



# Aboveground Storage Tank (AST) System Audit Checklist

(for tanks installed on or before November 1, 1998)

Environmental Audits/General #1.61, August 2000

Minnesota Pollution Control Agency (MPCA) environmental audit checklists are designed to assist businesses by providing a low cost way of reviewing compliance with Minnesota's environmental laws and rules. Because the laws and rules are numerous and often complicated, this checklist cannot be a complete guide to your legal obligations. You may have obligations that are not covered on this checklist. If you have questions regarding this checklist, your obligations, or conditions you discover when you evaluate your business operations, please call the MPCA Tanks Hot Line at (651) 297-8367 or 1 (800) 657-3864.

This checklist is in accordance with Minnesota Rules, Chapter (Minn. R. Ch.) 7151. If this AST was moved from a site and installed on a second site, the AST must meet standards for ASTs installed *after* November 1, 1998. Please reference Minn. R. Ch. 7151 regarding requirements for ASTs installed after November 1, 1998.

In order to assist you, some of the terms used on this checklist are defined in the Appendix. Also included in the Appendix are the secondary containment standards for tanks installed after November 1, 1998 (Minn. R. Ch. 7151.5400). Because you are using this checklist, your tank was installed prior to this date, but certain requirements may apply to both new and older tanks.

*Complete each question, unless directed to do otherwise.*

## A. GENERAL INFORMATION

|                                   |   |  |  |
|-----------------------------------|---|--|--|
| Date Audit Completed:             |   | <i>(Complete this form for each tank.)</i> Tank _____ of _____ |  |
| Site Name:                        |   | MPCA Tank Site ID#:  |  |
| Site Address:                     |   |  |  |
| City:                             | MN  | Zip code:  |  |
| Contact Person:                   |   | Contact Phone #:   |  |
| Product stored in the tank:       |   |  |  |
| <input type="checkbox"/> Gasoline | <input type="checkbox"/> Diesel                         | <input type="checkbox"/> Used oil                              | <input type="checkbox"/> Kerosene        |
| <input type="checkbox"/> Fuel oil | <input type="checkbox"/> "Hazardous material", specify: |  | <input type="checkbox"/> Other, specify: |

## B. NOTIFICATION AND CHANGES IN STATUS

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|--|--|--|
| 1. Does this facility have <i>less than</i> one million gallons total capacity for all liquid storage tanks?                   | <input type="checkbox"/> Yes - A general permit is no longer required. AST Minn. R. Ch. 7151 replaces this requirement (Minn. R., Ch. 7100). | <input type="checkbox"/> No - <b>This facility must apply to the MPCA for an AST major facility permit according to Minn. R. Ch. 7001.0020. This checklist is not applicable for this facility.</b><br><i>Stop here.</i> |
| 2. Is this tank exempt from AST notification requirements? <i>(See the attached fact sheet General Requirements for ASTs.)</i> | <input type="checkbox"/> Yes - <b>This tank does not have to be registered.</b><br><i>Go to 5.</i>   | <input type="checkbox"/> No  |
| 3. Is this tank registered with the MPCA?  | <input type="checkbox"/> Yes   | <input type="checkbox"/> No - <b>Failure to register an AST.</b><br><i>Go to 5.</i>  |
| 4. Was this tank registered within 30 days of ownership, installation, or discovery of the tank?                               | <input type="checkbox"/> Yes   | <input type="checkbox"/> No - <b>Failure to register an AST within 30 days of installation or discovery.</b>   |



|  |  |  |
|--|--|--|
| 5. Is this tank exempt from Minnesota Rules, Chapter 7151? <i>(See the attached fact sheet General Requirements for ASTs.)</i> | <input type="checkbox"/> Yes - <b>This tank is exempt from MPCA AST rules.</b><br><i>Stop here, but answer 7, if applicable.</i> | <input type="checkbox"/> No  |
| 6. Is this tank active (contains more than 1 inch of product)?   | <input type="checkbox"/> Yes<br><i>Go to Section C.</i>  | <input type="checkbox"/> No  |
| 7. Has the MPCA been notified of the “out-of-service” status of this AST?  | <input type="checkbox"/> Yes   | <input type="checkbox"/> No - <b>Failure to notify the MPCA of a change in status of an AST.</b> |
| 8. Has this tank been “out of service” for less than 1 year?   | <input type="checkbox"/> Yes<br><i>Go to Section C, if not properly “out-of service” (see Section N).</i>                        | <input type="checkbox"/> No<br><i>Go to Section N.</i>   |

