

**7045.0528 TANK SYSTEMS.**

Subpart 1. **Scope.** This part applies to owners and operators of facilities that use tank systems, including tank systems, sumps, and other such collection devices or systems used in conjunction with drip pads, as defined in part 7045.0020 and regulated under part 7045.0541, to treat or store hazardous waste, except as part 7045.0450, and items A and B provide otherwise.

A. Tank systems that are used to store or treat hazardous waste that contains no free liquids and are situated inside a building with an impermeable floor are exempted from the requirements in subpart 4. To demonstrate the absence or presence of free liquids in the stored or treated waste, the following test must be used: Method 9095 (Paint Filter Liquids Test) as described in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA publication SW-846, incorporated in part 7045.0065, item D.

B. Tank systems, including sumps, as defined in part 7045.0020, that serve as part of a secondary containment system to collect or contain releases of hazardous wastes are exempt from the requirements in subpart 4.

Subp. 2. **Assessment of existing tank system's integrity.** The following requirements apply to existing tank systems:

A. For each existing tank system that does not have secondary containment meeting the requirements of subpart 4, the owner or operator must determine whether the tank system is leaking or is unfit for use. Except as provided in item C, the owner or operator must obtain and keep on file at the facility a written assessment reviewed and certified by an independent, qualified registered professional engineer, that attests to the tank system's integrity. The certification must include the statements in parts 7001.0070 and 7001.0540.

B. This assessment must determine that the tank system is adequately designed and has sufficient structural strength and compatibility with the wastes to be stored or treated to ensure that it will not collapse, rupture, or fail. This assessment must consider the following:

(1) design standards, if available, according to which the tank and ancillary equipment were constructed;

(2) hazardous characteristics of the waste that has been and will be handled;

(3) existing corrosion protection measures;

(4) documented age of the tank system, if available (otherwise, an estimate of the age); and

(5) results of a leak test, internal inspection, or other tank integrity examination. For nonenterable underground, inground, or onground tanks, the assessment

must include a leak test that is capable of taking into account the effects of temperature variations, tank end deflection, vapor pockets, and high water table effects. For other than nonenterable underground, inground, or onground tanks and for ancillary equipment, this assessment must include either a leak test, as described above, or other integrity examination, that is certified by an independent, qualified, registered professional engineer, that addresses cracks, leaks, corrosion, and erosion. The certification must include the statements in parts 7001.0070 and 7001.0540.

C. Owners or operators of tank systems that were required to conduct this assessment by Code of Federal Regulations, title 40, section 264.191(a), as amended, must conduct and keep this assessment on file as required by that section. Owners or operators of all other existing tank systems must conduct this assessment by February 8, 1990. Owners or operators of tank systems that store or treat materials that become hazardous wastes must conduct this assessment within 12 months after the date the waste becomes a hazardous waste.

D. If, as a result of the assessment conducted in accordance with item A, a tank system is found to be leaking or unfit for use, the owner or operator must comply with the requirements of subpart 8.

Subp. 3. **Design and installation of new tank systems or components.** New tank systems and components must be designed as follows:

A. Owners or operators of new tank systems or components must obtain and submit a written assessment, reviewed and certified by an independent, qualified registered professional engineer, attesting that the tank system has sufficient structural integrity and is acceptable for storing and treating hazardous waste. The owners or operators of tank systems that were required to conduct this assessment by Code of Federal Regulations, title 40, section 264.192(a), must submit this assessment as required by that regulation. Owners or operators of other new tank systems must submit this assessment to the commissioner at the time of submittal of Part B information. The certification must include the statements in parts 7001.0070 and 7001.0540. The assessment must show that the foundation, structural support, seams, connections, and pressure controls, if applicable, are adequately designed and that the tank system has sufficient structural strength, compatibility with the waste to be stored or treated, and corrosion protection to ensure that it will not collapse, rupture, or fail. This assessment, which will be used by the commissioner to review and approve or disapprove the acceptability of the tank system design, must include the following information:

- (1) design standards according to which tanks and/or the ancillary equipment are constructed;
- (2) hazardous characteristics of the waste to be handled;

(3) for new tank systems or components in which the external shell of a metal tank or any external metal component of the tank system will be in contact with the soil or with water, a determination by a corrosion expert of the factors affecting the potential for corrosion, including soil moisture content, soil pH, soil sulfides level, soil resistivity, structure to soil potential, influence of nearby underground metal structures such as piping, existence of stray electric current, and existing corrosion protection measures such as coating and cathodic protection. The determination must also address the type and degree of external corrosion protection that are needed to ensure the integrity of the tank system during the use of the tank system or component. This protection must consist of corrosion resistant materials of construction such as special alloys or fiberglass reinforced plastic; corrosion resistant coating, such as epoxy or fiberglass, with cathodic protection such as impressed current or sacrificial anodes; or electrical isolation devices such as insulating joints, or flanges;

