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Maryland Containment System Testing Protocol

Introduction:

Recent (January 26, 2005) changes to Code of Maryland Regulations (COMAR) 26.10, *Oil Pollution and Tank Management*, establish requirements for the testing of underground storage tank (UST) system spill catchment basins and release containment sumps to ensure this equipment is not leaking. Specifically, these optional testing protocols were developed by the Maryland Department of the Environment (MDE) for spill catch basins (a.k.a. spill buckets) and containment sumps. The Department recognizes that this protocol is not necessarily the only method that can be used to determine the tightness of this equipment. There are electronic and vacuum methods available that may be more accurate than the process outlined in this protocol. However, before an alternative method can be used, the proposed testing method must be provided in detail to the Department for our review and approval. The Department further recommends that basin and sump testing be performed in conjunction with other UST compliance testing activities. After the initial test, the spill catchment basins are required to be tested yearly and containment sumps every five years.

Who can perform the test:

The individual performing the inspection and testing as outlined in this protocol must be either:

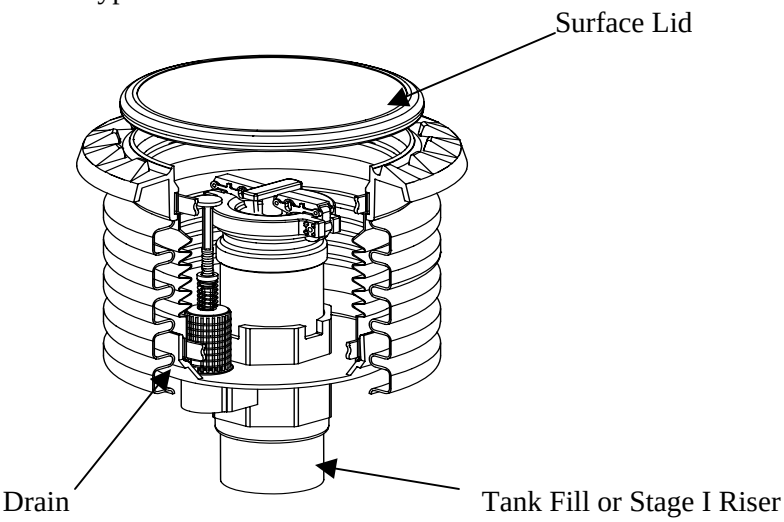
1. A certified UST technician in compliance with COMAR 26.10.06;
2. A Maryland certified UST inspector in compliance with COMAR 26.10.06; or
3. Employed by an UST testing company recognized by MDE as indicated on the list of approved UST tests methods authored and updated by MDE.

Spill Catchment Basins:

Containing the inevitable small spills that occur in the transfer of fuel from the tanker truck to the UST was the driving force behind the requirement for spill catchment basins (a.k.a. spill buckets). This requirement is stated in COMAR 26.10.03.03. Under COMAR 26.10.03, Maryland requires spill catchment basins (basins) on every tank installed on or after December 22, 1988. For tanks installed prior to that date, owner/operators had until December 1998 to have them in place. Thus, in Maryland it is possible that some basins have been in the ground for seventeen or more years. On July 1, 1998 Maryland further amended COMAR and required the installation of basins on the Stage I vapor recovery connections of gasoline storage tanks and the fill pipes for used oil storage tanks (COMAR 26.10.03.03.C and D).

The basins are made of both steel and plastic and are installed on fill risers and remote fill pipes of the UST. Most basins have a five-gallon spill capacity; however, larger basins with capacities upwards of twenty-five gallons are available. Some have drains or hand pumps permanently installed while others require the use of an external pump or absorbent pads to remove product.

The following is a schematic of a typical basin:



(Diagram taken from the EPA-OUST document "MUSTs for USTs")

The MDE testing procedure describes the protocol in detail. Important facts to consider with this test are:

1) The basins are hydrostatically tested;
2) Care must be taken to isolate loss through the drain;
3) The standard for declaring a failure is 1/8 inch or greater loss of water within one hour (which is equal to a leak rate of 0.05 gallons per hour in a typical 12-inch diameter basin).