**C. AST REQUIREMENTS BASED ON THE TYPE AND SIZE OF THE TANK**

|   |
|---|
| <p>9. Indicate the type and size of AST, and then complete the sections and /or questions noted below.</p> <p><input type="checkbox"/> “Temporary tanks” that store product for <i>more than 30 days, but less than one year (complete questions 12 and 14, and sections F and K)</i></p> <p><input type="checkbox"/> Small tanks of <i>less than or equal to 1,100 gallons, but greater than 500 gallons in capacity and within 500 feet of a Class 2 Surface Water (complete sections D, E, F, and N)</i></p> <p><input type="checkbox"/> Tanks storing “other regulated substances” <i>(complete all sections, excluding sections G, H, I, questions 23, 24, and 40 - 46)</i></p> <p><input type="checkbox"/> Tanks storing “asphalt cement” <i>(complete all sections, excluding sections G, H, I, questions 23, 24, and 40 - 46)</i></p> <p><input type="checkbox"/> <i>Greater than 1,100 gallons in capacity (complete all sections)</i></p> |
|---|

**D. TANK AND PIPING STANDARDS**

|  |                              |   |
|--|------------------------------|---|
| 10. Have steps been taken to ensure that this AST system will not structurally fail or corrode?        | <input type="checkbox"/> Yes | <input type="checkbox"/> No – <b>Failure to ensure that existing AST systems will not structurally fail or corrode.</b> |
| 11. Was this tank designed and constructed for service as an AST (vs. as an underground storage tank)? | <input type="checkbox"/> Yes | <input type="checkbox"/> No – <b>Failure to use a tank designed and constructed for service as an AST.</b>              |

**E. LABELING**

|  |                              |   |
|--|------------------------------|---|
| 12. Is the AST clearly labeled with the substance stored, the tank’s capacity, and a unique tank number (if there is more than one tank on site)? <i>If this AST is defined as a temporary tank, is it clearly labeled with the words “Temporary Storage” and the date that storage began at the site?</i> | <input type="checkbox"/> Yes | <input type="checkbox"/> No – <b>Failure to properly label an AST.</b>    |
| 13. Are the lines labeled in a manner that clearly indicates which line is connected to which AST?   | <input type="checkbox"/> Yes | <input type="checkbox"/> No – <b>Failure to properly label AST lines.</b> |



|   |                              |   |  |
|---|------------------------------|---|--|
| 14. Is a facility sign which indicates the name, address and phone # of the owner, operator, or local emergency response posted in a conspicuous place and legible from outside any secondary containment area? | <input type="checkbox"/> Yes | <input type="checkbox"/> N.A., if there is a person on site 24 hours a day. | <input type="checkbox"/> No – <b>Failure to properly post an adequate facility sign.</b> |
|---|------------------------------|---|--|

**F. SECONDARY CONTAINMENT**

|   |  |                               |   |
|---|--|-------------------------------|---|
| 15. Does this AST have secondary containment?   | <input type="checkbox"/> Yes                     |                               | <input type="checkbox"/> No – <b>Failure to provide secondary containment.</b><br><i>Go to 23.</i>                                |
| 16. <i>If more than one type of substance is stored in the secondary containment area, are the substances compatible with each other?</i>   | <input type="checkbox"/> Yes                     | <input type="checkbox"/> N.A. | <input type="checkbox"/> No – <b>Failure to store compatible substances within the same secondary containment area.</b>           |
| 17. Does the secondary containment area have a continuous dike surrounding the ASTs that will prevent releases from contaminating surface waters?   | <input type="checkbox"/> Yes                     |                               | <input type="checkbox"/> No – <b>Failure to provide a continuous dike in the secondary containment area.</b><br><i>Go to 23.</i>  |
| 18. Is the volume of the secondary containment area able to contain at least 100% of the capacity of the largest AST plus displacement from additional ASTs within the containment area?<br><i>* If this tank is exposed to precipitation, it will require a total containment area capacity of 110% by November 1, 2003.</i> | <input type="checkbox"/> Yes*                    |                               | <input type="checkbox"/> No* – <b>Failure to provide secondary containment of adequate volume.</b>                                |
| 19. Is the secondary containment area constructed with materials that are: impermeable to and compatible with the substance being stored; and will prevent a release to the environment?<br><i>* This requirement must be met by November 1, 2003.</i>  | <input type="checkbox"/> Yes                     |                               | <input type="checkbox"/> No* – <b>Failure to provide secondary containment made of appropriate materials.</b><br><i>Go to 23.</i> |
| 20. Does the secondary containment area meet the requirement of Minnesota Rules 7151.5400, subpart (subp.) 3, B – I? ( <i>See Appendix.</i> )   | <input type="checkbox"/> Yes<br><i>Go to 23.</i> |                               | <input type="checkbox"/> No   |
| 21. <i>If the secondary containment is constructed of soils, is it used as an integral part of a geosynthetic clay liner or does it meet the required standard? (See the permeability rates table below.)</i><br><i>* This requirement must be met by November 1, 2003.</i>   | <input type="checkbox"/> Yes                     |                               | <input type="checkbox"/> No* – <b>Failure to provide adequate secondary containment.</b>  |
| 22. Has proper post-installation permeability testing been done on containment areas constructed of native soils, amended soils, or imported clay liners requiring a minimum permeability standard?<br><i>* This requirement must be met by November 1, 2003.</i>   | <input type="checkbox"/> Yes                     | <input type="checkbox"/> N.A. | <input type="checkbox"/> No* – <b>Failure to perform a containment area evaluation.</b>   |



