

1301:7-9-07      Release detection methods and requirements for UST systems.

(A) Purpose and scope.

- (1) For the purpose of prescribing rules pursuant to section 3737.88 of the Revised Code, the state fire marshal hereby adopts this rule to establish release detection requirements and methods for underground storage tanks containing petroleum or other regulated substances. This rule is adopted by the state fire marshal in compliance with Chapter 119 of the Revised Code and shall not be considered a part of the "Ohio Fire Code."
- (2) Where any provision in this rule creates a duty of compliance for an owner and operator, and the owner and operator are separate persons, compliance may be attained by either person. In the event of noncompliance, both are liable.

(B) Release detection requirements for new UST systems.

- (1) New USTs shall be equipped and monitored for releases at least monthly using interstitial monitoring pursuant to paragraph (D)(1)(d) of this rule.
- (2) Underground piping that routinely contains regulated substances that is part of a new UST system shall be equipped and monitored for releases pursuant to paragraph (D)(2)(b) and (D)(2)(c) of this rule except that:
  - (a) Underground piping that conveys petroleum under suction shall be equipped and monitored for releases pursuant to paragraph (D)(2)(d) of this rule; and
  - (b) A manifold that conveys petroleum under suction between tanks does not have to meet the interstitial monitoring requirements as described in paragraph (D)(2)(b) of this rule.
- (3) Containment sumps that are part of a new UST system shall be equipped and monitored for releases pursuant to paragraph (D)(3) of this rule.
- (4) New UST systems containing motor or aviation petroleum fuels are not required to be monitored using product inventory control as described in paragraph (D)(1)(a) of this rule.
- (5) New UST systems that store fuel for use by emergency power generators shall comply with release detection requirements pursuant to paragraphs (B)(1) to (B)(3) of this rule, except that owners and operators may request approval of an alternative method of release detection pursuant to paragraph (D)(4) of this rule in lieu of installing automatic line leak detectors on pressure lines.
- (6) If a method of UST release detection authorized in paragraph (B)(1) of this rule is found to be defective, owners and operators shall immediately cause the method of release detection to undergo routine maintenance, modification or major repair.
  - (a) While the method of release detection undergoes routine maintenance, modification or major repair, owners and operators may use product inventory control or automatic

tank gauging in accordance with paragraph (D)(1)(a) or (D)(1)(c) of this rule in order to meet the requirements of paragraph (B)(1) of this rule.

- (b) Owners and operators may use product inventory control or automatic tank gauging in accordance with paragraph (D)(1)(a) or (D)(1)(c) of this rule for a period of up to sixty days after the last passing result obtained in accordance with paragraph (B)(1) of this rule. Afterwards, owners and operators shall take the UST system out of service in accordance with rule 1301:7-9-12 of the Administrative Code until such time as the routine maintenance, modification or major repair of the release detection method is complete.
  - (7) If an automatic tank gauge is found not to be defective, but cannot conduct a successful release detection test during a thirty day period due to low levels of regulated substance in the UST, owners and operators may use product inventory control in accordance with paragraph (D)(1)(a) of this rule as a method of UST release detection for a period of up to ninety days after the last passing result obtained in accordance with paragraph (D)(1)(c) of this rule.
  - (8) If an owner and operator elects to equip an UST system in a manner that exceeds the requirements of this rule, the owner and operator is only required to maintain the UST system to the extent required by this rule.
  - (9) Other methods of release detection may be used for tanks, piping, and containment sumps pursuant to paragraph (D)(4) of this rule.
  - (10) Release detection equipment located on new UST systems shall meet compatibility requirements described in paragraph (D)(9) of rule 1301:7-9-06 of the Administrative Code.
- (C) Release detection requirements for existing UST systems.
- (1) Existing UST systems shall be equipped and monitored for release in accordance with the following:
    - (a) Existing USTs shall be equipped and monitored for releases at least monthly using interstitial monitoring pursuant to paragraph (D)(1)(d) of this rule except that:
      - (i) Existing USTs installed prior to May 16, 2011, may use any of the release detection methods listed in paragraph (D)(1)(c) to (D)(1)(e) of this rule;
      - (ii) Existing USTs installed prior to May 16, 2011, with a capacity of five hundred fifty gallons or less and USTs with a capacity of five hundred fifty-one to one thousand gallons that meet the tank diameter criteria described in the table in paragraph (D)(1)(b)(iv) of this rule may use manual tank gauging in compliance with paragraphs (D)(1)(b) of this rule as the sole method of release detection; and
      - (iii) Existing USTs installed prior to May 16, 2011, with a capacity of five hundred fifty-one to two thousand gallons that do not meet the tank diameter criteria described in the table in paragraph (D)(1)(b)(iv) of this rule may still use manual tank gauging in compliance with paragraph (D)(1)(b) of the rule as a method of

