

**SECTION 104: VOC EMISSIONS CONTROL FOR INDUSTRIAL CLEANING
SOLVENT OPERATIONS**

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104.1 PURPOSE

Section 104 implements Control Technique Guidelines Reasonably Available Control Technology (CTG RACT) requirements for industrial cleaning solvent operations as required by Section 182(b)(2)(A) of the Clean Air Act (Act) under Title 42, Section 7511a of the U.S. Code (42 U.S.C. 7511a).

104.2 APPLICABILITY

- (a) Except as provided under Section 104.4, Section 104 is applicable to any owner or operator of a stationary source with projected maximum emissions of volatile organic compounds (VOC) equal to or greater than 3.0 tons per calendar year from industrial cleaning solvent operations when the stationary source is located:
 - (1) In Hydrographic Area 212 (the Las Vegas Valley) in Clark County;
or
 - (2) In any other hydrographic area that the Administrator has designated nonattainment for ozone, and has classified as a moderate or higher ozone nonattainment area on or after January 5, 2023.
- (b) Except as provided under Section 104.4, Sections 104.6, 104.7(c)–(d), and 104.8–104.10 are applicable to any owner or operator of a stationary source with projected maximum emissions of VOC of less than 3.0 tons per calendar year from industrial cleaning solvent operations when the stationary source is located:
 - (1) In Hydrographic Area 212 (the Las Vegas Valley) in Clark County;
or
 - (2) In any other hydrographic area that the Administrator has designated nonattainment for ozone, and has classified as a moderate or higher ozone nonattainment area on or after January 5, 2023.
- (c) Section 104 does not apply:
 - (1) If the stationary source uses less than 500 gallons (1,892 L) of industrial cleaning solvent per calendar year in industrial cleaning solvent operations.
 - (2) When industrial cleaning solvents are used to clean any of the following equipment, or in the following operations:
 - (A) Janitorial services.

- (B) Electrical and electronic components.
- (C) Precision optics.
- (D) Resin mixing, molding, and application equipment.
- (E) Coating, ink, and adhesive mixing, molding, and application equipment.
- (F) Stripping of cured inks, cured adhesives, and cured coatings.
- (G) Research and development laboratories.
- (H) Medical devices.
- (I) Pharmaceutical preparations.
- (J) Performance or quality assurance testing of coatings, inks, or adhesives.
- (K) Architectural coating manufacturing and application operations.
- (L) Magnet wire coating operations.
- (M) Semiconductor wafer fabrication.
- (N) Polyester resin operations.

104.3 DEFINITIONS

Unless the context requires otherwise, the following terms shall have the meanings set forth below for the purposes of this section. When a term is not defined, it shall have the meaning provided in Section 0 of the Clark County Air Quality Regulations (AQRs), Chapter 445B of the Nevada Revised Statutes, the Act, or common usage, in that order of priority.

“Coating” means a material containing more than 0.17 lb/gal (20 g/L) of VOC as applied, excluding water and exempt compounds, that is applied onto or into a substrate for protective, decorative, or functional purposes and that dries or cures to form a continuous solid film. The term includes, but is not limited to, paints, sealants, caulks, primers, inks, maskants, varnish, stains, lacquer, enamel, and shellac. The term does not include protective oils, acids or bases, adhesives, or combinations of these materials.

“Coating operation” means all steps involved in the application of one or more coatings, including application, drying/curing, surface preparation, and cleaning steps.

“Containers” means drums, buckets, cans, pails, trays, or similar storage units.

“Electrical and electronic components” means components and assemblies of components that generate, convert, transmit, or modify electrical energy. These 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. They do not include cabinets that house electrical and electronic components.

“Emissions Control System (ECS)” means the combination of an emissions capture device and an add-on emissions control device that reduces VOC emissions and that is designed and operated in accordance with good engineering practice.