|  |                               |   |   |
|--|-------------------------------|---|---|
| 23. If this AST was lifted or moved within a site after November 1, 1998, does this tank meet the leak detection design requirements for ASTs installed after November 1, 1998? (See Minn. Rules 7151.5400 subp. 4 in the Appendix.) | <input type="checkbox"/> Yes  | <input type="checkbox"/> N.A.<br>Go to Section G. | <input type="checkbox"/> No – <b>Failure to design and construct for the detection of a release of a stored substance the area of secondary containment which is directly under a tank.</b> |
| 24. Was this AST determined to be structurally sound through a thorough internal and external cleaning, degassing, and inspection or a leak test (tracer gas, vacuum, air pressure, or hydrostatic)?                                 | <input type="checkbox"/> Yes* |   | <input type="checkbox"/> No – <b>Failure to determine if the tank is structurally sound after moving it from one site to another.</b>   |

**Permeability Rates for Secondary Containment**

| Substance Classification | If groundwater or bedrock is <10 feet from grade or AST is within 100 feet of Class 2 surface water | If groundwater or bedrock is ≥10 feet from grade and AST is not within 100 feet of Class 2 surface water |
|--------------------------|---|--|
| <b>Type A</b>            | Minimum of 3 feet of soil at $1 \times 10^{-5}$ cm/sec  | Minimum of 3 feet of soil at $1 \times 10^{-4}$ cm/sec   |
| <b>Type B</b>            | Minimum of 3 feet of soil at $1 \times 10^{-4}$ cm/sec  | Minimum of 3 feet of soil at $1 \times 10^{-3}$ cm/sec   |
| <b>Type C</b>            | Minimum of 3 feet of soil at $1 \times 10^{-3}$ cm/sec  | No minimum permeability standard   |

**Type A substances** include gasoline, naphtha, denatured ethanol, hazardous materials, and mixtures or blends of these substances. (Antifreeze is considered a Type A substance.)

**Type B substances** include crude oil, diesel, kerosene, jet fuel, fuel oil types 1 through 4, waste oils, and mixtures or blends of these substances with Type C substances. (Virgin lube oil is considered Type B.)

**Type C substances** include asphalt cement, roofing flux, fuel oil types 5 and 6, and other regulated substances (any substance, including a food-based product intended for human or animal consumption, which is capable of polluting the waters of the state and is not a petroleum substance under standard temperature and pressure or a hazardous substance).

**Class 2 surface water** includes all waters of the state that are or may be used for fishing, fish culture, bathing, or any other recreational purpose, and for which quality control is or may be necessary to protect aquatic or terrestrial life, or the public health, safety, or welfare.

**G. SUBSTANCE TRANSFER AREAS**

|  |                              |                                |  |
|--|------------------------------|--------------------------------|--|
| 25. Are substance transfer areas provided with safeguards such as spill boxes, remote fill boxes, or containment areas?  | <input type="checkbox"/> Yes | <input type="checkbox"/> N.A.* | <input type="checkbox"/> No – <b>Failure to provide safeguards for substance transfer areas.</b> |
| * A substance transfer area is not required for: a tank that is filled with a hand-held nozzle; a transfer of the substance through a continuous pipeline between tanks at one site; or a barge transfer facility regulated by the U.S. Coast Guard. |                              |                                |  |