release detection provided that a tank tightness test is performed in accordance with paragraph (F)(1)(a) of this rule once every five years;

- (b) Existing underground piping that routinely contains regulated substances shall be equipped and monitored for releases pursuant to paragraph (D)(2)(a) to (D)(2)(d) of this rule except that:
  - (i) Existing piping associated with UST systems installed prior to March 1, 2005, does not have to meet the interstitial monitoring requirements as described in paragraph (D)(2)(b) of this rule;
  - (ii) Existing underground piping that conveys regulated substances under suction shall be equipped and monitored for releases pursuant to paragraph (D)(2)(d) of this rule;
  - (iii) An existing suction manifold between tanks does not have to meet the interstitial monitoring requirements as described in paragraph (D)(2)(b) of this rule; and
- (c) Existing containment sumps shall be equipped and monitored for releases pursuant to paragraph (D)(3) of this rule, except:
  - (i) Existing containment sumps associated with UST systems installed prior to March 1, 2005, shall instead be equipped and monitored pursuant to paragraph (D)(6)(a) of rule 1301:7-9-06 of the Administrative Code, and
  - (ii) Containment sumps associated with UST systems installed prior to March 1, 2005, that undergo work pursuant to paragraph (C)(6) of rule 1301:7-9-06 of the Administrative Code shall comply with the release detection requirements found in paragraph (C)(7) of this rule.
- (2) Existing UST systems containing hazardous substances as defined in rule 1301:7-9-03 of the Administrative Code shall be equipped and monitored using interstitial monitoring as defined in paragraphs (B)(1) and (B)(2) of this rule except that:
  - (a) Existing containment sumps originally configured with one release detection sensor located at the lowest point of the secondary containment system are not required to have sensors in every containment sump; and
  - (b) Existing underground piping and manifolds that convey hazardous substance under suction shall be equipped and monitored for releases pursuant to paragraph (B)(2) of this rule.
- (3) Owners and operators using soil gas monitoring or ground water monitoring as the sole method of release detection for USTs and piping were required to comply with one of the release detection methods as provided in paragraphs (D)(1)(c) or (D)(1)(d) of this rule by December 31, 2005. Owners and operators may request to continue using said methods of release detection or request to use an alternative method provided that the owner and operator receives written approval from the state fire marshal pursuant to paragraph (D)(4) of this rule.

- (4) Existing UST systems containing motor or aviation petroleum fuels are no longer required to be monitored daily using product inventory control as described in paragraph (D)(1)(a) of this rule.
  - (5) Existing UST systems, installed prior to May 16, 2011, that store fuel for use by emergency power generators are required to be equipped with a method of release detection pursuant to paragraph (C)(1) of this rule by October 13, 2018, except that owners and operators may request approval of an alternative method of release detection pursuant to paragraph (D)(4) of this rule in lieu of installing automatic line leak detectors on pressure lines.
  - (6) If a method of UST release detection authorized in paragraph (C)(1)(a) of this rule is found to be defective, owners and operators shall comply with paragraph (B)(6) of this rule and may use product inventory control as a method of UST release detection.
  - (7) If work is performed on an existing UST system in order to meet the requirements of paragraph (C)(6) of rule 1301:7-9-06 of the Administrative Code, then the UST, piping, or containment sumps affected by the work shall meet the release detection requirements for new UST systems as described in paragraphs (B)(1) to (B)(3) of this rule, except that containment sumps for existing UST systems installed prior to March 1, 2005, are not required to meet those requirements until fifty percent or more of the containment sumps at the UST site undergo work pursuant to paragraph (C)(6) of rule 1301:7-9-06 of the Administrative Code.
  - (8) If an automatic tank gauge is found not to be defective, but cannot conduct a successful release detection test during a thirty day period due to low levels of regulated substance in the UST, owners and operators may use product inventory control in accordance with paragraph (D)(1)(a) of this rule as a method of UST release detection for a period of up to ninety days after the last passing result obtained in accordance with paragraph (D)(1)(c) of this rule.
  - (9) If an owner and operator elects to equip an UST system in a manner that exceeds the requirements of this rule, the owner and operator is only required to maintain the UST system to the extent required by this rule.
  - (10) Other methods of release detection may be used for tanks, piping, and containment sumps pursuant to paragraph (D)(4) of this rule.
  - (11) Release detection equipment located on existing UST systems shall meet compatibility requirements described in paragraph (D)(9) of rule 1301:7-9-06 of the Administrative Code.
- (D) Methods, operation and maintenance of release detection systems on UST systems.
- (1) UST release detection.