(4) for underground tank system components that are likely to be adversely affected by vehicular traffic, a determination of design or operational measures that will protect the tank system against potential damage;

(5) design considerations to ensure that tank foundations will maintain the load of a full tank, tank systems will be anchored to prevent flotation or dislodgement where the tank system is placed in a saturated zone, and tank systems will withstand the effects of frost heave; and

(6) any additional information that the commissioner determines is relevant to the tank system design.

B. The owner or operator of a new tank system must ensure that proper handling procedures are adhered to in order to prevent damage to the system during installation. Before covering, enclosing, or placing a new tank system or component in use, an independent, qualified installation inspector or an independent, qualified, registered professional engineer, either of whom is trained and experienced in the proper installation of tank systems or components, must inspect the system for the presence of weld breaks, punctures, scrapes of protective coatings, cracks, corrosion, or other structural damage or inadequate construction or installation. All discrepancies must be remedied before the tank system is covered, enclosed, or placed in use.

C. New tank systems or components that are placed underground and that are backfilled must be provided with a backfill material that is a noncorrosive, porous, homogeneous substance and that is installed so that the backfill is placed completely around the tank and compacted to ensure that the tank and piping are fully and uniformly supported.

D. All new tanks and ancillary equipment must be tested for tightness before being covered, enclosed, or placed in use. If a tank system is found not to be tight, all repairs

necessary to remedy the leaks in the system must be performed before the tank system is covered, enclosed, or placed into use.

E. Ancillary equipment must be supported and protected against physical damage and excessive stress due to settlement, vibration, expansion, or contraction.

F. The owner or operator must provide the type and degree of corrosion protection recommended by an independent corrosion expert, based on the information provided under item A, subitem (3), or other corrosion protection if the commissioner believes other corrosion protection is necessary to ensure the integrity of the tank system during use of the tank system. The installation of a corrosion protection system that is field fabricated must be supervised by an independent corrosion expert to ensure proper installation.

G. The owner or operator must obtain and keep on file at the facility written statements by those persons required to certify the design of the tank system and supervise the installation of the tank system in accordance with the requirements of items A to F that attest that the tank system was properly designed and installed and that repairs under items B and D were performed. The certification must include the statements in parts 7001.0070 and 7001.0540.

Subp. 4. **Containment and detection of releases.** The following requirements apply to the containment and detection of releases from tanks:

A. In order to prevent the release of hazardous waste or hazardous constituents to the environment, secondary containment that meets the requirements of this part must be provided, except as provided in item H.

B. Secondary containment systems must be:

(1) designed, installed, and operated to prevent any migration of wastes or accumulated liquid out of the system to the soil, ground water, or surface water at any time during the use of the tank system; and

(2) capable of detecting and collecting releases and accumulated liquids until the collected material is removed.

C. To meet the requirements of item B, secondary containment systems must be:

(1) constructed of or lined with materials that are compatible with the waste to be placed in the tank system and must have sufficient strength and thickness to prevent failure owing to pressure gradients, including static head and external hydrological forces; physical contact with the waste to which it is exposed; climatic conditions; and the stress of daily operation, including stresses from nearby vehicular traffic;

(2) placed on a foundation or base capable of providing support to the secondary containment system, resistance to pressure gradients above and below the system, and capable of preventing failure due to settlement, compression, or uplift;

(3) provided with a leak detection system that is designed and operated so that it will detect the failure of either the primary or secondary containment structure or the presence of any release of hazardous waste or accumulated liquid in the secondary containment system within 24 hours, or at the earliest practicable time if the owner or operator can demonstrate to the commissioner that existing detection technologies or site conditions will not allow detection of a release within 24 hours; and

(4) sloped or otherwise designed or operated to drain and remove liquids resulting from leaks, spills, or precipitation. Spilled or leaked waste and accumulated precipitation must be removed from the secondary containment system within 24 hours, or in as timely a manner as is possible to prevent harm to human health and the environment, if the owner or operator can demonstrate to the commissioner that removal of the released waste or accumulated precipitation cannot be accomplished within 24 hours.