**H. CORROSION PROTECTION**

*The requirements of this section must be met by November 1, 2003.*

This section does not apply to tanks or tank systems within a secondary containment area that comply with the requirements of Minnesota Rules, Ch. 7151, part, 5400, subp. 1, 2, 3 (items B to I), and 4 regarding secondary containment for ASTs installed after November 1, 1998 (see Appendix).

|   |                              |   |
|---|------------------------------|---|
| 26. Is the AST system protected from corrosion?   | <input type="checkbox"/> Yes | <input type="checkbox"/> No – <b>Failure to provide corrosion protection for a steel AST system.</b>        |
| 27. Is the floor of the AST protected from external corrosion using one of the more of the methods* listed below?   | <input type="checkbox"/> Yes | <input type="checkbox"/> No – <b>Failure to protect the AST floor from external corrosion.</b>              |
| 28. Are existing steel lines protected from external corrosion by anodes or isolation from the soil?  | <input type="checkbox"/> Yes | <input type="checkbox"/> No – <b>Failure to protect the lines from external corrosion.</b>                  |
| 29. <i>If this tank or its piping is cathodically protected</i> , was the corrosion protection system designed by a corrosion expert in accordance with American Petroleum Institute (API) Standards 651 and 1632, as applicable? | <input type="checkbox"/> Yes | <input type="checkbox"/> N.A.   |
|   |                              | <input type="checkbox"/> No – <b>Failure to provide cathodic protection designed by a corrosion expert.</b> |

\* **Methods of protecting the AST floor from external corrosion:** (1) the tank is elevated so that the underside of the tank's floor is not in contact with any surface other than the supports; (2) the tank rests on a continuous concrete slab that is designed to prevent water from accumulating under the floor; (3) the tank is double-walled; (4) the tank has a double-bottom with a vacuum pulled on the interstitial space or an installed cathodic protection system; (5) the tank floor is cathodically protected and internally lined in accordance with API Standard 652; (6) the tank floor is cathodically protected, and internally inspected in accordance with API Standard 653 prior to November 1, 2003, and thereafter as indicated by the results of the inspection; or (7) prior to November 1, 2003, the tank floor is internally lined in accordance with API Standard 652 and internally inspected in accordance with API 653.

**I. OVERFILL PROTECTION**

*The requirements of this section must be met by November 1, 2003.*

Tanks or tank systems within a secondary containment area that is constructed to a  $1 \times 10^{-7}$  cm/sec permeability standard and meet the secondary containment requirements of Minnesota Rules, Ch. 7151, part, 5400 (see Appendix) or 7151.6400, subp. 1 to 4, are excluded from the requirements of this section.

|  |                              |  |
|--|------------------------------|--|
| 30. Is this tank filled by transfers of more than 55 gallons at one time?  | <input type="checkbox"/> Yes | <input type="checkbox"/> No – Overfill protection is not required.<br><i>Go to Section J.</i>    |
| 31. Does this tank have overfill protection* (see page 6)?   | <input type="checkbox"/> Yes | <input type="checkbox"/> No – <b>Failure to provide overfill protection.</b>                     |
| 32. <i>If you are using any level stick, sight glass, or gauge that does not read in volumetric measurements and requires conversion</i> , is a clearly labeled conversion chart indicating the maximum working capacity of the tank mounted on the tank or the tank's delivery manifold and visible to the person controlling the substance transfer? | <input type="checkbox"/> Yes | <input type="checkbox"/> N.A.  |
|  |                              | <input type="checkbox"/> No – <b>Failure to provide a conversion chart to prevent overfills.</b> |



\* **Overfill protection systems** include: (1) a high-level alarm, set at no greater than 95 percent of the tank's capacity, that is visible or audible to the person controlling the substance transfer; (2) a system that automatically shuts off the flow of substance into the tank, set at no greater than 95 percent of the tank's capacity; (3) a permanently mounted sight glass or gauge, visible to the person controlling the substance transfer, that accurately shows the level of substance in the tank; or (4) a person who manually gauges substance level with a stick during substance transfer and controls the substance transfer or is in contact with a person who controls the substance transfer. Double-walled tanks that are not otherwise located within an agency-approved secondary containment area must have either (1) or (2) from the list above.