Owners and operators should carefully review the release detection requirements described in paragraphs (B) and (C) of this rule in order to determine which of the following methods apply to their UST system.

- (a) Daily product inventory control shall be conducted as described in American Petroleum Institute Publication RP 1621-93 (reaffirmed 2012), "Bulk Liquid Stock Control at Retail Outlets".
  - (i) Inventory from UST systems shall be reconciled monthly. If the reconciliation for any month indicates an overage or shortage equal to or greater than one per cent of flow-through plus one hundred thirty gallons, owners and operators shall investigate the inventory discrepancy as described in American Petroleum Institute Publication RP 1621-93 (reaffirmed 2012), "Bulk Liquid Stock Control at Retail Outlets".
  - (ii) If inventory discrepancies occur for two consecutive months, owners and operators shall perform an investigation in accordance with all of the following:
    - (a) Conduct a tightness test of the UST system in accordance with paragraph (F) of this rule within seven days of discovery of the discrepancy; and
    - (b) Report any failure of a tightness test to BUSTR as a suspected release. A release is suspected and subject to the reporting requirements of sections 3737.88 and 3737.882 of the Revised Code and this chapter of the Administrative Code if a tightness test leak rate exceeds the amount designated for the testing method. Passing tightness test results do not have to be reported to the state fire marshal.
  - (iii) Gauging sticks and charts used in the performance of daily product inventory control as described in paragraph (D)(1)(a) of this rule shall be designed for the UST being measured and shall be maintained in working order.
- (b) Manual tank gauging shall be conducted weekly and comply with the following requirements:
  - (i) Tank liquid level measurements shall be taken at the beginning and end of a time period using the appropriate minimum duration of test value in the table in paragraph (D)(1)(b)(iv) of this rule during which no liquid is added to or removed from the tank;
  - (ii) Level measurements are based on an average of two consecutive stick readings at both the beginning and ending of the period;
  - (iii) The equipment used is capable of measuring the level of product over the full range of the tank's height to the nearest one-eighth of an inch;
  - (iv) A release is suspected and subject to the reporting requirements of sections 3737.88 and 3737.882 of the Revised Code and this chapter of the Administrative Code if the variation between the beginning and ending measurements exceeds the weekly or monthly standards in the following table:

Nominal Tank Capacity	Minimum Duration of Test	Weekly Standard (One Test)	Monthly Standard (Four Test Average)
550 gallons or less	36 hours	10 gallons	5 gallons
551-1,000 gallons (when tank diameter is 64 inches)	44 hours	9 gallons	4 gallons
551-1,000 gallons (when tank diameter is 48 inches)	58 hours	12 gallons	6 gallons
551-1,000 gallons (requires tank tightness test every five years)	36 hours	13 gallons	7 gallons
1,001-2,000 gallons (requires tank tightness test every five years)	36 hours	26 gallons	13 gallons

