(Adopted July 7, 1989)(Amended December 7, 1990)(Amended May 13, 1994)
(Amended December 6, 2002)(Amended June 1, 2007)(Amended February 6, 2009)
(Amended TBD)

PROPOSED AMENDED RULE 1173 CONTROL OF VOLATILE ORGANIC COMPOUND LEAKS AND RELEASES FROM COMPONENTS AT PETROLEUM FACILITIES AND CHEMICAL PLANTS

[Rule index to be added after Amendment]

(a) Purpose

This rule is intended to control Volatile Organic Compound (VOC) Leaks from Components, Releases from Atmospheric Process Pressure Relief Devices (PRDs), and establish Contingency Measures for applicable ozone standards for the reduction of VOC.

(b) Applicability

This rule applies to Refineries, Chemical Plants, Lubricating Oil and Grease Re-refiners, Marine Terminals, Oil and Gas Production Fields, Natural Gas Processing Plants, and Pipeline Transfer Stations.

(c) Definitions:

For the purpose of this rule the following definitions shall apply:

(1) ATMOSPHERIC PROCESS PRD is a PRD located on process equipment other than storage tanks or pipelines used to transport material and that vents to atmosphere.

(2) BACKGROUND is the ambient concentration of total organic compounds (TOC) in the air at least one (1) meter upwind of the Component to be inspected, determined according to the test method in paragraph (j)(1).

(3) CHEMICAL PLANT is a facility engaged in producing chemicals and manufacturing products by chemical processes, as described by North American Industry Classification System (NAICS) subsector 325 – Chemical Manufacturing or similar.

(4) COMMERCIAL NATURAL GAS is a mixture of hydrocarbons, with at least 80 percent methane by volume and less than ten (10) percent by weight VOC, determined according to test methods specified in paragraph (j)(2).

(5) COMPONENT is a Valve, Fitting, Pump, Compressor, PRD, or other device (diaphragm, Hatch, sight-glass, meter) in VOC service. Components are further classified as:

(A) MAJOR COMPONENT is a 4-inch or larger Valve, a 5-hp or larger Pump, a Compressor, or a 4-inch or larger PRD.

(B) MINOR COMPONENT is a Component which is not a Major Component.

(6) COMPRESSOR is a device used to compress gas/vapor by the addition of energy, and includes all associated Connectors, Flanges, and Compressor Seals.

(7) COMPRESSOR SEAL is associated with a Compressor and is used to prevent escape of gas/vapor and introduction of atmosphere.

(8) CONNECTOR is a nonwelded connection to, from, or between pipes or piping details without flanged ends, typically threaded and screwed together.

(9) CONTINGENCY MEASURE (CM) is a control strategy to further reduce VOC emissions if the South Coast Air Basin fails to make reasonable further progress (RFP), or to attain the applicable National Ambient Air Quality Standard (NAAQS) for ozone by a specified attainment date.

(10) FITTING is a device used to terminate, attach, or connect pipes, piping details, or other devices. Fittings include piping couplings (Flange or Connector), blind Flanges, plugs, and caps.

(11) FLANGE is a nonwelded connection between pipes or piping details with flanged ends, joined by bolting and equipped with a gasket, seal, or other means that provides a barrier to potential leakage.

(12) HATCH is a covered opening system that provides access to a tank, container, or vessel.

(13) HEAVY LIQUID is a liquid with ten (10) percent or less VOC by volume evaporated at 150°C (302°F), determined according to test methods specified in paragraph (j)(2).

(14) INACCESSIBLE COMPONENT is a Component located over five (5) meters above ground when access is required from the ground; or a Component located over two (2) meters away from a platform when access is required from the platform; or a Component which would require the elevation of a monitoring personnel higher than two (2) meters above permanent support surfaces.

(15) INSPECTION is a survey of Components and is further classified as:

(A) AUDIO-VISUAL-OLFACTORY (AVO) INSPECTION is a survey of Components by the owner or operator, or their contractor, by hearing, by sight, and by smell.

(B) OPTICAL GAS IMAGING (OGI) INSPECTION is a survey of Components using an OGI Device by the owner or operator, or their contractor.

(C) ANALYZER INSPECTION is a survey of Components using an appropriate analyzer in accordance with the test method in paragraph (j)(1) by the owner or operator, or their contractor.