“Exempt compound” means a specified organic compound, as listed in 40 CFR Part 51.100, that the Administrator has determined to have negligible photochemical reactivity.

“Existing industrial cleaning solvent operations” means industrial cleaning solvent operations for which the owner or operator began actual construction or reconstruction before April 2, 2024, or first constructed and operated on or after April 2, 2024, and subsequently modified such that the industrial cleaning solvent operations became subject to Section 104 after the modification.

“Existing inventory” means industrial cleaning solvents that an owner or operator purchased before April 2, 2024.

“In use” means the active application of an industrial cleaning solvent to a substrate or equipment, or the filling or draining of a container holding an industrial cleaning solvent.

“Industrial cleaning solvent” means solvents and other VOC-containing materials used to remove residue or other unwanted materials from equipment during industrial cleaning solvent operations, or to clean equipment used in industrial cleaning operations.

“Industrial cleaning solvent operations” means the use of solvents to remove contaminants, including, but not limited to, adhesives, inks, paint, dirt, soil, oil, and grease, from parts, products, tools, machinery, equipment, vessels, and work production-related areas for a variety of reasons, including safety, operability, and avoiding product contamination. This includes activities such as wiping, flushing, spraying, dipping, and purging. It also includes the cleaning of equipment used to remove contaminants. It does not include the solvent(s) used in a metal solvent degreaser, discussed in Section 105.

“Janitorial services” means the cleaning of buildings or building components, including, but not limited to, floors, ceilings, walls, windows, doors, stairs, bathrooms, furnishings, and exterior surfaces of office equipment, but excluding the cleaning of work areas where manufacturing or repair activity is performed.

“Magnet wire” means wire used in electromagnetic field applications in electrical machinery and equipment, such as transformers, motors, generators, and magnetic tape recorders.

“Magnet wire coating operations” means the process of applying insulation coatings, such as varnish or enamel, onto magnet wire where the wire is continuously drawn through a coating applicator.

“Material change” means a change in the owner or operator, a change in location, a change in compliance method, a change to a different ECS, or an increase in either the stationary source’s projected maximum emissions or its annual actual emissions of VOC above the projected maximum emissions.

“Medical device” means an instrument, apparatus, implement, machine, contrivance, implant, in vitro reagent, or other similar article, including any component or accessory, that is intended for use in the diagnosis of diseases or other conditions or in the cure, mitigation, treatment, or prevention of diseases; is intended to affect the structure or any function of the body; or is defined in the National Formulary or the U.S. Pharmacopeia (and any supplement to it).

“Metal solvent degreaser” means a tank, drum, or other container in which metal objects are exposed to a solvent or solvent vapors to remove contaminants. For the purposes of this rule, it includes only cold cleaners, open vapor top degreasers, and conveyORIZED degreasers.

“New industrial cleaning solvent operations” means industrial cleaning solvent operations for which the owner or operator began actual construction or reconstruction on or after April 2, 2024.

“Pharmaceutical preparation” means medical devices, pharmaceutical products (and associated manufacturing and product handling equipment and material), work surfaces, maintenance tools, and room surfaces subject to the U.S. Food and Drug Administration’s Current Good Manufacturing Practice or Good Laboratory Practice for Nonclinical Laboratory Studies regulations, or to Centers for Disease Control and Prevention or National Institutes of Health guidelines for biological disinfection of surfaces.

“Polyester resin operations” means the fabrication, rework, repair, or touch-up of composite products for commercial, military, or industrial uses by mixing, pouring, manually applying, molding, impregnating, injecting, forming, spraying, pultrusion, filament winding, or centrifugally casting with polyester resins.

“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 in light energy levels.

“Projected maximum emissions” means the highest annual rate, in tons per year, at which the stationary source is projected to emit VOC based on anticipated production, throughput, heat input, or material utilization rates that does not include emission reductions from add-on controls.