**J. MONITORING**

|  |                              |   |
|--|------------------------------|---|
| 33. Is at least one person present during substance loading or unloading of an AST to visually monitor and terminate the transfer?   | <input type="checkbox"/> Yes | <input type="checkbox"/> No – <b>Failure to properly monitor transfers of substance.</b>  |
| 34. Is weekly* visual monitoring conducted to verify that no releases have occurred?<br><br><i>* If the AST does not meet the secondary containment criteria indicated by MN Rules, Ch. 7151, part 5400 (see Appendix), then release detection monitoring must be performed at least every 72 hours.<br/>Weekly visual monitoring of the containment area around a double-walled tank is not required.</i>   | <input type="checkbox"/> Yes | <input type="checkbox"/> N.A. for double-walled ASTs.<br><input type="checkbox"/> No – <b>Failure to conduct weekly visual monitoring.</b>  |
| 35. Is monthly monitoring conducted to identify defects in the secondary containment and substance transfer areas, and to visually detect problems with equipment, maintenance, or operating practices?  | <input type="checkbox"/> Yes | <input type="checkbox"/> No – <b>Failure to conduct monthly monitoring of the secondary containment and substance transfer area, and of the equipment, maintenance, or operating practices.</b> |
| 36. Is leak detection* being conducted at least monthly?<br><br><i>* If the AST meets the secondary containment criteria indicated by MN Rules, Ch. 7151, part 5400, subp. 4 (see Appendix), then leak detection must be conducted as follows: (1) visual monitoring of: elevated tanks; tanks on continuous concrete slabs for Type B and Type C substances; tanks on a continuous concrete slab treated with a material that is impermeable to the substance being stored for Type A substances; tanks on containment constructed of fabricated steel or fiberglass; (2) interstitial monitoring between the tank's inner and outer shell or the tank's shell and the containment area; or (3) vapor monitoring in the soil directly under the tank bottom or the perimeter and above the water table.<br/>If the AST <u>does not</u> meet the secondary containment criteria indicated by MN Rules, Ch. 7151, part 5400, subp. 4 (see Appendix), then leak detection must be conducted using one or more of the following: (1) monthly reconciliation of substance measurements taken pursuant to the interval established in question 33 (either weekly or every 72 hours), with dispenser meter readings, shipments, deliveries, and internal transfers; any difference of 2.0 percent or more of monthly throughput shall be investigated and resolved; or (2) statistical inventory reconciliation as approved by the MPCA.</i> | <input type="checkbox"/> Yes | <input type="checkbox"/> No – <b>Failure to conduct leak detection monitoring at least monthly.</b>   |
| 37. Is leak detection* being conducted on the underground lines annually?<br><br><i>* Methods of line leak detection include: (1) tracer gas; (2) hydrostatic; (3) lockdown pressure; (4) double-walled piping with a sump sensor connected to an audible alarm; or (5) other MPCA approved alternative methods.</i>   | <input type="checkbox"/> Yes | <input type="checkbox"/> N.A.<br><input type="checkbox"/> No – <b>Failure to conduct leak detection monitoring on underground lines at least monthly.</b>                                       |
| 38. Is all equipment that is used for release detection, monitoring, or warning checked for proper function and/or calibrated at least annually or according to manufacturer's specifications?   | <input type="checkbox"/> Yes | <input type="checkbox"/> No – <b>Failure to check equipment at least annually or in accordance with manufacturer's specifications.</b>  |



|  |  |  |  |
|--|--|--|--|
| 39. <i>If this tank is a field-erected steel tank, has it been externally inspected by a certified tank inspector in accordance with API standard 653?</i> | <input type="checkbox"/> Yes                     | <input type="checkbox"/> N.A.                            | <input type="checkbox"/> No* – <b>Failure to conduct an external inspection of a field-erected steel tank.</b>                             |
| <i>* This inspection must be conducted by November 1, 2003.</i>  |  |  |  |
| 40. <i>If this tank is a field-erected steel tank, has it been internally inspected by a certified tank inspector in accordance with API standard 653?</i> | <input type="checkbox"/> Yes                     | <input type="checkbox"/> N.A.                            | <input type="checkbox"/> No* – <b>Failure to conduct an internal inspection of a field-erected steel tank.</b>                             |
| <i>* This inspection must be conducted by November 1, 2008.</i>  |  |  |  |
| 41. <i>If this tank is protected by anodes, was it tested for corrosion protection within 6 months of installation?</i>                                    | <input type="checkbox"/> Yes                     | <input type="checkbox"/> N.A.                            | <input type="checkbox"/> No - <b>Failure to test the corrosion protection system of the tank within 6 months of installation.</b>          |
| 42. <i>If the tank is protected by anodes and was installed at least 3 years ago, has it been tested for corrosion protection every 3 years?</i>           | <input type="checkbox"/> Yes<br><i>Go to 45.</i> | <input type="checkbox"/> N.A.                            | <input type="checkbox"/> No - <b>Failure to test the corrosion protection system of the tank every 3 years.</b>                            |
| 43. <i>If impressed current protects the tank, has it been tested for function every 60 days?</i>  | <input type="checkbox"/> Yes                     | <input type="checkbox"/> N.A.                            | <input type="checkbox"/> No - <b>Failure to test the impressed current system for function every 60 days.</b>                              |
| 44. <i>If this is a lined tank without external cathodic protection, has it been internally inspected every 10 years?</i>                                  | <input type="checkbox"/> Yes                     | <input type="checkbox"/> N.A.                            | <input type="checkbox"/> No - <b>Failure to internally inspect a lined tank every 10 years.</b>  |
| 45. <i>If monitoring has indicated inadequate corrosion protection, were corrective actions taken?</i>   | <input type="checkbox"/> Yes                     | <input type="checkbox"/> N.A.<br><i>Go to Section K.</i> | <input type="checkbox"/> No - <b>Failure to take corrective actions for inadequate corrosion protection. Go to Section K.</b>              |
| 46. <i>Were these corrective actions taken within 180 days of discovery of the inadequate corrosion protection?</i>  | <input type="checkbox"/> Yes                     |  | <input type="checkbox"/> No - <b>Failure to take corrective measures for inadequate corrosion protection within 180 days of discovery.</b> |