(D) SOUTH COAST AQMD INSPECTION is a survey of Components using an appropriate analyzer, OGI Device, or other means by South Coast AQMD personnel, or their authorized representatives.

(16) LEAK is the emission and detection of a concentration of TOC above Background, determined according to the test method in paragraph (j)(1).

(17) LIGHT LIQUID is a liquid with more than ten (10) percent VOC by volume evaporated at 150ºC (302ºF), determined according to the test method specified in paragraph (j)(2).

(18) LUBRICATING OIL AND GREASE RE-REFINER is a facility engaged in the blending, compounding, and re-refining of lubricating oils and greases from mineral, animal, and vegetable materials, as described by NAICS code 324191 – Petroleum Lubricating Oil and Grease Manufacturing or similar.

(19) MARINE TERMINAL is a facility engaged in the loading or unloading of organic liquid into or out of marine tank vessels, as described by NAICS code 424710 – Petroleum Bulk Stations and Terminals, NAICS code 488320 – Marine Cargo Handling, or similar.

(20) NATURAL GAS PROCESSING PLANT is a facility engaged in the separation of natural gas liquids from feed stock gas or fractionation of the liquids into natural gas products, such as ethane, propane, butane, and natural gasoline, as described by NAICS code 211130 – Natural Gas Extraction or similar. Excluded from the definition are compressor stations, dehydration units, sweetening units, field treatment, underground storage facilities, liquefied natural gas units, and feed stock gas gathering systems unless these entities are located at a Natural Gas Processing Plant.

(21) OIL AND GAS PRODUCTION FIELD is a facility engaged in crude petroleum and natural gas production and handling, as described by NAICS subsector 211 – Oil and Gas Extraction or similar.

(22) OPTICAL GAS IMAGING (OGI) DEVICE is an infrared camera with a detector capable of visualizing gases in the 3.2-3.4 micrometer waveband.

(23) PIPELINE TRANSFER STATION is a facility which handles the transfer and storage of petroleum products or crude petroleum in pipelines as described by NAICS code 486110 – Pipeline Transportation of Crude Oil, NAICS code 486910 – Pipeline Transportation of Refined Petroleum Products, or similar.

(24) PLATFORM is a raised, permanent, horizontal surface for the purpose of gaining access to Components.

(25) PRESSURE RELIEF DEVICE (PRD) is a pressure relief valve (PRV) or a Rupture Disc, and includes all associated Connectors or Flanges.

(26) PRESSURE RELIEF VALVE (PRV) is associated with a PRD and is automatically actuated by upstream static pressure to the atmosphere (atmospheric PRV) or to a control device, and used for safety or emergency purposes.

(27) PUMP is a device used to transport Light Liquids or Heavy Liquids by the addition of energy, and includes all associated Connectors, Flanges, and Pump Seals.

(28) PUMP SEAL is associated with a Pump and is used to prevent escape of Light Liquids or Heavy Liquids and to prevent introduction of atmosphere.

(29) REFINERY is a facility engaged in producing gasoline, aviation gasoline, kerosene, distillate fuel oils, residual fuel oils, biofuels, asphalt, and lubricants and also producing aliphatic and aromatic chemicals as by-products, through fractionation or straight distillation of crude oil, redistillation of unfinished petroleum derivatives, cracking or other processes, as described by NAICS code 324110 – Petroleum Refineries, NAICS code 324199 – All Other Petroleum and Coal Products Manufacturing, or NAICS code 325199 – All Other Basic Organic Chemical Manufacturing, or similar.

(30) RELEASE is a VOC emission to the atmosphere from a PRD caused by an increase in upstream pressure. A Leak caused by improper reseating of a PRV is not a Release.

(31) REPAIR is corrective action for the purpose of eliminating or reducing Leaks, Visible Leaks, or Visible Vapors and includes washing, tightening, repacking, lubricating, resealing, or replacing Components, piping, or other devices. Repair may involve the temporary removal or taking out of service of a Component.

(32) RUPTURE DISC is associated with a PRD and is a diaphragm held between Flanges for the purpose of isolating VOC from the atmosphere or from a downstream PRV.

(33) SOUTH COAST AIR BASIN is the non-desert portions of Los Angeles, Riverside, and San Bernardino counties and all of Orange County as defined in California Code of Regulations, Title 17, Section 60104.