“Solvent” means any substance containing an organic compound (or combination of organic compounds) that is liquid at atmospheric pressure and ambient temperature and is used as a diluent, thinner, dissolver, viscosity reducer, or cleaning agent, or other additive used for a similar purpose. It does not include substances used as fuel, antiseptics, or anesthetics.

“VOC-containing material” means any coatings, solvent, or cleaning material used in industrial cleaning solvent operations that contain more than 0.17 lb/gal (20 g/L) of VOC as applied, excluding water and exempt compounds.

“Waste material” means any VOC-containing material designated for disposal, including VOC-laden rags and wipes.

104.4 EXEMPTIONS

Unless and until the Control Officer objects to an owner or operator’s use of an exemption in accordance with Section 104.9, industrial cleaning solvent operations that meet the criteria in this section are exempt from one or more requirements of Section 104 if the owner or operator complies with the notification, recordkeeping, and reporting requirements of Section 104.9, as applicable.

- (a) Sections 104.5–104.8 (related to emissions standards, work practice requirements, compliance obligations, and registration requirements) and Sections 104.9.1(a), 104.9.2, and 104.9.3 (related to testing notification, recordkeeping, and reporting requirements) do not apply when VOC emissions from the industrial cleaning solvent operations are controlled by RACT emissions standard(s) at least as stringent as Section 104 under another applicable SIP-approved section of the AQRs.
- (b) Section 104.6 (related to work practice requirements) and Sections 104.7(c)–(d) (related to compliance obligations) do not apply when a stationary source uses only aerosol products of industrial cleaning solvents.

104.5 EMISSIONS STANDARDS

Except as provided in Section 104.4, an owner or operator of industrial cleaning solvent operations shall limit VOC emissions from industrial cleaning solvents by complying with paragraphs (a), (b), or (c) of this section.

- (a) Use industrial cleaning solvents that have a VOC content equal to or less than 0.42 lb/gal (50 g/L), as applied, excluding water and exempt compounds;
- (b) Use industrial cleaning solvents with a maximum composite vapor pressure of 8.0 mm Hg measured at 68°F (20°C); or
- (c) Reduce VOC emissions from industrial cleaning solvent operations using an ECS that reduces VOC emissions by at least 85% by weight, or reduce VOC emissions to an overall percent efficiency equivalent of at least 85%, using the following equation to calculate the minimum required percent control of the ECS:

$$\text{MCE} = \left(1 - \frac{E}{V}\right) * 100$$

where:

MCE = minimum required control efficiency (%)

E = 0.42 lb/gal (50 g/L) of VOC

V = VOC content of industrial cleaning solvent in lb/gal or g/L.

104.6 WORK PRACTICES REQUIREMENTS FOR USING, STORING, HANDLING, AND DISPOSING OF INDUSTRIAL CLEANING SOLVENTS

An owner or operator of industrial cleaning solvent operations shall comply with the requirements of this section to minimize VOC emissions to the atmosphere.

- (a) Ensure all containers with a capacity of 1 gallon (3.8 L) or more are clearly labeled with the product name and the type of industrial cleaning solvent or waste material inside.
- (b) When industrial cleaning solvents are in use:
 - (1) Use closed, nonabsorbent, nonleaking containers (except as necessary to relieve pressure buildup) or handheld spray bottles that deliver industrial cleaning solvent without propellant-induced force, or use a reservoir cleaner that prevents industrial cleaning solvent vapors from escaping from the solvent reservoir, directs solvent flow in a manner that prevents splashing, and is not used for cleaning porous or absorbent materials.
 - (2) Do not atomize the industrial cleaning solvent unless the emissions are vented to an ECS meeting Section 104.5(c) requirements, except when cleaning nozzle tips of automated spray equipment systems that are not part of a robotic system.