- (v) Gauging sticks and charts used in the performance of manual tank gauging as described in paragraphs (D)(1)(b) of this rule shall be designed for the UST being measured and shall be maintained in working order.
- (c) Equipment for automatic tank gauging that tests for the loss of product and conducts inventory control must meet the following requirements:
  - (i) The automatic product level monitor test can detect a 0.2 gallon per hour leak rate from any portion of the tank that routinely contains product;
  - (ii) The automatic tank gauging equipment must meet the inventory control (or other test of equivalent performance) requirements of paragraph (D)(1)(a) of this rule;
  - (iii) The test must be performed with the system operating in one of the following modes:
    - (a) In-tank static testing conducted at least monthly with no less than the minimum volume required by the manufacturer of the method during the test period; or
    - (b) Continuous in-tank leak detection operating on an uninterrupted basis or operating within a process that allows the system to gather incremental measurements to determine the leak status of the tank at least monthly with no less than the minimum volume required by the manufacturer of the method during the test period;
  - (iv) A release is suspected and subject to the reporting requirements of sections 3737.88 and 3737.882 of the Revised Code and this chapter of the Administrative Code if a 0.2 gallon per hour leak rate is detected from any portion of the tank;

- (v) Equipment for automatic tank gauging shall be checked monthly to ensure that the equipment is operating with no alarms or other operating conditions present and to ensure records of release detection testing are reviewed and current; and
  - (vi) Equipment for automatic tank gauging, including probes, sensors and monitoring units, shall be evaluated annually to confirm proper calibration and operation in accordance with the manufacturer's requirements. If the manufacturer is no longer in business, then the equipment shall be evaluated in accordance with paragraph (G) of this rule.
- (d) Monitoring of the interstice of a secondarily contained UST shall comply with the following requirements:
- (i) Monitoring of the interstitial space shall be performed at least monthly;
  - (ii) A secondarily contained UST shall have an interstitial monitoring method that can detect a release through the inner wall in any portion of the tank that routinely contains a regulated substance;
  - (iii) Any alarm from a sensor that is part of an interstitial monitoring method shall be evaluated within twenty-four hours to confirm proper operation or to confirm the presence of a release. A release is suspected and subject to the reporting requirements of sections 3737.88 and 3737.882 of the Revised Code and this chapter of the Administrative Code if any regulated substance is detected between the inner and outer wall; and
  - (iv) Equipment for interstitial monitoring, including probes, sensors and monitoring units, shall be evaluated annually by a person recognized by the manufacturer as qualified to confirm proper calibration and operation in accordance with the manufacturer's requirements. If the manufacturer has no process to recognize qualified persons or if the manufacturer is no longer in business, then the equipment shall be evaluated in accordance with paragraph (G) of this rule.
- (e) Statistical inventory reconciliation (SIR) shall comply with the following requirements:
- (i) Report a quantitative result with a calculated leak rate at least monthly;
  - (ii) Be capable of detecting a leak rate of 0.2 gallon per hour or release of one hundred fifty gallons within thirty days;
  - (iii) Use a threshold that does not exceed one-half the minimum detectible leak rate. In order to have confidence in the ability of SIR to detect a leak rate of 0.2 gallon per hour, the threshold for declaring a leak shall be 0.1 gallon per hour;
  - (iv) A release is suspected and subject to the reporting requirements of sections 3737.88 and 3737.882 of the Revised Code and this chapter of the Administrative Code if the SIR analysis indicates a threshold leak rate from the UST which is equal to or greater than 0.1 gallon per hour;

- (v) Inconclusive SIR results or any analysis that is anything other than pass or fail shall be investigated as a suspected release pursuant to paragraph (C)(35)(a) of rule 1301:7-9-13 of the Administrative Code;
- (vi) SIR may not be used to meet release detection requirements for piping described in paragraph (D)(2) of this rule;
- (vii) SIR may not be used to meet tightness testing requirements described in paragraph (F) of this rule; and
- (viii) Equipment for SIR, including gauging sticks and charts used in the performance of daily product inventory control as described in paragraph (D)(1)(a) of this rule, shall be designed for the UST being measured and shall be maintained in working order. Other probes, sensors, and monitoring units shall be evaluated annually to confirm proper calibration and operation in accordance with the manufacturer's requirements. If the manufacturer is no longer in business, then the equipment shall be evaluated in accordance with paragraph (G) of this rule.

(2) Piping release detection.