(34) TAMPER-PROOF is all data collected is encrypted such that it cannot be modified.

(35) TELLTALE INDICATOR is a device installed in conjunction with a PRD, indicating whether a Release has occurred.

(36) TOTAL ORGANIC COMPOUNDS (TOC) is the concentration of gaseous organic compounds determined according to the test method in paragraph (j)(1).

(37) TURNAROUND is a scheduled shutdown of a process unit for maintenance and Repair work.

(38) VALVE is a device that regulates or isolates the fluid flow in a pipe, tube, or conduit by means of an external actuator, and includes all associated Connectors and Flanges.

(39) VISIBLE LEAK is the dripping of either Light Liquid or Heavy Liquid at a rate of more than three (3) drops per minute.

(40) VISIBLE VAPORS is TOC vapor leakage detected with an OGI Device, when operated and maintained in accordance with manufacturer training or certification, or equivalent California Air Resources Board (CARB) training, user manuals, specifications, and recommendations.

(41) VOLATILE ORGANIC COMPOUND (VOC) is as defined in Rule 102.

(d) South Coast AQMD Inspection Procedures

(1) Effective October 1, 2025, the owner or operator of a facility shall be in violation of this rule if South Coast AQMD personnel detect using an appropriate analyzer in accordance with the test method in paragraph (j)(1) a Component exceeding the applicable standard listed in Table 1 – Violation Standards:

TABLE 1 – VIOLATION STANDARDS

Component Service	Violation Standard
Light Liquid and Gas/Vapor	10,000 ppm
Heavy Liquid	500 ppm

(2) The owner or operator of a facility shall be in violation of this rule if South Coast AQMD personnel detect a Component with a Visible Leak.

(3) Effective October 1, 2025, the owner or operator of a facility shall be in violation of this rule if South Coast AQMD personnel detect a Component with Visible Vapors, unless the owner or operator concurrently demonstrates using an appropriate analyzer in accordance with the test method in paragraph (j)(1) to the satisfaction of South Coast AQMD personnel that the Component is not exceeding the applicable standard listed in Table 1 – Violation Standards.

(4) The owner or operator of a facility shall be in violation of this rule if South Coast AQMD personnel detect open-ended lines and Valves located at the end of lines that are not sealed with a blind Flange, plug, cap, or a second closed Valve at all

times, except during operations requiring process fluid flow through the open-ended line.

(e) Identification Requirements

The owner or operator shall:

(1) Physically identify clearly and visibly all Major Components for Inspection, Repair, and recordkeeping purposes.

(2) Clearly identify all Minor Components in piping and instrumentation flow diagrams or group them together functionally for Inspection, Repair, and recordkeeping purposes.

(f) Self Inspection Requirements

(1) The owner or operator of a facility, except for unmanned Oil and Gas Production Fields and unmanned Pipeline Transfer Stations, shall conduct an AVO Inspection of all accessible Pumps, Compressors, and atmospheric PRDs at least once per operating shift, and no more than 12 hours between AVO Inspections. The owner or operator of an unmanned Oil and Gas Production Field or an unmanned Pipeline Transfer Station shall conduct an AVO Inspection of all accessible Pumps, Compressors, and atmospheric PRDs at least once per calendar week.

(2) Effective October 1, 2025, the owner or operator of a facility shall conduct an OGI Inspection of each Component at least once per calendar month, unless a Component will be out of service for more than 14 calendar days of the calendar month due to Turnaround.

(A) The owner or operator conducting an OGI Inspection shall complete a manufacturer's certification or training program, or equivalent CARB training for the OGI Device used to conduct the Inspection.

(B) The owner or operator conducting an OGI Inspection shall operate and maintain the OGI Device in accordance with the manufacturer's specifications and recommendations.

(C) In lieu of an OGI Inspection, the owner or operator may elect to use an alternative Inspection method approved in writing by U.S. EPA that is equivalent or more stringent than an OGI Inspection. The owner or operator seeking to use an alternative Inspection method shall submit the written approval from U.S. EPA to the Executive Officer for their review and independent approval.

(3) The owner or operator of a facility shall conduct an Analyzer Inspection:

(A) Quarterly, of all accessible Components.

(B) Annually, of all Inaccessible Components.

(C) After every Release from a PRD within one (1) calendar day and an additional Analyzer Inspection within 14 calendar days.

(D) After every Repair of a Component within 30 days of Repair.