- (3) Minimize air circulation around industrial cleaning solvent operations to the extent possible without compromising workplace safety.
- (c) Repair any liquid leak, visible tear, or crack detected in a storage container within one calendar day or drain all contents from the leaking container and transfer them to a container meeting the requirements of paragraph (b)(1) of this section. The owner or operator may not use the leaking container until repaired or replaced.
- (d) Securely close all containers containing industrial cleaning solvent or waste material when not in use, and store solvent-laden rags and wipes in closed containers when not in use.
- (e) Use closed, nonabsorbent, nonleaking containers to store and dispose of industrial cleaning solvent and waste material, including used rags and wipes.
- (f) Use care when handling and transferring waste material or industrial cleaning solvents to and from containers, enclosed systems, waste receptacles, and other equipment to minimize spills; immediately contain and clean up any spills that occur.
- (g) Use closed and labeled containers or pipes to convey industrial cleaning solvent and waste material from one location to another.

104.7 COMPLIANCE OBLIGATIONS

To demonstrate compliance with the emissions standards and work practices in Section 104, an owner or operator of industrial cleaning solvent operations shall:

- (a) Identify the VOC content per volume of industrial cleaning solvent using information provided by the manufacturer, or calculate the VOC content using the following equation:

$$C_{mvoc} = (W_s - W_w - W_{es})/V_m$$

where:

C_{mvoc} = VOC content per volume of cleaning solvent

W_s = weight of volatile compounds, including water and exempt compounds

W_w = weight of water

W_{es} = weight of exempt compounds

V_m = volume of cleaning solvent, including water and exempt compounds.

- (b) Determine the variables for paragraph (a) of this section using the following information:
 - (1) “Method 24–Determination of Volatile Matter Content, Water Content, Density, Volume Solids, and Weight Solids of Surface Coatings,” including updates and revisions, at 40 CFR Part 60, Appendix A-7; or
 - (2) Manufacturer’s Safety Data Sheet or formulation data.
- (c) Conduct periodic (at least quarterly) inspections to assure compliance with the requirements of Section 104.6.
- (d) Provide training to newly hired workers on the work practices requirements of Section 104.6.

104.7.1 Compliance When Using an Emissions Control System

An owner or operator of industrial cleaning solvent operations using an ECS shall:

- (a) Develop, maintain, and comply with an operations and maintenance plan, in accordance with manufacturer recommendations where available, if using an ECS to comply with Section 104.5(c). Such plan shall:
 - (1) Identify monitoring devices, monitoring frequencies, and key system operating parameters, i.e., those needed to ensure that good operation and engineering practices are associated with operation of the ECS, such as temperature, pressure, and/or flow rate.
 - (2) Include schedules for inspection, schedules for anticipated ongoing maintenance, and proposed recordkeeping practices regarding the key system operating parameters.
 - (3) Include a monitoring plan to ensure proper operation of the ECS using the key operating parameters identified.
 - (4) Include provisions for minimizing emissions during periods of startup, shutdown, and malfunction.
 - (5) Determine the control efficiency of the ECS used to comply with Section 104 through manufacturer design specifications or performance testing. The following reference materials may assist in determining the control efficiency of the ECS:

- (A) “Guidelines for Determining Capture Efficiency,” EPA Office of Air Quality Planning and Standards, January 9, 1995.
 - (B) EPA Test Methods 1–4 in 40 CFR Part 60, Appendices A–1 through A–3, to determine flow rates.
 - (C) “Method 204–Criteria for and Verification of a Permanent or Temporary Total Enclosure,” at 40 CFR Part 51, Appendix M; or, as applicable, EPA Test Methods 204A, 204B, 204C, or 204D.
 - (D) “Method 18–Measurement of Gaseous Organic Compound Emissions by Gas Chromatography,” at 40 CFR Part 60, Appendix A–6.
 - (E) “Method 25–Determination of Total Gaseous Nonmethane Organic Emissions as Carbon,” at 40 CFR Part 60, Appendix A–7, or, as applicable, EPA Test Methods 25A or 25B.
- (b) Install, calibrate, operate, and maintain monitoring devices on an ECS used to comply with Section 104 according to manufacturer specifications and the operations and maintenance plan.
 - (c) Operate the monitoring devices required by paragraph (b) of this section at all times an ECS operates.

