



ADMINISTRATIVE RULES OF MONTANA



17.56.407 METHODS OF RELEASE DETECTION FOR TANKS

- (1) Each method of release detection for tanks used to meet the requirements of ARM 17.56.402 must be conducted in accordance with the following:
 - (a) product inventory control (or another test of equivalent performance) must be conducted monthly to detect a release of at least 1.0 percent of flow-through plus 130 gallons on a monthly basis in the following manner:
 - (i) inventory volume measurements for regulated substance inputs, withdrawals, and the amount still remaining in the tank are recorded each operating day;
 - (ii) 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;
 - (iii) the regulated substance inputs are reconciled with delivery receipts by measurement of the tank inventory volume before and after delivery;
 - (iv) deliveries are made through a drop tube that extends to within one foot of the tank bottom;
 - (v) product dispensing is metered and recorded within for an accuracy of six cubic inches for every five gallons of product withdrawn; and
 - (vi) the measurement of any water level in the bottom of the tank is made to the nearest one-eighth of an inch at least once a month;
 - (b) manual tank gauging must meet the following requirements:
 - (i) tank liquid level measurements are taken at the beginning and ending of a period of at least 36 hours 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 requirements of ARM Title 17, chapter 56, subchapter 5 if the variation between beginning and ending measurements exceeds the weekly or monthly standards in the following table:

Table 1:

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 (also requires periodic tank tightness testing)	36 hours	13 gallons	7 gallons
1,001 – 2,000 gallons (also requires periodic tank tightness testing)	36 hours	26 gallons	13 gallons

- (v) tanks of 550 gallons or less nominal capacity and tanks with a nominal capacity of 551 to 1,000 gallons that meet the tank diameter criteria in Table 1 may use this method as the sole method of release detection. All other tanks with a nominal capacity of 551 to 2,000 gallons may use the method in place of inventory control in (1)(a). Tanks of greater than 2,000 gallons nominal capacity may not use this method to meet the requirements of this subchapter; and
- (vi) tanks listed in ARM 17.56.402(1)(a)(iv) may use this method of release detection as the sole method of annual tank tightness testing;
- (c) tank tightness testing (or another test of equivalent performance) must be capable of detecting a 0.1 gallon per hour leak rate from any portion of the tank that routinely contains product while accounting for the effects of thermal expansion or contraction of the product, vapor pockets, tank deformation, evaporation or condensation, and the location of the water table;
- (d) equipment for automatic tank gauging that tests for the loss of product or conducts inventory control must meet the following requirements:
 - (i) the automatic product level monitor test can detect a 0.2 gallon per hour (gph) leak rate from any portion of the tank that routinely contains product;
 - (ii) after December 31, 2010, if the automatic tank gauging equipment has the capability, the leak detection console must be set to temporarily disable the pumping system after a failed 0.2 gph leak test. The owner or operator may not restart the pumping system until:

- (A) an investigation of the UST system alarm condition is conducted in accordance with the leak detection equipment manufacturer's requirements and ARM Title 17, chapter 56, subchapter 5; and
 - (B) the owner or operator determines that a release to the environment has not occurred;
- (iii) inventory control (or another test of equivalent performance) is conducted in accordance with the requirements of (1)(a); and
- (iv) the test must be performed with the system operating in one of the following modes:
 - (A) in-tank static testing is conducted at least once every 30 days; 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 once every 30 days.
- (e) testing or monitoring for vapors within the soil gas of the excavation zone may only be used as a leak detection method until October 13, 2023, to meet the requirements of ARM 17.56.402 and must meet the following requirements:
 - (i) the materials used as backfill are sufficiently porous (e.g., gravel, sand, crushed rock) to readily allow diffusion of vapors from releases into the excavation area;
 - (ii) the stored regulated substance, or a tracer compound placed in the tank system, is sufficiently volatile (e.g., gasoline) to result in a vapor level that is detectable by the monitoring devices located in the excavation zone in the event of a release from the tank;
 - (iii) the measurement of vapors by the monitoring device is not rendered inoperative by the ground water, rainfall, or soil moisture or other known interferences so that a release could go undetected for more than 30 days;
 - (iv) the level of background contamination in the excavation zone will not interfere with the method used to detect releases from the tank;
 - (v) the vapor monitors are designed and operated to detect any significant increase in concentration above background of the regulated substance stored in the tank system, a component or components of that substance, or a tracer compound placed in the tank system;
 - (vi) in the UST excavation zone, the site is assessed to ensure compliance with the requirements in (1)(e)(i) through (iv) and to establish the number and positioning of monitoring wells that will detect releases within the excavation zone from any portion of the tank that routinely contains product;
 - (vii) monitoring wells are clearly marked and secured to avoid unauthorized access and tampering; and
 - (viii) after December 31, 2010, if the vapor monitoring equipment has the capability, the leak detection console must be set to temporarily disable the pumping system after a failed leak test. The owner or operator may not restart the pumping system until:

- (A) an investigation of the UST system alarm condition is conducted in accordance with the leak detection equipment manufacturer's requirements and ARM Title 17, chapter 56, subchapter 5; and
 - (B) the owner or operator determines that a release to the environment has not occurred;
- (f) testing or monitoring for liquids on the ground water may only be used as a leak detection method until October 13, 2023, to meet the requirements of ARM 17.56.402 and must meet the following requirements:
 - (i) the regulated substance stored is immiscible in water and has a specific gravity of less than one;
 - (ii) ground water is never more than 20 feet from the ground surface and the hydraulic conductivity of the soil(s) between the UST system and the monitoring wells or devices is not less than 0.01 cm/sec (e.g., the soil should consist of gravels, coarse to medium sands, course silts, or other permeable materials);
 - (iii) the slotted portion of the monitoring well casing must be designed to prevent migration of natural soils or filter pack into the well and to allow entry of regulated substance on the water table into the well under both high and low ground water conditions, as well as all conditions between the high and low ground water conditions;
 - (iv) monitoring wells shall be sealed from the ground surface to the top of the filter pack;
 - (v) monitoring wells or devices intercept the excavation zone or are as close to it as is technically feasible;
 - (vi) the continuous monitoring devices or manual methods used can detect the presence of at least one-eighth of an inch of free product on top of the ground water in the monitoring wells;
 - (vii) within and immediately below the UST system excavation zone, the site is assessed to ensure compliance with the requirements in (1)(f)(i) through (v) and to establish the number and positioning of monitoring wells or devices that will detect releases from any portion of the tank that routinely contains product;
 - (viii) monitoring wells are clearly marked and secured to avoid unauthorized access and tampering;
 - (ix) monitoring wells must be accessible for the sampling purposes of ARM 17.56.503; and
 - (x) after December 31, 2010, if the ground water monitoring equipment has the capability, the leak detection console must be set to temporarily disable the pumping system after a failed leak test. The owner or operator may not restart the pumping system until:
 - (A) an investigation of the UST system alarm condition is conducted in accordance with the leak detection equipment manufacturer's requirements and ARM Title 17, chapter 56, subchapter 5; and
 - (B) the owner or operator determines that a release to the environment has not occurred;

- (g) interstitial monitoring between the UST system and a secondary barrier immediately around or beneath it may be used, but only if the system is designed, constructed, and installed to detect a leak from any portion of the tank that routinely contains product and also meets one of the following requirements:
 - (i) for double-walled UST systems:
 - (A) the sampling or testing method can detect a release through the inner wall in any portion of the tank that routinely contains product; and
 - (B) after December 31, 2010, if the interstitial monitoring equipment has the capability, the leak detection console must be set to temporarily disable the pumping system after a failed leak test. The owner or operator may not restart the pumping system until:
 - (I) an investigation of the UST system alarm condition is conducted in accordance with the leak detection equipment manufacturer's requirements and ARM Title 17, chapter 56, subchapter 5; and
 - (II) the owner or operator determines that a release to the environment has not occurred;
 - (ii) for UST systems with a secondary barrier within the excavation zone, the sampling or testing method used can detect a leak between the UST system and the secondary barrier;
 - (A) the secondary barrier around or beneath the UST system consists of artificially constructed material that is sufficiently thick and impermeable (at least 10^{-6} cm/sec for the regulated substance stored) to direct a leak to the monitoring point and permit its detection;
 - (B) the barrier is compatible with the regulated substance stored so that a leak from the UST system will not cause a deterioration of the barrier allowing a release to pass through undetected;
 - (C) for cathodically protected tanks, the secondary barrier must be installed so that it does not interfere with the proper operation of the cathodic protection system;
 - (D) the ground water, soil moisture, or rainfall will not render the testing or sampling method used inoperative so that a release could go undetected for more than 30 days;
 - (E) the site is assessed to ensure that the secondary barrier is always above the ground water and not in a 25-year flood plain, unless the barrier and monitoring designs are for use under such conditions; and
 - (F) monitoring wells are clearly marked and secured to avoid unauthorized access and tampering; and
 - (iii) for tanks with an internally fitted liner, an automated device can detect a leak between the inner wall of the tank and the liner, and the liner is compatible with the substance stored; and

- (h) release detection methods based on the application of statistical principles to inventory data must meet the following requirements:
 - (i) report a quantitative result with a calculated leak rate;
 - (ii) be capable of detecting a leak rate of 0.2 gallon per hour or a release of 150 gallons within 30 days; and
 - (iii) use a threshold that does not exceed one-half the minimum detectible leak rate.
- (i) any other type of release detection method, or combination of methods, can be used if it can detect a 0.2 gallon per hour leak rate or a release of 150 gallons within 30 days with a probability of detection of 0.95 and a probability of false alarm of 0.05.
- (2) UST systems installed, modified, or replaced after November 26, 2009, must employ interstitial monitoring and meet the requirements in ARM 17.56.306(3), ARM 17.56.204, and applicable recordkeeping requirements in ARM 17.56.409.

Authorizing statute(s): 75-11-505, MCA

Implementing statute(s): 75-11-505, MCA

History: NEW, 1989 MAR p. 1912, Eff. 11/23/89; TRANS, from DHES, 1995 MAR p. 2259; AMD, 2003 MAR p. 1079, Eff. 5/23/03; AMD, 2007 MAR p. 1189, Eff. 8/24/07; AMD, 2009 MAR p. 2247, Eff. 11/26/09; AMD, 2018 MAR p. 1954, Eff. 10/6/18.