(E) Using an electronic recording instrument, operated and maintained according to manufacturer's specifications, to simultaneously record all readings in an electronic format, at a Refinery with more than 25,000 Components.

(4) The owner or operator may apply for written approval from the Executive Officer to change the Analyzer Inspection frequency for each type of accessible Component as required in subparagraph (f)(3)(A) from quarterly to annually provided that all accessible Components of that type at the facility have been successfully operated and maintained for five consecutive calendar quarters with no Visible Leaks, no Visible Vapors, and no Leaks exceeding the applicable standard listed in Table 1– Violation Standards..

(5) The owner or operator shall submit documentation prior to the change in Inspection frequency, as per paragraph (f)(4) for written approval from the Executive Officer.

(6) The owner or operator shall revert to a quarterly Analyzer Inspection frequency for a Component type should AVO Inspection, OGI Inspection, the annual Analyzer Inspection, or South Coast AQMD Inspection detect any of the following, applicable to the Component type, listed below, either:

(A) A Visible Leak;

(B) Visible Vapors; or

(C) A Leak exceeding the applicable standard listed in Table 1 – Violation Standards.

(g) Leak Standards and Repair Requirements

(1) Effective October 1, 2025, the owner or operator of a facility shall Repair all Components exceeding the applicable standard listed in Table 2 – Component Leak Standards:

TABLE 2 - COMPONENT LEAK STANDARDS

Component Type	Leak Standard
Compressor or Pump (Light Liquid)	400 ppm
Pressure Relief Device (PRD)	200 ppm
Pump (Heavy Liquid)	100 ppm
Valve, Fitting, or other device (diaphragm, Hatch, sight-glass, meter)	100 ppm

(2) For a Component exceeding the applicable standard listed in Table 2 – Component Leak Standards, the owner or operator shall:

(A) If the Component exceeds the applicable standard listed in Table 1 – Violation Standards, no later than one (1) calendar day after detection, either:

(i) Demonstrate the Component does not emit Visible Vapors using an OGI Device; or

(ii) Demonstrate the Component does not exceed the applicable standard listed in Table 1 – Violation Standards using an appropriate analyzer in accordance with the test method in paragraph (j)(1); and

(B) Within 14 calendar days of detection, complete Repair below the applicable standard listed in Table 2 – Component Leak Standards.

(3) For a Visible Leak from an accessible Component, the owner or operator shall, no later than one (1) calendar day after detection, eliminate the Visible Leak:

(4) For a Visible Leak from an Inaccessible Component, the owner or operator shall:

(A) Before the end of the operating shift, not to exceed 12 hours, the Visible Leak was detected, notify the Executive Officer electronically; and

(B) Within 14 calendar days of detection, eliminate the Visible Leak.

(5) Effective October 1, 2025, for Visible Vapors from an accessible Component, the owner or operator shall, no later than one (1) calendar day after detection, eliminate the Visible Vapors:

(6) Effective October 1, 2025, for Visible Vapors from an Inaccessible Component, the owner or operator shall:

(A) Before the end of the operating shift, not to exceed 12 hours, the Visible Vapors were detected, notify the Executive Officer electronically; and

(B) Within 14 calendar days of detection, eliminate the Visible Vapors.

(h) Atmospheric Process PRD Requirements

(1) The owner or operator of a Refinery shall continuously monitor Atmospheric Process PRDs by installing Tamper-proof electronic monitoring devices capable of recording the duration of each Release and quantifying the amount of VOC released. This requirement does not apply to Atmospheric Process PRDs in Heavy Liquid service that Release to drains subject to Rule 1176, provided that the owner or operator demonstrates to the satisfaction of the Executive Officer that all Releases meets the definition of Heavy Liquid.

(2) The owner or operator of a Chemical Plant shall monitor Atmospheric Process PRDs by either of the following options:

(A) Install and maintain Tamper-proof electronic monitoring devices capable of recording the duration of each Release and quantifying the amount of VOC released on twenty percent of the Atmospheric Process PRD inventory; or

(B) Use of electronic process control instrumentation that allows for real time continuous parameter monitoring and Telltale Indicators for the Atmospheric Process PRDs where parameter monitoring is not feasible.