Owners and operators should carefully review the release detection requirements described in paragraphs (B) and (C) of this rule in order to determine which of the following methods apply to their UST system.

- (a) Single wall piping that routinely contains regulated substances shall be monitored pursuant to paragraph (D)(2)(c) and (D)(2)(d) of this rule.
- (b) Secondly contained piping that routinely contains regulated substances shall be monitored pursuant to paragraphs (D)(2)(c) and (D)(2)(d) of this rule, and the interstice of the secondarily contained piping shall be continuously monitored for releases using one of the following methods:
  - (i) The sampling or testing method can detect a 0.2 gallon per hour leak rate from any portion of the inner wall of the piping that routinely contains a regulated substance. A release is suspected and subject to the reporting requirements of sections 3737.88 and 3737.882 of the Revised Code and this chapter of the Administrative Code if a 0.2 gallon per hour leak rate is detected from any portion of the inner wall of the piping; or
  - (ii) The piping terminates or transitions in containment sumps and the sampling or testing method can detect a release from any portion of the inner wall of the piping that routinely contains a regulated substance pursuant to paragraph (D)(3) of this rule.
- (c) Requirements for pressure piping.
  - (i) Underground piping that conveys regulated substances under pressure shall be equipped with an automatic line leak detector attached to the piping that will alert the operator to the presence of a leak by restricting or shutting off the flow of regulated substances through the piping or triggering an audible or visual alarm if the automatic line leak detector detects a leak of three gallons per hour at ten



pounds per square inch line pressure within one hour. The owner and operator is permitted to restart the flow of regulated substances only once to verify the presence of a piping leak or an equipment malfunction. If the flow of regulated substance is restricted or shut off or in the event of an audible or visual alarm within two hours of a restart by an operator, a release is suspected and subject to the reporting requirements of sections 3737.88 and 3737.882 of the Revised Code and this chapter of the Administrative Code.

- (ii) Automatic line leak detectors shall be tested annually to confirm proper calibration and operation in accordance with the manufacturer's requirements. If the manufacturer is no longer in business, then the equipment shall be evaluated in accordance with paragraph (G) of this rule. Automatic line leak detectors shall be tested in accordance with the following:
  - (a) Automatic line leak detectors shall be tested in a manner that introduces a simulated leak into the product line between the tank and the dispenser. Automatic line leak detectors shall function within design specifications and the flow of product shall be restricted, stopped, or an alarm shall be activated; and
  - (b) Automatic line leak detectors that fail a test method shall undergo routine maintenance, modification or major repair, as appropriate, to restore the automatic line leak detectors to working order.
- (iii) Underground piping that conveys regulated substances under pressure shall meet one of the following:
  - (a) Have an annual tightness test conducted in compliance with paragraph (F)(2)(a) of this rule;
  - (b) Have a monthly tightness test conducted by the on-site electronic line testing unit as described in paragraph (D)(2)(c) of this rule provided that the unit can detect a 0.2 gallon per hour leak rate at operating pressure; or
  - (c) Be a part of secondarily contained piping system whereby the interstice of the piping is continuously monitored pursuant to (D)(2)(b)(i) or (D)(2)(b)(ii) of this rule.
- (d) Requirements for suction pumping.
  - (i) Underground piping that conveys regulated substances under suction shall be monitored for loss of vacuum indicated by an inability to dispense regulated substances or erratic operation of the pump. Within twenty-four hours of an UST owner and operator suspecting a loss of vacuum, the owner and operator shall initiate an investigation of the cause of the loss of vacuum. If an owner and operator is unable to make a determination of the loss of vacuum, then the loss of vacuum shall be considered a suspected release as defined in paragraph (C)(35) of rule 1301:7-9-13 of the Administrative Code and the owner and operator shall comply with paragraph (F)(2) of rule 1301:7-9-13 of the Administrative Code. If the loss of vacuum is determined to be due to a leaking component, it shall constitute a release as defined in paragraph (C)(26) of rule 1301:7-9-13 of the

Administrative Code and the owner and operator shall comply with paragraph (F) of rule 1301:7-9-13 of the Administrative Code.