It is important to understand that basins were neither intended nor designed for the *storage* of petroleum product, but rather to *contain* a small spill. The clear intent is that any spilled product would be immediately removed and either returned to the tank or properly disposed. Although it is a violation of COMAR 26.10.04.01B, it is very common to find petroleum product in the basin.

SPILL CATCHMENT BASINS HYDROSTATIC TEST

I. This test cannot be performed in the rain or in freezing weather conditions.

II. Basins must be inspected for debris and liquid content. If liquid content is found to include significant petroleum product, the product must be removed. Any accumulation of debris (leaves, trash and sediment) encountered in the basins must be removed for proper disposal.

III. Examine all fill and vapor recovery caps and adapter fittings for loose or damaged parts and make necessary replacements.

IV. Examine the basins for damage. A damaged basin should not be tested but recorded as a failure and arrangements made for repair or replacement.

V. The basin drain must be secured against possible leaks. This involves one of the following procedures:

a. Remove the plunger-drain and insert a temporary plug; (MDE recommends that this plug be made permanent and the plunger mechanism not used.)
b. Remove the plunger-drain ensuring it seals properly and reinstalling the plunger-drain; or
c. Adding 2+ inches of water to the bucket prior to beginning the test to ensure the plunger-drain is liquid tight.

If the drain cannot not be secured by one of the above methods, the test is to be considered invalid and arrangements made for repairs.

VI. Add water to the basin to just over the top of the fill-pipe. The water must be allowed to settle before the level measurement is taken. To ensure an accurate measurement, a rigid, straight edge should be laid across the top of the basin and its location marked. A tape measure or other measuring device that is accurate within $1/16^{th}$ of an inch is then lowered into the water perpendicular to the straight edge and the water level measurement is recorded. The location of the straight edge and the measuring device must be kept constant for each measurement. If possible, to ensure accuracy, do not remove the straight edge.

VII. The basin lid or an alternative cover is put in place and the hydrostatic test is performed for one hour.

VIII. After one hour, measure the water level as in VI above.

IX. A liquid level drop of $1/8^{th}$ inch or greater in the one hour is considered a failure.

X. Upon completion of the test, the water must be removed for further use or proper disposal.

Containment Sumps:

Containment Sumps (sumps) were not required on underground storage tanks in Maryland until January 26, 2005. As a result of emergency regulations, sumps became mandatory for all new, replaced, or upgraded UST systems (COMAR 26.10.03.02). Sumps can be found as a subsurface structure directly under the product dispenser, at the tank top, or sometimes located at pipe transitions. Sumps are designed to provide access to equipment, fittings, and piping located below grade and to prevent the stored product from being released into the environment. Sumps should not routinely contain product or water; however, the Department continually finds liquid in sumps during our inspections. Sumps must be UL-listed and made from material compatible with the product being stored.

Types of Containment Sumps:

The Turbine Pump Sump is designed to provide access to the turbine area above the tank. The turbine area may house the turbine pump head, line leak detectors, interstitial monitoring devices, wiring, and other equipment. Dispenser sumps are designed to contain releases and provide access to piping and other equipment located under the product dispenser. Transition/Intermediate Sumps are used for the transition from aboveground piping to belowground piping or, in some cases, to transition between different types of piping, or to achieve the proper slope on a piping run. Intermediate sumps are located at key points in the piping system.

CONTAINMENT SUMP INSPECTION AND TEST

Safety precautions and care must be taken when opening the lids. The lids are generally cumbersome and heavy. Flammable vapors and liquids may be present in the sump. Square or rectangular sump lids can fall through the opening and damage the piping, submersible pump, or tank. Round or oval lids, while not typically capable of falling into the sump, may swing down and impact the submersible pump or line leak detector. If applicable, follow the equipment manufacturer recommendations if special instructions are necessary to open the sump lids. Some lids are bolted down and hinged to allow ease in opening. In order to access the dispenser sumps, you may need a key to remove the dispenser cover. In rare instances, the dispenser may need to be removed for the inspection and testing procedure.

I. This test cannot be performed in the rain or in freezing weather conditions.

II. Test boots or sealed entry fittings must be present on the piping that penetrates the sump. If test boots or sealed entry fittings are not installed and cannot be retrofitted, an alternative test must be performed.