**K. MAINTENANCE**

|   |                              |                               |   |
|---|------------------------------|-------------------------------|---|
| 47. <i>If this is a metal tank, have measures been taken to minimize the rust on the exterior of the tank to protect the integrity of the tank system (e.g. periodic painting)?</i> | <input type="checkbox"/> Yes | <input type="checkbox"/> N.A. | <input type="checkbox"/> No - <b>Failure to take measures to minimize the rust on a metal tank.</b>                             |
| 48. <i>Has any water that has been drawn from the bottom of the tank been disposed of according to applicable state and federal laws?</i>   | <input type="checkbox"/> Yes | <input type="checkbox"/> N.A. | <input type="checkbox"/> No - <b>Failure to properly dispose of any water that has been drawn from the bottom of the tank.</b>  |
| 49. <i>Are the secondary containment and substance transfer areas maintained free of cracks, open seams, open drains, siphons, and vegetation other than grass?</i>                 | <input type="checkbox"/> Yes |                               | <input type="checkbox"/> No - <b>Failure to properly maintain secondary containment and/or substance transfer areas.</b>        |
| 50. <i>Is precipitation removed as often as practical to ensure proper containment volume?</i>  | <input type="checkbox"/> Yes |                               | <input type="checkbox"/> No - <b>Failure to remove precipitation as often as practical to ensure proper containment volume.</b> |



|   |                              |                               |  |
|---|------------------------------|-------------------------------|--|
| 51. If precipitation reduces the volume of the containment basin below 100 percent, has the storage volume within the tank or tank system been reduced to accommodate the decreased secondary containment volume? | <input type="checkbox"/> Yes | <input type="checkbox"/> N.A. | <input type="checkbox"/> No – Failure to reduce the storage volume in instances where the containment volume has been reduced by precipitation.                        |
| 52. If storm water collects within the secondary containment or substance transfer area, has it been discharged according to applicable state and federal laws?   | <input type="checkbox"/> Yes | <input type="checkbox"/> N.A. | <input type="checkbox"/> No – Failure to discharge storm water from a secondary containment or substance transfer area according to applicable state and federal laws. |
| 53. Are safeguard systems installed and maintained according to applicable manufacturer’s schedules and applicable standards?   | <input type="checkbox"/> Yes |                               | <input type="checkbox"/> No – Failure to install and maintain safeguard system.  |