(3) The owner or operator of a Lubricating Oil and Grease Re-refiner or a Marine Terminal shall monitor Atmospheric Process PRDs by use of either electronic process control instrumentation that allows for real time continuous parameter monitoring or Telltale indicators for the Atmospheric Process PRDs where parameter monitoring is not feasible.

(4) Following a Release from an Atmospheric Process PRD, the owner or operator shall conduct a failure analysis and implement corrective actions within 30 days to prevent the reoccurrence of similar Releases.

(5) At a Refinery with throughput greater than 20,000 barrels per day, the owner or operator shall, as soon as practicable but no later than the next Turnaround, connect all Atmospheric Process PRDs serving that equipment to a vapor recovery or control system following either:

(A) Two (2) Releases, each in excess of 500 pounds of VOC in a continuous 24-hour period, within any five (5) year period from any Atmospheric Process PRD serving the same piece or pieces of equipment; or

(B) One (1) Release in excess of 2,000 pounds of VOC in a continuous 24-hour period from any Atmospheric Process PRD serving the same piece or pieces of equipment.

(6) In lieu of complying with paragraph (h)(5), an owner or operator may elect to pay a mitigation fee of $625,000 to the Executive Officer for Releases described by

subparagraphs (h)(5)(A) or (h)(5)(B) and any subsequent Release in excess of 500 pounds of VOC in a continuous 24-hour period within a five (5) year period. Within 90 days of the release, the owner or operator shall notify the Executive Officer, in writing, of the election to pay a mitigation fee and submit payment as requested by the Executive Officer.

(i) Recordkeeping and Reporting Requirements

(1) The owner or operator shall record all Leaks, Visible Leaks, Visible Vapors, Repairs, and Inspections in an electronic format approved by the Executive Officer and submit those records electronically as quarterly or annual Inspection reports to the Executive Officer no later than 30 days after the end of each calendar quarter or no later than 60 days after the end of the calendar year, respectively.

(2) The owner or operator shall include in all records of Inspection, at a minimum, the Component identification and type, Repair, location, Leak rate, and date and time of Inspection. The owner or operator shall maintain these records for a period of at least five (5) years and make them available to the Executive Officer, upon request.

(3) The owner or operator of a Refinery, Chemical Plant, Lubricating Oil and Grease Re-refiner, or Marine Terminal shall:

(A) Notify the Executive Officer, by telephone to 800-CUT-SMOG or another method approved by the Executive Officer, of any Release in excess of 100 pounds of VOC within one (1) hour of such occurrence or within one (1) hour of the time the owner or operator knew or reasonably should have known of its occurrence;

(B) Submit a written failure analysis report to the Executive Officer within 30 days following notification of a Release, providing the following information:

(i) PRD type, size and location.

(ii) Date, time, and duration of the Release.

(iii) Types of VOC released and individual amounts, in pounds, including supporting calculations.

(iv) Cause of the Release.

(v) Corrective actions taken to prevent a subsequent Release.

(C) Submit electronically quarterly reports for all monitored Atmospheric Process PRDs to comply with paragraphs (h)(1), (h)(2), and (h)(3), if applicable, in an electronic format approved by the Executive Officer,

indicating the parameters monitored as a function of time, no later than 30 days after the end of each calendar quarter.

(D) Maintain records of the process parameters monitored to comply with paragraphs (h)(1), (h)(2), and (h)(3), if applicable, for a period of at least five (5) years and make them available to the Executive Officer, upon request.

(j) Test Methods

(1) Measurements of Leak concentrations shall be conducted according to the United States Environmental Protection Agency (U.S. EPA) Reference Method 21 using an appropriate analyzer calibrated with methane. The analyzer shall be calibrated before Analyzer Inspection each day.

(2) The VOC content shall be determined according to ASTM Method D 1945 for gases, South Coast AQMD Method 304-91 for liquids. The percent VOC of a liquid evaporated at 150°C (302°F) shall be determined according to ASTM Method D 86.

(3) The flash point of Heavy Liquids shall be determined according to ASTM Method D 93.

(4) The owner or operator may use another method to determine compliance with this rule provided it is demonstrated to be equivalent and approved in writing by the Executive Officer, CARB, and U.S. EPA.

(k) Ozone Contingency Measures

(1) The applicable CM specified in paragraph (k)(2) shall be implemented upon the issuance of a final determination by U.S. EPA that the South Coast Air Basin has failed to comply with any of the following:

(A) Meet an RFP requirement in an approved attainment plan for the 2008 or 2015 ozone NAAQS; or

(B) Attain the 2008 or 2015 ozone NAAQS by the applicable date.