D. Unless a petition is granted under part 7045.0075, subpart 7, secondary containment for tanks must include one or more of the following devices:

(1) a liner external to the tank;

(2) a vault;

(3) a double walled tank; or

(4) an equivalent device as approved by the commissioner under part 7045.0075, subpart 6.

E. In addition to the requirements of items B, C, and D, an external liner system of secondary containment systems must be:

(1) designed or operated to contain 100 percent of the capacity of the largest tank within its boundary;

(2) designed and operated to prevent run on or infiltration of precipitation into the secondary containment system unless the collection system has sufficient excess capacity to contain run on or infiltration. The additional capacity must be sufficient to contain precipitation from a 25 year, 24 hour rainfall event;

(3) free of cracks or gaps; and

(4) designed and installed to surround the tank completely and to cover all surrounding earth likely to come into contact with the waste if the waste is released from the tank; that is, capable of preventing lateral as well as vertical migration of the waste.

F. In addition to the requirements of items B, C, and D, a vault system must be:

(1) designed or operated to contain 100 percent of the capacity of the largest tank within its boundary;

(2) designed or operated to prevent run on or infiltration of precipitation into the secondary containment system unless the collection system has sufficient excess capacity to contain run on or infiltration. Such additional capacity must be sufficient to contain precipitation from a 25 year, 24 hour rainfall event;

(3) constructed with chemical resistant water stops in place at all joints, if any;

(4) provided with an impermeable interior coating or lining that is compatible with the stored waste and that will prevent migration of waste into the concrete;

(5) provided with a means to protect against the formation and ignition of vapors within the vault, if the waste being stored or treated meets the definition of ignitable waste under part 7045.0131, or reactive waste under part 7045.0131 and may form an ignitable or explosive vapor; and

(6) provided with an exterior moisture barrier or be otherwise designed or operated to prevent migration of moisture into the vault if the vault is subject to hydraulic pressure.

G. In addition to the requirements of items B, C, and D, double walled tanks must be:

(1) designed as an integral structure, that is, an inner tank completely enveloped within an outer shell, so that any release from the inner tank is contained by the outer shell;

(2) protected, if constructed of metal, from both corrosion of the primary tank interior and of the external surface of the outer shell; and

(3) provided with a built-in continuous leak detection system capable of detecting a release within 24 hours, or at the earliest practicable time, if the owner or operator can demonstrate to the commissioner, and the commissioner concludes, that the existing detection technology or site conditions would not allow detection of a release within 24 hours.

H. Ancillary equipment must be provided with secondary containment, such as trench, jacketing, or double walled piping, that meets the requirements of items B and C, except for:

(1) aboveground piping, exclusive of flanges, joints, valves, and other connections, that are visually inspected for leaks on a daily basis;

(2) welded flanges, welded joints, and welded connections, that are visually inspected for leaks on a daily basis;

(3) sealless or magnetic coupling pumps and sealless valves that are visually inspected for leaks on a daily basis; and

(4) pressurized aboveground piping systems with automatic shutoff devices, such as excess flow check valves, flow metering shutdown devices, and loss of pressure actuated shutoff devices, that are visually inspected for leaks on a daily basis.

Subp. 5. [Repealed, 20 SR 715]

Subp. 6. **General operating requirements.**

A. Hazardous wastes or treatment reagents must not be placed in a tank system if they could cause the tank, its ancillary equipment, or the containment system to rupture, leak, corrode, or otherwise fail.

B. The owner or operator must use appropriate controls and practices to prevent spills and overflows from tank or containment systems. These include:

(1) spill prevention controls such as check valves and dry disconnect couplings;

(2) overflow prevention controls such as level sensing devices, high level alarms, automatic feed cutoff, or bypass to a standby tank; and

(3) maintenance of sufficient freeboard in uncovered tanks to prevent overtopping by wave or wind action or by precipitation.

C. The owner or operator must comply with the requirements of subpart 8 if a leak or spill occurs in the tank system.

Subp. 7. MR 1987 [Renumbered 7045.0528, subpart 10]

Subp. 7. **Inspections.** The following requirements apply to inspections:

A. The owner or operator must develop and follow a schedule and procedure for inspecting overflow controls.

B. The owner or operator must inspect at least once each operating day:

(1) aboveground portions of the tank system, if any, to detect corrosion or releases of waste;

(2) data gathered from monitoring and leak detection equipment, such as pressure or temperature gauges and monitoring wells, to ensure that the tank system is being operated according to its design; and

(3) the construction materials and the area immediately surrounding the externally accessible portion of the tank system, including the secondary containment

system, such as dikes, to detect erosion or signs of releases of hazardous waste such as wet spots and dead vegetation.