**L. RECORDS**

|  |                              |                               |   |
|--|------------------------------|-------------------------------|---|
| 54. Are maintenance and repair records, 3 <sup>rd</sup> -party certifications of equipment, and as-built drawings maintained?<br><br><i>Records available as of November 1, 1998 must be kept for the life of the tank system.</i>   | <input type="checkbox"/> Yes |                               | <input type="checkbox"/> No – Failure to maintain maintenance and repair records, 3 <sup>rd</sup> party certifications of equipment, and as-built drawings. |
| 55. Are service check and equipment calibration records maintained?<br><br><i>These records must be kept for three years.</i>  | <input type="checkbox"/> Yes |                               | <input type="checkbox"/> No – Failure to maintain service check and calibration records.  |
| 56. Are records of all sampling and testing methods used to evaluate permeability of soil containment areas maintained? <i>These must include: classification of soils used in containment area construction, soil descriptions and logs of each sample location, a table of individual permeability tests, and hydraulic conductivity of the soil expressed as cm/sec for each sample location and for each containment area.</i><br><br><i>These records must be kept for the life of the tank system.</i> | <input type="checkbox"/> Yes | <input type="checkbox"/> N.A. | <input type="checkbox"/> No – Failure to maintain records of all sampling and testing methods used to evaluate permeability of soil containment areas.      |
| 57. Are periodic monitoring records maintained? <i>These must include: the name of the person doing the monitoring, the method(s) used, the date, and the results of the monitoring.</i><br><br><i>These records must be kept for three years.</i>   | <input type="checkbox"/> Yes |                               | <input type="checkbox"/> No – Failure to maintain monitoring records.   |
| 58. Are records and written summaries of corrosion protection and internal tank inspections maintained?<br><br><i>These records must be kept for the life of the tank system.</i>  | <input type="checkbox"/> Yes |                               | <input type="checkbox"/> No – Failure to maintain corrosion protection and internal tank inspection records.  |



|  |                              |                               |   |
|--|------------------------------|-------------------------------|---|
| 59. <i>If the tank has been taken out of service, are records demonstrating compliance with out-of-service tank requirements (see Section N) maintained?</i> | <input type="checkbox"/> Yes | <input type="checkbox"/> N.A. | <input type="checkbox"/> No – <b>Failure to maintain records demonstrating compliance with out-of-service tank requirements..</b> |
| <i>These records must be kept for three years after the date the tank was taken out of service.</i>  |                              |                               |   |
| 60. <i>For field-erected tanks, are records of all internal and external tank inspections maintained?</i>  | <input type="checkbox"/> Yes | <input type="checkbox"/> N.A. | <input type="checkbox"/> No – <b>Failure to maintain internal and external tank inspection records.</b>                           |
| <i>These records must be kept for the life of the tank system.</i>   |                              |                               |   |

**M. RELEASES AND DISCHARGES TO A SECONDARY CONTAINMENT AREA**

|   |                              |  |   |
|---|------------------------------|--|---|
| 61. <i>If there was a suspected release or confirmed discharge to a secondary containment area, was an investigation done immediately?</i>  | <input type="checkbox"/> Yes | <input type="checkbox"/> N.A.<br><i>Stop here.</i> | <input type="checkbox"/> No – <b>Failure to immediately investigate a suspected release or discharge to a secondary containment area.</b>               |
| 62. Was the suspected release or confirmed discharge to the secondary containment area reported to the Minnesota State Duty Officer*?   | <input type="checkbox"/> Yes |  | <input type="checkbox"/> No – <b>Failure to report a suspected release or confirmed discharge to a secondary containment area to the MPCA*.</b>         |
| <i>* Releases and suspected releases should be reported immediately to the Minnesota State Duty Officer at 651/649-5451 or 800/422-0798. These reports are forwarded to the MPCA.</i> |                              |  |   |
| 63. Following the release, was an assessment for any damage to the secondary containment and necessary repair done?   | <input type="checkbox"/> Yes |  | <input type="checkbox"/> No – <b>Failure to assess the secondary containment area for damage and perform any necessary repair, following a release.</b> |

**N. WITHDRAWAL FROM SERVICE OF ASTS**

|   |                              |                               |   |
|---|------------------------------|-------------------------------|---|
| 64. <i>If substance has not been introduced to or removed from an AST for one year or more, have the operation and maintenance requirements been maintained or has the tank been declared inactive and taken out of service or removed?</i> | <input type="checkbox"/> Yes | <input type="checkbox"/> N.A. | <input type="checkbox"/> No – <b>Failure to maintain the operation and maintenance requirements or declare the tank inactive and have it taken out of service or removed, if substance has not been introduced to or removed from this tank for one year or more.</b> |
|---|------------------------------|-------------------------------|---|

*Go to the next page.*



|  |                              |                               |  |
|--|------------------------------|-------------------------------|--|
| <p>65. <i>If the tank has been taken out of service, was it done properly? The following must be done: remove all substance from the tank, connected piping, and appurtenances; secure the tank to prevent unauthorized entrance or tampering; thoroughly clean the interior of the tank and all associated piping of all sludge, solids, and residuals; dispose of tank bottom sludges in accordance with applicable state or federal requirements; render the tank sufficiently free of vapors to avoid formation of an explosive atmosphere and vent the tank; and clearly label the exterior of the out-of-service tank with the words "Out of Service," and the date the the tank was taken out of service.</i></p> | <input type="checkbox"/> Yes | <input type="checkbox"/> N.A. | <input type="checkbox"/> No – <b>Failure to properly take a tank out of service.</b> |
|--|------------------------------|-------------------------------|--|