(ii) Underground piping that conveys regulated substances under suction shall meet one of the following:

(a) Have a tightness test conducted every thirty-six month period in compliance with paragraph (F)(2)(b) of this rule; or

(b) Demonstrate compliance with the following safe suction requirements:

(i) The underground piping operates at less than atmospheric pressure;

(ii) The underground piping is sloped so that the contents of the pipe will drain back into the tank if the suction is released;

(iii) Only one check valve is included in each suction line;

(iv) The check valve is located directly below and as close as practical to the suction pump; and

(v) A method is provided that allows compliance with paragraphs (D)(2)(d)(ii)(b)(i) to (D)(2)(d)(ii)(b)(iv) of this paragraph to be readily determined.

(e) Above ground piping that routinely contains regulated substances that is fully visible to inspection is not required to be equipped with release detection. If a portion of the above ground piping is located below ground and the piping cannot be easily accessed for visual inspection, then the piping must be equipped and monitored for releases pursuant to paragraph (D)(2) of this rule.

(3) Release detection methods for containment sumps.

Owners and operators should carefully review the release detection requirements described in paragraphs (B) and (C) of this rule in order to determine which of the following methods apply to their UST system.

(a) When required, containment sumps shall be continuously monitored with sensors capable of detecting a release of a regulated substance before the release reaches the lowest penetration in the containment sump. Sensors shall be located in every containment sump.

(b) Any alarm from a sensor in any containment sump shall be evaluated within twenty-four hours to confirm proper operation or to confirm the presence of a release. A release is suspected and subject to the reporting requirements of sections 3737.88 and 3737.882 of the Revised Code and this chapter of the Administrative Code if any regulated substance is detected in the containment sump.

(c) Release detection equipment for containment sumps, including probes, sensors and monitoring units, shall be evaluated annually to confirm proper calibration and operation in accordance with the manufacturer's requirements. If the manufacturer is no

longer in business, then the equipment shall be evaluated in accordance with paragraph (G) of this rule.

- (4) Any other type of release detection method, or combination of methods, can be used if approved in writing by the state fire marshal pursuant to the following:
    - (a) The method can detect a 0.2 gallon per hour leak rate with a probability of detection of 0.95 and a probability of falsely indicating a release of 0.05; or the owner and operator can demonstrate the method can detect a release as effectively as any of the corresponding methods allowed in paragraphs (D)(1)(c) to (D)(3) of this rule. In comparing methods, the state fire marshal shall consider the size of release that the method can detect and the frequency and reliability with which it can be detected. The state fire marshal may approve, deny or rescind the method at his discretion. If the method is approved, the owner and operator shall comply with any terms and conditions imposed by the state fire marshal on its use;
    - (b) A release is suspected and subject to the reporting requirements of sections 3737.88 and 3737.882 of the Revised Code and this chapter of the Administrative Code if a release exceeds the leak rates established for the method approved by the state fire marshal; and
    - (c) Any method of release detection allowed by this paragraph shall be properly monitored, operated and maintained in accordance with any terms and conditions imposed by the state fire marshal on its use. At a minimum, the method shall produce a result at least every thirty days and the method shall be maintained and operated in accordance with the manufacturer's requirements unless the state fire marshal specifies otherwise.
  - (5) For all electronic and mechanical methods of release detection, a test of the proper operation must be performed at least annually and, at a minimum, as applicable to the facility, cover the following components and criteria:
    - (a) Automatic tank gauge and other controllers: test alarm, verify system configuration, test battery backup;
    - (b) Probes and sensors: inspect for residual buildup, ensure floats move freely, ensure shaft is not damaged; ensure cables are free of kinks and breaks, test alarm operability and communication with controller; and
    - (c) Vacuum pumps and pressure gauges: ensure proper communication with sensors and controller.
- (E) Release detection recordkeeping.

