **DETERMINATION OF MAXIMUM UNCONTROLLED VOC MASS EMISSION RATE:** Any person petitioning for an exemption pursuant to Section 401 must determine the maximum uncontrolled VOC mass emission rate as follows:
- 406.1 **POTENTIAL TO EMIT \geq 25 TPY:** A stationary source with a potential to emit 25 tons per year or more of VOC from organic chemical plants must determine the maximum uncontrolled VOC emission rate by using emission testing pursuant to Section 408.
- 406.2 **POTENTIAL TO EMIT $<$ 25 TPY:** A stationary source with a potential to emit of less than 25 tons per year of VOC from organic chemical plants must determine the maximum uncontrolled VOC emissions by using engineering assessment pursuant to Section 407 or emission testing pursuant to Section 408.
- 406.3 **OPEN-TYPE PROCESS TANK:** A person must determine the maximum uncontrolled VOC emissions by using the most recent version of U.S. EPA's computer model, WATER9. The concentration of each individually speciated VOC in the process stream with the potential to be emitted into the atmosphere, must be determined by U.S. EPA Method 305 of 40 CFR Part 63, Appendix A.
- 406.4 **DETERMINATION CRITERIA:** The emission testing or engineering assessment must be made using one of the following criteria:
- FOR CONTINUOUS PROCESS:** The maximum daily uncontrolled VOC emissions must be determined based on District permitted or highest process/production rate in any calendar day.
 - FOR BATCH PROCESS:** The maximum daily uncontrolled VOC emissions must be the highest emission rate in any 24-hour period based on District permitted or highest process/production rate. An emission profile must be used to determine highest 24-hour period emission rate and must be submitted along with the exemption petition pursuant to Section 401.
- 407 **DETERMINATION OF VOC MASS EMISSION RATE USING ENGINEERING ASSESSMENT:** A person must conduct an engineering assessment that includes, but is not limited to, the following:
- 407.1 Previous test results provided the tests are representative of current operating practices at the process unit.

- 407.2 Bench-scale or pilot-scale test data representative of the process under representative operating conditions.
- 407.3 Maximum flow rate, VOC emission rate, concentration, or other relevant parameter specified or implied within a permit limit applicable to the process vent.
- 407.4 Design analysis based on accepted chemical engineering principles, measurable process parameters, or physical or chemical laws or properties. Examples of analytical methods include, but are not limited to:
- Use of material balances based on process stoichiometry to estimate maximum VOC concentrations,
 - Estimation of maximum flow rate based on physical equipment design such as pump or blower capacities,
 - Estimation of VOC concentrations based on saturation conditions.
- 407.5 All data, assumptions, and procedures used in the engineering assessment must be documented and provided to the District.

Notwithstanding the provisions of this section, the Air Pollution Control Officer may require emission testing pursuant to Section 408 to verify compliance.

408 **DETERMINATION OF VOC MASS EMISSION RATE USING EMISSION TESTING:**

- 408.1 A person must conduct emission testing using test methods in Section 502 and the following test durations:
- CONTINUOUS PROCESS:** The test must consist of three 1-hour runs.
 - BATCH PROCESS:** The duration is the time from the start to the completion of a batch cycle unless the test is conducted under worst-case condition described in Section 410.3 (b) (1) or (2). For batch cycle or test period greater than 3 hours, a single test conducted over the duration of the batch cycle or test period must be used for emission determination. For batch cycle or test period less than or equal to 3 hours, testing must include three 1-hour runs.
- 408.2 A person conducting any emission test for the purpose of the petition for exemption pursuant to Section 401 must comply with the following source test notification and reporting requirements:
- At least 30 days prior to the scheduled test date, submit the source test plan.
 - At least 7 days prior to the source test date, notify Air District staff of the exact date and time scheduled for the source test.
 - The source test observation and evaluation fee as authorized under Rule 301 – PERMIT FEES - STATIONARY SOURCE must be submitted with the petition for exemption.

409 **CALCULATION FOR VOC MASS EMISSION RATE, CONTROL EFFICIENCY, AND COMBINED SYSTEM EFFICIENCY**

- 409.1 **VOC MASS EMISSION RATE:** VOC mass emission rate must be calculated using the following equation:

$$\text{VOC Mass Emission Rate} = (Q)(C)(60 \text{ min/hr})$$

Where: Q = the flow rate, in scfm, as determined by Section 407 or Sections 408 and 502.

C = the VOC mass concentration, in lb/scf, as determined by Section 407 or Sections 408 and 502.

- 409.2 **CONTROL EFFICIENCY:** Expressed in percent, control efficiency is the ratio of the weight of the VOC removed by the air pollution control device from the effluent stream entering the air pollution control device to the weight of VOC in the effluent stream entering the air pollution control device, both measured

simultaneously. Control efficiency must be determined using the following equation:

$$\% \text{Control Efficiency} = \frac{(M_i - M_o)}{M_i} \times 100\%$$

Where: M_i = inlet VOC mass emission rate, in lb/hr.

M_o = outlet VOC mass emission rate, in lb/hr.