**Thank you for completing the MPCA’s AST System Audit Checklist  
(for ASTs installed on or before November 1, 1998).**

**For further assistance, call:**

- **the MPCA Tanks Hot Line at (651) 297-8367;**
- **the MPCA at 1 (800) 657-3864, and ask to speak to a storage tank inspector in your region; or**
- **the Small Business Assistance Program at (651) 282-6143 or 1 (800) 657-3938 (for businesses with 100 or fewer employees).**

**Questions regarding the audit process should be directed to Edwin Balcos at (651) 297-8661.**

**A number of fact sheets are available upon request, or go to the MPCA’s AST web site  
(<http://www.pca.state.mn.us/cleanup/ast.html>).**



## APPENDIX

### Glossary

Asphalt cement – a mixture of bituminous obtained from native deposits or as a petroleum by-product used for roofing or paving that is in a solid state at 100 degrees Fahrenheit or less.

Field-erected tank – an AST that is constructed by final assembly on site at a facility.

Hazardous material – any substance listed as a hazardous material or hazardous substance in the Code of Federal Regulations, title 49, section 172.101.

Other regulated substance – any substance, including a food-based product intended for human or animal consumption, which may cause pollution of waters of the state and is not:

- A. a petroleum substance under standard temperature and pressure; or
- B. a hazardous material.

Temporary tank – an AST that is located at a facility for more than 30 days, but less than a year.

Out-of-service tank – an AST with no activity for a year or more.

### Minnesota Rules Chapter 7151.5400 SECONDARY CONTAINMENT.

Subpart (Subp.) 1. **Requirement.** All tanks regulated by this chapter must have secondary containment. If tanks containing more than one type of substance are stored within one secondary containment area, the substances must be compatible with each other.

Subp. 2 **Volume.** A secondary containment area must be able to contain at least 100 percent of the design capacity of the largest tank in the secondary containment area plus displacement from additional tanks within the containment area, with an additional ten percent capacity where secondary containment areas are exposed to precipitation.

Subp. 3. **Materials.** A secondary containment area must be constructed with materials that are impermeable to and compatible with the substance being stored and that will prevent a release to the environment. Materials for secondary containment include:

- A. compacted clay as defined in subp. 5;
- B. geosynthetic clay liner;
- C. concrete for Type B and Type C substances. Concrete for Type A substances must be treated with a material that is impermeable to the substance being stored;
- D. synthetic membrane;
- E. the outer shell of a double-walled tank;
- F. the lower bottom of a double-bottomed tank;
- G. fabricated steel;
- H. fiberglass; or
- I. any other approved material having an impermeability equivalent to the stored substance's primary container, pursuant to the alternative design or operating practice procedure of part 7151.9400.



Owners and operators shall install and maintain secondary containment areas constructed of synthetic or manufactured materials according to the manufacturer's recommendations.

Subp. 4. **Design.** The area of secondary containment which is directly under a tank must be designed and constructed to provide for the detection of a release of a substance. Methods of leak detection are as follows:

- A. visual monitoring of:
  - (1) elevated tanks;
  - (2) tanks on continuous concrete slabs for Type B and Type C substances;
  - (3) tanks on a continuous concrete slab treated with a material that is impermeable to the substance being stored for Type A substances;
  - (4) tanks on containment constructed of fabricated steel; or
  - (5) tanks on containment constructed of fiberglass;
- B. interstitial monitoring between the tank's inner and outer shell or the tank's shell and the containment area; or
- C. vapor monitoring in the soil directly under the tank bottom or perimeter and above the water table.

Subp. 5. **Clay.** A secondary containment area constructed of clay must:

- A. be used as an integral part of a geosynthetic clay liner; or
- B. meet the following standards:
  - (1) consist of a minimum of 12 inches of compacted imported clay or native clay soil;
  - (2) be protected with cover material to prevent drying and erosion;
  - (3) be designed, inspected, and certified by a registered professional engineer to prevent a release from the primary tank from extending outside the containment; and
  - (4) show, through post-installation testing, that the compacted clay has a permeability rate to water equal to or less than  $1 \times 10^{-7}$  centimeters per second.