UST system owners and operators shall maintain records demonstrating compliance with this chapter, and these records shall be maintained pursuant to the following:

- (1) All written performance claims pertaining to any release detection system used, and the manner in which these claims have been justified or tested by the equipment manufacturer or installer, and any schedules of required calibration and maintenance provided by the release detection equipment manufacturer shall be maintained for five years;

- (2) The results of any sampling, testing, or monitoring, and the records of walkthrough inspections required by paragraph (E)(4) of rule 1301:7-9-06 of the Administrative Code shall be maintained for at least one year;
- (3) The records demonstrating compatibility shall be maintained for as long as the UST system is used to store the regulated substance;
- (4) Written documentation of all calibration, maintenance, and repair of release detection equipment permanently located at the facility shall be maintained for at least three years;
- (5) Owners and operators shall provide the state fire marshal access to all records within one business day of a request; and
- (6) Within thirty days of transfer of ownership of an UST system, the transferor shall provide the transferee with all records identified in this paragraph or with equivalent copies of said records.

(F) Testing methods for UST systems.

- (1) Tightness testing for USTs.
  - (a) Tank tightness testing of the primary shell of both single wall and secondarily contained USTs shall be capable of detecting a 0.1 gallon per hour leak rate from any portion of the primary shell while accounting for the effects of thermal expansion or contraction of the regulated substance, vapor pockets, tank deformation, evaporation or condensation, and the location of the water table.
  - (b) Tightness testing of the interstice of secondarily contained USTs shall be conducted in accordance with paragraphs (G)(1) to (G)(3) of this rule.
- (2) Tightness testing for piping.
  - (a) Piping tightness testing of single wall pipe and the primary or inner pipe of secondarily contained pressure piping may be conducted only if it can detect a 0.1 gallon per hour leak rate at one and one-half times the operating pressure, or equivalent.
  - (b) Tightness testing of suction and other non-pressurized piping shall be conducted as follows:
    - (i) Piping that can be isolated from the UST shall be tested using a method capable of detecting a 0.1 gallon per hour leak rate at a minimum of fifteen pounds per square inch pressure, or equivalent; and
    - (ii) Piping that cannot be isolated from the UST shall be tested using a method capable of detecting a 0.1 gallon per hour leak rate.
  - (c) Tightness testing of the interstice of secondarily contained piping shall be conducted in accordance with paragraphs (G)(1) to (G)(3) of this rule.
- (3) Testing of containment sumps and spill prevention equipment shall be conducted in accordance with paragraphs (G)(1) to (G)(3) of this rule.

- (4) All testing methods used to comply with paragraphs (F)(1)(a), (F)(2)(a), and (F)(2)(b) of this rule shall be third party approved to perform in a manner where the method can detect a release at the designated release rate with a probability of detection of 0.95 and a probability of falsely indicating a release of 0.05. Testing methods used to comply with paragraphs (F)(1)(b), (F)(2)(c), and (F)(3) of this rule are not required to be third party approved.
  - (5) The results from tightness testing methods performed in accordance with this chapter of the Administrative Code or the results from tightness testing methods for other activities such as but not limited to routine maintenance, UST system audits or property divestments shall be managed as follows:
    - (a) A release is suspected and subject to the reporting requirements of sections 3737.88 and 3737.882 of the Revised Code and this chapter of the Administrative Code if a leak rate exceeds the amount designated for the testing method except that:
      - (i) Non-passing results attributed to a failure of the outer wall of USTs described in paragraph (F)(1)(b) of this rule are not a suspected release, unless other release conditions pursuant to paragraph (C)(35) of rule 1301:7-9-13 of the Administrative Code are present; or
      - (ii) Non-passing results attributed to a failure of the outer wall of piping described in paragraph (F)(2)(c) of this rule are not a suspected release unless other release conditions pursuant to paragraph (C)(35) of rule 1301:7-9-13 of the Administrative Code are present; or
      - (iii) Non-passing results attributed to a failure of containment sumps or spill prevention equipment described in paragraph (F)(3) of this rule are not a suspected release unless other release conditions pursuant to paragraph (C)(35) of rule 1301:7-9-13 of the Administrative Code are present; or
      - (iv) Non-passing results that are part of preliminary tightness tests of components undergoing permit activities described in paragraph (C)(1) of rule 1301:7-9-10 of the Administrative Code are not a suspected release unless other release conditions pursuant to paragraph (C)(35) of rule 1301:7-9-13 of the Administrative Code are present.
    - (b) Any components required by this chapter that fail to achieve a passing result shall be immediately assessed and restored to working order in accordance with paragraph (G) of this rule or paragraph (E) of rule 1301:7-9-06 of the Administrative Code.
  - (6) No pressure testing with air shall be performed on a component of an UST system that has contained a flammable regulated substance or flammable vapors. The manufacturer's instructions for the testing method shall be followed when using gases for the test method.
- (G) General performance standards, permits, certified UST installers and inspectors.
- (1) All release detection systems and tightness testing methods shall be properly designed, constructed, installed, modified, repaired, operated and maintained in accordance with the requirements of this rule. Release detection components and tightness testing methods not