- 409.3 **COMBINED SYSTEM EFFICIENCY:** A capture efficiency of 100% can be assumed for any capture system that is piped to the control equipment and has no leak. The combined system (capture and control) efficiency is calculated as follows:

$$\% \text{System Efficiency} = \% \text{CE} \times \% \text{CLE} / 100\%$$

Where: %System Efficiency = %capture and control efficiency.

%CE = %control efficiency, as determined by Section 409.2.

%CLE = %capture efficiency, as determined by Section 502.2

- 410 **PROCEDURES FOR DEMONSTRATING COMPLIANCE:** A person must demonstrate compliance with Sections 301, 302, 303, 304, 305 and 306.2 by using the applicable procedure listed below, Section 410.1, or 410.2, or 410.3.

410.1 A stationary source with a potential to emit of less than 25 tons per year of VOC from the organic chemical plants may use the condenser exit gas temperature to calculate the removal efficiency of the condenser in demonstrating the required emission reduction if the condenser system is equipped with a temperature sensor and recorder, such that the condenser exit gas temperature can be measured at 15-minute intervals when the condenser is functioning in cooling a vent stream. Notwithstanding the requirements in this section, the Air Pollution Control Officer may require source testing to verify compliance.

410.2 A stationary source with a potential to emit of less than 25 tons per year of VOC from the organic chemical plants must determine percent reduction by conducting a performance test, using the procedure in Section 410.3, or a design evaluation. The design evaluation must include documentation demonstrating that the air pollution control device being used achieves the required reduction during the emission episodes in which it is functioning in reducing emissions. This documentation must include a description of the gas stream that enters the air pollution control device, flow and VOC content, and all pertinent air pollution control device operating parameters that resulted in the required reduction. The calculation must be based on engineering assessment described in Section 407. Notwithstanding the requirements in 410.2, the Air Pollution Control Officer may require source testing to verify compliance.

410.3 A stationary source with a potential to emit of greater than or equal to 25 tons per year of VOC from the organic chemical plants must demonstrate compliance by conducting a performance test based on the following procedure:

- a. Perform test pursuant to Sections 408 and 502 at the inlets and outlets of the air pollution control devices to determine the capture efficiency and the control efficiency and use the equations in Section 409 to determine percent combined system (capture and control) efficiency in total VOC.
- b. Test air pollution control devices over absolute or hypothetical worst-case conditions, or over normal conditions, provided the operation of the devices is limited to the conditions that existed during testing by District permit.

1. **ABSOLUTE WORST-CASE CONDITION:** It is either:

- i. The period in which the inlet to the air pollution control device contains at least 50 percent of the maximum VOC load capable of being vented to the air pollution control device over any 8-hour period, or
 - ii. A 1-hour period of time in which the inlet to the air pollution control device will contain the highest VOC mass loading rate, in lbs/hr, capable of being vented to the air pollution control device. An emission profile as described in Section 208 must be used to determine maximum VOC loading periods.
 2. **HYPOTHETICAL WORST-CASE CONDITION:** The simulated test condition that, at a minimum, contains the highest total average hourly VOC load that would be predicted to be vented to the air pollution control device using the emissions profile described in Section 208. The highest total average hourly VOC load is determined by first dividing the VOC emissions from each episode by the duration of each episode, in hours, and selecting the highest hourly block average.
 3. **NORMAL CONDITION:** Test condition that is based on the process/production rate, stream composition, temperature, and flow rate limits set in District permit.
- 411 **VIOLATION:** Any leak originally identified by the Air Pollution Control Officer is a violation.

500 MONITORING AND RECORDS

- 501 **RECORDKEEPING:** In addition to any existing permit conditions issued pursuant to Rule 201 – GENERAL PERMIT REQUIREMENTS, a person subject to this rule must comply with the following requirements:
- 501.1 **CONTROL EQUIPMENT:** A person using an air pollution control device pursuant to Section 300 must maintain on site the records required by the Operation and Maintenance Plan in Section 403 on a daily basis.
 - 501.2 **ORGANIC COMPOUND AND WASTEWATER PROCESSING RECORDS:** A person subject to the combined system efficiency, capture efficiency and/or control efficiency requirement of Sections 301, 302, 303, 304, 305 or 306 must maintain on site a current list of organic compounds in use including the vapor pressure of each compound at 20°C. In addition, a person must:
 - a. **FOR CONTINUOUS PROCESS:** Keep daily records on site of the types and amounts of organic compounds used and produced by each organic chemical manufacturing process unit. Keep daily records on site of the amount of wastewater received, managed or treated by each wastewater process equipment.
 - b. **FOR BATCH PROCESS:** Keep records on site of each production batch step, including starting and completion time and date, and the types and amounts of organic compounds used and produced by each organic chemical manufacturing process unit. Keep records on site of each treatment batch, including starting and completion time and date, and the amount of wastewater received, managed or treated by each wastewater process equipment.
 - 501.3 **WASTEWATER REPORT:** For any equipment that receives, manages or treats wastewater, a person must maintain on site an annual wastewater report prepared pursuant to Section 404.
 - 501.4 **EXEMPTION, SMALL STATIONARY SOURCE:** A person seeking to satisfy the conditions of Section 110 must:
 - a. **FOR CONTINUOUS PROCESS:** Keep daily records on site of the types, amounts, and VOC content of organic compounds used and produced.