C. The owner or operator must inspect cathodic protection systems, if present, according to the following schedule to ensure that they are functioning properly:

(1) the proper operation of the cathodic protection system must be confirmed within six months after initial installation and annually thereafter; and

(2) all sources of impressed current must be inspected and/or tested, as appropriate, at least bimonthly.

D. The owner or operator must document in the operating record of the facility an inspection of those items in items A to C.

Subp. 8. MR 1987 [Renumbered 7045.0528, subpart 11]

Subp. 8. **Response to leaks or spills and disposition of leaking or unfit for use tank systems.** The owner or operator of a tank system or secondary containment system from which there has been a leak or spill, or which is unfit for use, must satisfy the following requirements:

A. The owner or operator must immediately stop the flow of hazardous waste into the tank system or secondary containment system and inspect the system to determine the cause of the release.

B. Removal of waste from tank system or secondary containment system:

(1) If the release was from the tank system, the owner or operator must, within 24 hours after detection of the leak, or if the owner or operator demonstrates that it is not possible, at the earliest practicable time, remove as much of the waste as is necessary to prevent further release of hazardous waste to the environment and to allow inspection and repair of the tank system to be performed.

(2) If the material released was to a secondary containment system, all released materials must be removed within 24 hours or in as timely a manner as is possible to prevent harm to human health and the environment.

C. The owner or operator must immediately conduct a visual inspection of the release and, based upon that inspection:

(1) prevent further migration of the leak or spill to soils or surface water; and

(2) remove and properly manage any visible contamination of the soil or surface water.

D. Notification and reports.

(1) Any release to the environment must be reported immediately upon detection to the Minnesota duty officer at (651) 649-5451 or (800) 627-3529.

(2) Within 30 days of detection of a release to the environment, a report containing the following information must be submitted to the commissioner. The report must include the likely route of migration of the release; the characteristics of the surrounding soil, including soil composition, geology, hydrogeology, and climate; and the results of any monitoring or sampling conducted in connection with the release, if available. If sampling or monitoring data relating to the release are not available within 30 days, these data must be submitted to the commissioner as soon as they become available. The report must also address the proximity to downgradient drinking water, surface water, and populated areas and a description of response actions taken or planned.

(3) A leak or spill of hazardous waste that is less than or equal to a quantity of one pound and immediately contained and cleaned up is exempt from the requirements of subitem (2).

E. Provision of secondary containment, repair, or closure.

(1) Unless the owner or operator satisfies the requirements of subitems (2) to (4), the tank system must be closed in accordance with subpart 9.

(2) If the cause of the release was a spill that has not damaged the integrity of the system, the owner or operator may return the system to service as soon as the released waste is removed and repairs, if necessary, are made.

(3) If the cause of the release was a leak from the primary tank system into the secondary containment system, the system must be repaired before returning the tank system to service.

(4) If the source of the release was a leak to the environment from a component of a tank system without secondary containment, the owner or operator must provide the component of the system from which the leak occurred with secondary containment that satisfies the requirements of subparts 4 and 5 before it can be returned to service, unless the source of the leak is an aboveground portion of a tank system that can be inspected visually. If the source is an aboveground component that can be inspected visually, the component must be repaired and may be returned to service without secondary containment as long as the requirements of item F are satisfied. If a component is replaced to comply with the requirements of this subitem, that component must satisfy the requirements for new tank systems or components in subparts 3 to 5. Additionally, if a leak has occurred in any portion of a tank system component that is not readily accessible for visual inspection, such as the bottom of an inground or onground tank, the entire

component must be provided with secondary containment in accordance with subparts 4 and 5 before being returned to use.

F. If the owner or operator has repaired a tank system in accordance with item E and the repair has been extensive, such as installation of an internal liner or repair of a ruptured primary containment or secondary containment vessel, the tank system must not be returned to service unless the owner or operator has obtained a certification by an independent, qualified, registered professional engineer that the repaired system is capable of handling hazardous wastes without release. This certification must be submitted to the commissioner before returning the tank system to use and must include the statements in parts 7001.0070 and 7001.0540.