(2) CMs shall be implemented sequentially, effective 60 days after issuance of each final determination:

Stage 1 CM

(A) The owner or operator of a facility within the South Coast Air Basin shall Repair a Compressor or Pump (Light Liquid) detected above 300 ppm, instead of 400 ppm as listed in Table 2 – Component Leak Standards.

Stage 2 CM

(B) The owner or operator of a facility within the South Coast Air Basin shall conduct an OGI Inspection of each Component at least once every two (2) calendar weeks, instead of at least once per calendar month as specified in paragraph (f)(2), unless a Component will be out of service for more than seven (7) calendar days of the two (2) calendar week period due to Turnaround.

Stage 3 CM

(C) The owner or operator of a facility within the South Coast Air Basin shall Repair a Valve, Fitting, or other device (diaphragm, Hatch, sight-glass, meter) detected above 50 ppm, instead of 100 ppm as listed in Table 2 – Component Leak Standards.

(l) Exemptions

(1) The requirements of this rule shall not apply to the following Components if the owner or operator supplies proof of the applicable criteria to the satisfaction, upon request, of the Executive Officer for the following cases:

(A) Components which present a safety hazard for Inspection, as documented and established in a safety manual or policy previously or with the prior written approval of the Executive Officer, except that the owner or operator shall inspect these Components for Leaks when it is safe to do so. Upon detection of a Leak exceeding the applicable standard listed in Table 2 – Component Leak Standards, the owner or operator shall Repair the Component as soon as Repair can be carried out safely.

(B) Components being Repaired during the specified time period as given in subdivision (g).

(C) Components exclusively handling Commercial Natural Gas.

(D) Components incorporated in lines, while operating under negative pressures.

(E) Components totally contained or enclosed such that there are no VOC emissions into the atmosphere.

(F) Components buried below ground.

(G) Pressure/vacuum vent Valves on storage tanks.

(H) Storage tank Hatches subject to Rule 1178.

(2) The requirements of subdivisions (h) and (i) shall not apply to PRDs installed for protection from overpressure due to variation in ambient temperature provided that

they are vented to drains or back into the pipeline. The owner or operator seeking exemption shall supply proof of the applicable criteria to the satisfaction, upon request, of the Executive Officer.

(3) The requirements of paragraphs (h)(5) and (h)(6) shall not apply to Releases from Refineries that resulted from natural disasters, acts of war or terrorism, or external power curtailment beyond the Refinery's control, excluding power curtailment due to an interruptible service agreement. The owner or operator of the Refinery seeking exemption shall supply proof of the applicable criteria to the satisfaction, upon request, of the Executive Officer.

(4) The requirements of paragraph (f)(2) and subparagraph (g)(2)(B) to conduct an OGI Inspection shall not apply on days the owner or operator determines that it is unsafe to conduct an OGI Inspection from a Platform or vantage point capable of inspecting Components, provided that the reasons and dates the OGI Inspection was not conducted is documented. The owner or operator shall resume OGI Inspection on the first day determined to be safe. The owner or operator seeking exemption shall supply proof of the applicable criteria to the satisfaction, upon request, of the Executive Officer.

(m) Interim Procedures and Requirements

(1) Prior to October 1, 2025, the owner or operator of a facility shall be in violation of this rule if South Coast AQMD personnel detect using an appropriate analyzer in accordance with the test method in paragraph (j)(1) a Component exceeding the applicable standard listed in Table 3 – Interim Violation Standards:

TABLE 3 – INTERIM VIOLATION STANDARDS

Component Service	Interim Violation Standard
Light Liquid and Gas/Vapor	50,000 ppm
Heavy Liquid	500 ppm

(2) Prior to October 1, 2025, the owner or operator of a facility shall Repair all Components exceeding the applicable standard listed in Table 4 – Interim Leak Standards:

TABLE 4 - INTERIM LEAK STANDARDS

Component Type	Interim Leak Standard
Compressor or Pump (Light Liquid)	500 ppm
Pressure Relief Device (PRD)	200 ppm
Pump (Heavy Liquid)	100 ppm
Valve, Fitting, or other device (diaphragm, Hatch, sight-glass, meter)	500 ppm