- b. **FOR BATCH PROCESS:** Keep records on site of the types, amounts, and VOC content of organic compounds used and produced by each production batch including starting and completion time and date.
- 501.5 **EXEMPTION, PROCESS VENT, PROCESS TANK, NON-PHARMACEUTICAL NON-COSMETIC SEPARATION OPERATION:** A person seeking to satisfy the conditions of Section 111, 112 or 113 must:
- a. **FOR CONTINUOUS PROCESS:** Keep daily records on site of the types, amounts, and VOC content of organic compounds used and produced by each organic chemical manufacturing process unit.
 - b. **FOR BATCH PROCESS:** Keep records on site of each production batch, including starting and completion time and date, and types, vapor pressure, amounts, and VOC content of organic compounds used and produced by each organic chemical manufacturing process unit.
- 501.6 **EXEMPTION, RESEARCH AND DEVELOPMENT OPERATIONS:** A person seeking to satisfy the conditions of Section 114 must keep the following records on site:
- a. For cleanup materials, monthly records of the types, amounts, and VOC content of cleanup materials used and must determine the daily usage by dividing the monthly usage by the number of operating days during the month, and
 - b. For all other organic compounds, daily records of type, amount, and VOC content of each organic compound used and produced. When requested by the Air Pollution Control Officer, the VOC emissions for the specified day must be calculated and submitted to the Air Pollution Control Officer.
- 501.7 **EXEMPTION, SOLVENT CLEANING OF OPERATION REGULATED BY FDA:** A person seeking to satisfy the conditions of Section 116 must keep daily records on site of the types, amounts, and VOC content of cleaning solvent used.
- 501.8 **CLEANUP MATERIALS:** Monthly records of the total applied volume of materials used for cleanup must be kept on site. The records must include the name/code/manufacturer and maximum volatile organic compound content of the cleanup material, as applied, after any mixing or thinning as recommended by the manufacturer. The VOC content must be displayed as grams of volatile organic compound per liter of coating (or pounds of volatile organic compound per gallon), including water and exempt compounds.
- 501.9 **SOURCE TEST REPORT:** Each owner or operator of a stationary source must keep on site copies of all applicable source reports.
- 501.10 **DURATION OF RECORDS:** Such records (electronic files or on paper) must be maintained on site for a continuous five-year period and made available to the Air Pollution Control Officer upon request.
- 502 **TEST METHODS:** The performance tests for demonstrating compliance with the requirements of this rule must be run using the following methods:
- 502.1 **VOC MASS EMISSION RATE OR CONTROL EFFICIENCY:** VOC mass emission rate or control efficiency must be determined in accordance with U.S. EPA Method 18, 25 or 25A, U.S. EPA Method 1 or 1A, U.S. EPA Method 2, 2A, 2B or 2C, U.S. EPA Method 3 and U.S. EPA Method 4 (whichever combination most applicable).
 - 502.2 **DETERMINATION OF CAPTURE EFFICIENCY:** Capture efficiency must be determined in accordance with the U.S. EPA technical guideline document, "Guidelines for Determining Capture Efficiency," dated January 9, 1995. Individual capture efficiency test runs subject to U.S. EPA technical guidelines must be determined by:
 - a. Applicable U.S. EPA methods 204, 204A, 204B, 204C, 204E, and/or 204F; or
 - b. The South Coast Air Quality Management District "Protocol for Determination of Volatile Organic Compound (VOC) Capture Efficiency"; or

- c. Any other method approved in writing by the U.S. EPA, the California Air Resources Board, and the Air Pollution Control Officer.
- 502.3 **VOC CONCENTRATION IN WASTEWATER:** The total VOC concentration in wastewater must be determined in accordance with U.S. EPA Method 305 or 25D.
- 502.4 **VAPOR PRESSURE:** Vapor pressure of a VOC must be determined in accordance with ASTM Method D2879-97 (2007), or may be obtained from the most current edition of a published source, including, but not limited to:
- a. *The Vapor Pressure of Pure Substances*, Boublik, Fried, and Hala; Elsevier Scientific Publishing Company, New York.
 - b. *Perry's Chemical Engineer's Handbook*, McGraw-Hill Book Company.
 - c. *CRC Handbook of Chemistry and Physics*, Chemical Rubber Publishing Company.
 - d. *Lange's Handbook of Chemistry*, John Dean, editor, McGraw-Hill Book Company.
- 502.5 **LEAK DETECTION:** Concentration of VOC in leaks must be measured using a portable gas detector as prescribed in U.S. EPA Method 21.
- 502.6 **MULTIPLE TEST METHODS:** When more than one test method or set of test methods is specified for any testing, a violation of any requirement of this rule established by any one of the specified test methods or set of test methods will constitute a violation of this rule.