specifically addressed in this rule shall comply with the manufacturer's instructions or codes of practice developed by nationally recognized associations or independent testing laboratories or other industry best practices.

- (2) All release detection systems and tightness testing methods shall be properly designed, constructed, installed, modified, repaired, operated and maintained by a qualified person in accordance with the requirements of this rule.
  - (a) Any person performing activities in accordance with this rule shall check paragraph (C) of rule 1301:7-9-10 of the Administrative Code prior to performing the activities to determine if a permit is required. Any activities requiring a permit shall be overseen by a certified UST installer and a certified UST inspector as required in paragraph (D) of rule 1301:7-9-10 of the Administrative Code.
  - (b) For activities that do not require a permit, or if the rule does not specifically identify a type of qualified person, then owners and operators may allow any person to perform such activities provided they follow manufacturer's instructions or codes of practice developed by nationally recognized associations or independent testing laboratories or other industry best practices.
- (3) The following codes of practice may be used to comply with this rule:
  - (a) American Petroleum Institute Publication RP 1615-11, "Installation of Underground Hazardous Substances or Petroleum Storage Systems";
  - (b) Petroleum Equipment Institute Publication RP100-17, "Recommended Practices for Installation of Underground Liquid Storage Systems"; or
  - (c) Petroleum Equipment Institute Publication RP1200-17, "Recommended Practices for the Testing and Verification of Spill, Overfill, Leak Detection and Secondary Containment Equipment at UST Facilities".
- (4) Prior to going into operation, a functionality test shall be performed on any new or existing UST system component that undergoes work requiring a permit under paragraph (G)(2) of this rule. The UST system shall not be placed into operation until a passing functionality result is obtained for the UST system component undergoing work.
- (5) Performing work pursuant to this rule does not relieve a person engaged in UST activity from the obligation to comply with any other applicable federal, state, or local laws and regulations, including but not limited to, the Ohio Fire Code and the Ohio Building Code.
- (6) Other release detection requirements and methods may be used in place of any requirements or methods described in this rule if an owner and operator demonstrates that the alternative method is no less protective of human health and the environment than the method or requirement specified in this rule, and the state fire marshal approves the alternative method in writing prior to the use of the method. If the alternative method is approved, the owner and operator shall comply with any terms and conditions imposed on its use by the state fire marshal.

(H) Requirements for airport hydrant systems or field constructed tank systems.

- (1) New and existing airport hydrant systems or new and existing field constructed tank systems shall comply with the release detection, operation, and maintenance requirements found in Subpart K of Part 280 of Title 40 Chapter I of the Code of Federal Regulations except that:
  - (a) Qualifying systems shall comply with the deadlines and conditions identified in rule 1301:7-9-01 of the Administrative Code;
  - (b) Vapor monitoring and groundwater monitoring shall not be used as methods of release detection unless approved pursuant to paragraph (G)(6) of this rule; and
  - (c) In addition to completing the walkthrough inspection requirements pursuant to paragraph (E)(4) of rule 1301:7-9-06 of the Administrative Code, owners and operators shall visually check hydrant pits and hydrant piping vaults for evidence of leaks or damage and remove any liquid or debris found. The check shall be performed monthly, unless confined spaced entry is required, in which case the check is required at least annually.
- (2) New and existing airport hydrant systems or new and existing field constructed tank systems shall comply with the design, installation, construction, operation, maintenance and walkthrough inspection requirements found in paragraph (F) of rule 1301:7-9-06 of the Administrative Code.
- (3) Owners and operators of new and existing airport hydrant systems or new and existing field constructed tank systems may request to use alternative methods pursuant to paragraph (G)(6) of this rule.

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