III. Sumps must be inspected for debris and liquid content. If liquid content is found to include petroleum product, the product must be removed in an environmentally safe manner. Any accumulation of debris (leaves, trash, sediment, and/or filters) encountered in the sump must be removed for proper disposal.

IV. Examine the sump for damage. A damaged sump should not be tested but immediately recorded as a failure. Arrangements must be made to repair or replace the sump.

V. Inspect all equipment for product leaks. All product leaks must be repaired before testing the sump.

VI. Inspect all entry points and seals to ensure they are in good condition.

VII. When liquid sensors are present, raise or disable the sensors before conducting the test. This is an excellent time to ensure proper operation of the liquid sensors.

VIII. Ensure that there are no components that can be damaged by the addition of water to the sump. If such components are present discontinue the test and arrange to make repairs in order to perform the test or use an alternative testing method. Water can damage electrical connections, so caution must be taken.

IX. Water is then added to the sump to a minimum of 4 inches above the highest sump penetration or sump sidewall seam. To compensate for sump deflection, the water must be allowed to settle. To ensure an accurate measurement, a rigid straight-edged is laid across the top of the sump and its location marked. A tape measure or other measuring device that is accurate within $1/16^{th}$ of an inch is then lowered into the water perpendicular to the straight edge and the water level measurement recorded. The location of the straight edge and the measuring device must be kept constant for each measurement. If possible the straight edge should be left in place.

X. The sump lid or dispenser cover must be put back in place and the hydrostatic test performed for one hour. After the one-hour test period, a liquid measurement is taken using the methodology described in IX above.

XI. A measured liquid drop of 1/8th of an inch or greater in one hour is considered a failure.

XII. Upon completion of the test:

a. Remove all water for further use or proper disposal and dry the containment sump;
b. Reinstall or activate all liquid sensors and test them for proper operation; and
c. If necessary, reinstall and check for leaks the product dispenser;

If during your site visit you identify or suspect a release of fuel to the environment, you must report this finding to the Department immediately.

Reporting Requirements:

1. The UST owner must maintain records of the test for one year at the facility and five years at a location determined by the owner. The Department highly recommends that photographic documentation be made of all testing procedures and the basin and sump condition.

2. In accordance with COMAR 26.10.08.01A, if a storage system fails a test for tightness, is otherwise determined to be leaking, or there exists evidence of a discharge, the person conducting the test, the owner, and the operator of the storage system shall notify the Department within two hours. Two consecutive inconclusive tests are considered a failure and shall be reported as required in this chapter.

3. Failures can be reported to the MDE-Oil Control Program at 410-537-3442 or via facsimile: 410-537-3092.

4. Within thirty days of completion of the catchbasin or sump test, a written report detailing all activities and results must be maintained on site. If a test failure is detected, a copy of the report must also be forwarded to the Department.

5. The report must include:
   - Name and Address of Facility tested where testing was conducted;
   - Owner's Name, Telephone Number, and Address;
   - Date test was performed and weather conditions;
   - Name and Telephone Number of tester/company;
   - Site Diagram of station identifying all tank top components, dispensers, basins, sumps and the known layout of piping; and
   - Results of the test and a record identifying all repairs made to the storage system prior to and during each test.

6. In accordance with Section 4-417(c) of the Environment Article, Annotated Code of Maryland, *False Statements in required documents; tampering with monitoring devices.* – Any person who knowingly makes any false statement, representation, or certification in any application, record, report, plan, or other document filed or requirement to be maintained under this title, or by any permit, rule, regulation, or order issued under this title, or who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this title or by any permit, rule, regulation, or order issued under this title, upon conviction, is subject to a fine not exceeding $10,000, or by imprisonment not exceeding six months or both.

Disclaimer:

The storage of petroleum products and the maintenance and inspection of storage systems is a hazardous endeavor. Only experienced storage tank personnel should perform the actions as outlined in this protocol. The Maryland Department of the Environment makes no claim as to the completeness or the quality of work performed by private parties. The use of this protocol is designed to demonstrate compliance with Maryland regulations. The damage of storage tank equipment, loss of life or injury are the sole responsibility of the storage tank owner and the person performing the test. Before performing any test, the UST equipment manufacture should be consulted to ensure the test will not damage or void the equipment warranty.