104.8 REGISTRATION REQUIREMENTS

An owner or operator of industrial cleaning solvent operations shall comply with the registration requirements of this section, as indicated below.

- (a) Except as provided in paragraph (d) of this section, an owner or operator of industrial cleaning solvent operations shall comply with the following registration requirements:
 - (1) No later than September 29, 2024, or 45 days after becoming subject to any requirements in Section 104, whichever is later, submit a registration application to the Control Officer in the manner and form prescribed that includes, at a minimum, the following information:
 - (A) Name, email address, and telephone number of the owner or operator and the Responsible Official;
 - (B) Company name and address (and source name and address, if different);

- (C) Projected maximum emissions of VOC (in tons per calendar year) from industrial cleaning solvent operations at the stationary source;
 - (D) Calculations to support the values reported in paragraph (a)(1)(C) of this section;
 - (E) Type of ECS used to comply with Section 104, if any;
 - (F) Copy of the ECS operations and maintenance plan developed to comply with Section 104.7.1, if required;
 - (G) A declaration signed by the Responsible Official under penalty of perjury that the statements and information in the registration are true, accurate, and complete. Signature on the declaration statement shall subject the Responsible Official to liability for perjury under NRS 199.145; and
 - (H) Other information as required by the Control Officer.
- (2) Submit an updated registration to the Control Officer within 60 days of a material change.
- (b) The Control Officer may require updated information after the initial registration to determine that the source continues to operate below the applicability threshold in Section 104.2(a).
 - (c) Owners or operators may submit a revised registration application with reduced projected maximum emissions from industrial cleaning solvent operations at the stationary source if less than 3.0 tons of VOC were emitted and reported in each of the previous three consecutive calendar years.
 - (d) In lieu of complying with the registration requirements of Section 104.8, but by the deadlines established in paragraph (a)(1), a stationary source regulated by a minor source permit, an authority to construct permit, or a Part 70 operating permit shall apply for a permit revision to incorporate Section 104 requirements in accordance with the requirements in Sections 12.1, 12.4, and 12.5.

104.9 NOTIFICATION, RECORDKEEPING, AND REPORTING REQUIREMENTS

An owner or operator of industrial cleaning solvent operations shall comply with the notification, recordkeeping, and reporting requirements of this section, as indicated below. The Control Officer may deny exemption use or applicability status upon finding that the industrial cleaning solvent operation does not meet the eligibility criteria for exemption(s) or applicability, the stationary source has a poor regulatory compliance history, or the

RACT emissions standard does not provide comparable emission reductions to Section 104.

104.9.1 Notification Requirements

- (a) Owners or operators using a performance test to determine the control efficiency of an ECS to comply with Section 104.5(c) shall comply with the following requirements and with the compliance dates in Section 104.10:
 - (1) Conduct a performance test within 180 days of initial operation of the ECS or September 29, 2024, whichever is later.
 - (2) Submit a performance testing protocol to the Control Officer in accordance with department guidelines containing test, reporting, and notification schedules, test protocols, and anticipated test dates at least 45 days, but no more than 90 days, before the anticipated test date.
 - (3) Submit a report to the Control Officer in accordance with department guidelines describing the results of a performance test within 60 days of completing the test.
- (b) Owners or operators relying on the exemption in Section 104.4(a) shall submit a notice to the Control Officer that identifies the exemption claimed by the owner or operator within 30 days of the applicable compliance date in Section 104.10.