Subp. 9. MR 1987 [Repealed, 13 SR 259]

Subp. 9. **Closure and postclosure care.** The requirements for closure and postclosure care of tank systems are as follows:

A. At closure of a tank system, the owner or operator must remove or decontaminate all waste residues, contaminated containment system components, such as liners, contaminated soils, and structures and equipment contaminated with waste, and manage them as hazardous waste unless it can be demonstrated that they are not a hazardous waste. Metal tanks and tank system components that have been decontaminated in accordance with an approved closure plan prepared in accordance with part 7045.0486, subpart 3, or 7045.0594, subpart 3, must be considered scrap metal for purposes of part 7045.0125, subpart 4, and if recycled, are not subject to parts 7045.0205 to 7045.0685. The closure plan, closure activities, cost estimates for closure, and financial responsibility for tank systems must meet all of the requirements of parts 7045.0486 to 7045.0524.

B. If the owner or operator demonstrates that not all contaminated soils can be practicably removed or decontaminated as required in item A, then the owner or operator must close the tank system and perform postclosure care in accordance with the closure and postclosure care requirements of part 7045.0538, subpart 7. In addition, for the purposes of closure, postclosure, and financial responsibility, the tank system is then considered to be a landfill, and the owner or operator must meet all of the requirements of parts 7045.0486 to 7045.0524.

C. If an owner or operator has a tank system that does not have secondary containment that meets the requirements of subpart 4, items B to F, and has not been granted a petition under part 7045.0075, subpart 6 or 7, then:

(1) the closure plan for the tank system must include both a plan for complying with item A and a contingent plan for complying with item B;

(2) a contingent postclosure plan for complying with item B must be prepared and submitted as part of the permit application;

(3) the cost estimates calculated for closure and postclosure care must reflect the costs of complying with the contingent closure plan and the contingent postclosure plan, if those costs are greater than the costs of complying with the closure plan prepared for the expected closure under item A;

(4) financial assurance must be based on the cost estimates in subitem (3);  
and

(5) for the purposes of the contingent closure and postclosure plans, the tank system is considered to be a landfill, and the contingent plans must meet all of the closure, postclosure, and financial responsibility requirements of parts 7045.0486 to 7045.0524.

Subp. 10. **Special requirements for ignitable or reactive waste.** Ignitable or reactive waste must not be placed in a tank unless:

A. the waste is treated, rendered, or mixed before or immediately after placement in the tank so that the resulting waste, mixture, or dissolved material no longer meets the definition of ignitable or reactive waste under part 7045.0131, subparts 2 and 5, and compliance with part 7045.0456, subpart 2 is maintained;

B. the waste is stored or treated in such a way that it is protected from any materials or conditions which may cause the waste to ignite or react; or

C. the tank is used solely for emergencies.

The owner or operator of a facility that treats or stores ignitable or reactive waste in a tank shall comply with the requirements for the maintenance of protective distances between the waste management area and any public ways, streets, alleys, or an adjoining property line that can be built upon, as required in the buffer zone requirements for tanks contained in the Minnesota State Fire Code, chapter 7510. As required by part 7045.0458, the waste analysis plan must include analyses needed to comply with these special requirements for ignitable or reactive waste. Additional requirements for ignitable and reactive wastes are contained in part 7045.0456, subpart 1. Part 7045.0456, subpart 3 also requires waste analysis, trial tests, or other documentation to ensure compliance with part 7045.0456, subpart 2. As required by part 7045.0478, the owner or operator shall place the results of each waste analysis and trial test, and any documented information, in the operating record of the facility.

Subp. 11. **Special requirements for incompatible wastes.** Incompatible wastes or incompatible wastes and materials, must not be placed in the same tank, unless compliance with part 7045.0456, subpart 2 is maintained.

Hazardous waste must not be placed in a tank system that has not been decontaminated and which previously held an incompatible waste or material, unless compliance with part 7045.0456, subpart 2 is maintained. As required by part 7045.0458, the waste analysis plan must include analyses needed to comply with these special requirements for

incompatible wastes. Part 7045.0456, subpart 3 also requires waste analyses, trial tests, or other documentation to ensure compliance with part 7045.0456, subpart 2. As required by part 7045.0478, the owner or operator shall place the results of each waste analysis and trial test, and any documented information, in the operating record of the facility.

Subp. 12. **Air emission standards.** The owner or operator of a facility must manage all hazardous waste placed in a tank in accordance with parts 7045.0540, 7045.0549, and 7045.0551.

**Statutory Authority:** *MS s 116.07; 116.37*

**History:** *9 SR 115; 10 SR 1212; L 1987 c 186 s 15; 13 SR 259; 15 SR 1515; 18 SR 1751; 20 SR 715; 22 SR 2300; 32 SR 10; 33 SR 2042*

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