104.9.2 Recordkeeping Requirements

An owner or operator of industrial cleaning solvent operations shall comply with the following recordkeeping requirements:

- (a) Owners or operators required to comply with Section 104 shall, at a minimum:
 - (1) Maintain records to document eligibility for applicability thresholds or for any exemption claimed under Section 104.4.
 - (2) Retain all records for a period of five years from their creation.
 - (3) Make records available and producible onsite to the Control Officer's authorized representative upon request and without prior notice during the owner or operator's hours of operation.
 - (4) Each month, record the type and amount of VOC-containing material used in the previous month. The owner or operator may track the actual use of VOC-containing material or use purchase

and inventory records (assuming that all purchases not retained in inventory are used).

- (5) Maintain a list of VOC-containing material used that includes, at a minimum:
 - (A) Material name and manufacturer;
 - (B) VOC content of each VOC-containing material, listed as lb/gal or g/L of VOC; and
 - (C) Product data sheet or technical data sheet with specific mixing instructions and the VOC content, as applied, of VOC-containing material requiring dilution.
 - (6) Maintain a record of calendar year emission calculations.
- (b) Owners or operators using an ECS to comply with Section 104.5 shall:
- (1) Maintain a record of monitoring of the key system operating parameters specified in the operations and maintenance plan.
 - (2) Record and maintain monitoring data collected to comply with Section 104.7.1(b).
- (c) Owners or operators required to comply with Sections 104.6 and 104.7(c)–(d) shall maintain inspection and training logs.

104.9.3 Reporting Requirements

- (a) Owners or operators subject to Section 104.2(a) shall complete and submit to the Control Officer an annual emissions inventory for VOCs in the manner and form prescribed.
- (b) The inventory must be submitted to and received by the department on or before March 31 of each year (or other specified date upon prior notice from the Control Officer), and shall include emission factors and calculations used to determine emissions in the previous calendar year.
- (c) The inventory shall include, at a minimum:
 - (1) Actual annual emissions of VOC (in tons per calendar year) for the previous calendar year from industrial cleaning solvent operations at the stationary source; and
 - (2) Calculations to support the values reported in paragraph (c)(1) of this section.

- (d) Any information submitted pursuant to this section shall contain a certification by the Responsible Official of truth, accuracy, and completeness. This certification shall state that, based on information and belief formed after reasonable inquiry, the information in the statement or inventory is true, accurate, and complete.

104.10 COMPLIANCE DATES

- (a) Except as provided in paragraphs (c)–(e) of this section, an owner or operator of existing industrial cleaning solvent operations shall comply with the requirements in Section 104 by September 29, 2024, or by the date the industrial cleaning solvent operations commence normal operations or meet the applicability criteria in Section 104.2, whichever of the three dates is later.
- (b) An owner or operator of new industrial cleaning solvent operations shall comply with Section 104 upon commencing normal operation.
- (c) An owner or operator of existing industrial cleaning solvent operations may use industrial cleaning solvents from their existing inventory that do not meet the requirements of Section 104.5 until April 2, 2025, or 12 months after first becoming subject to Section 104.5, whichever is later. Beginning on the compliance date specified in paragraph (a) of this section, the owner or operator shall not purchase any industrial cleaning solvent that does not comply with the emissions standards in Sections 104.5(a) or (b) unless the emissions from such solvent(s) are controlled in accordance with the requirements of Section 104.5(c).
- (d) An owner or operator of existing industrial cleaning solvent operations who elects to comply with Section 104.5 by installing a new ECS shall comply with Section 104.5(c) no later than September 24, 2025.
- (e) The Control Officer may establish an alternative compliance date for meeting Section 104.5 not later than April 2, 2027, considering the technical feasibility and time needed to comply, through issuance of a minor source permit or an authority to construct permit, or by revising a Part 70 operating permit. The filing of a complete application for a minor source permit, authority to construct permit, or Part 70 significant permit revision requesting an alternative compliance date stays the compliance date in paragraph (a) of this section until the proposed alternative compliance date, or until the Control Officer denies the request or issues the minor source permit, authority to construct permit, or revised Part 70 operating permit.

History: Adopted March 19, 2024.