STORAGE OF LIQUID MATERIALS COMMERCIAL/INDUSTRIAL/INSTITUTIONAL & MUNICIPAL POLLUTION PREVENTION

Goal: Prevent or reduce the discharge of pollutants to stormwater from the outdoor storage of liquid materials in above ground tanks or portable containers

APPLICABLE OPERATIONS AND ACTIVITIES

Any facility or site with outdoor storage of liquids in either above-ground storage tanks or storage containers such as drums, barrels, jugs or cans. These liquids may be raw materials, intermediate products, final products, waste materials or fuel. *NOTE: These pollution prevention and control measures are not intended for underground tanks which have separate regulations.*

POLLUTION CONTROL APPROACH

Store and contain liquid materials in such a manner to prevent the discharge, flow or washoff to the stormwater drainage system, surface waters or groundwater

KEY POLLUTION PREVENTION AND CONTROL MEASURES

- Provide secondary containment for liquid storage areas
- Cover outdoor storage areas where feasible
- Ensure that all outdoor liquid storage containers have tightfitting lids and proper labels
- Keep container lids closed at all times
- Store containers off the ground using a spill containment pallet or within a secondary containment area

TARGETED POLLUTANTS

- ☐ **Sediment**
- ☒ **Nutrients**
- ☐ **Bacteria**
- ☒ **Organic Matter**
- ☒ **Oil & Grease**
- ☒ **Heavy Metals**
- ☒ **Toxic Chemicals**
- ☒ **Abnormal pH**
- ☐ **Trash & Debris**
- ☒ **Other:** All liquid materials and chemicals

Overview

Outdoor storage of liquid materials in above-ground tanks or portable containers such as drums and barrels presents the potential for accidental release and contamination of stormwater with a wide variety of pollutants. Liquids may be raw materials, intermediate products, final products, waste materials or fuel. Some of the more common liquids stored outdoors include petroleum products (gasoline, kerosene, diesel fuel, oil, etc), solvents, antifreeze, and other materials and chemicals used in industrial and commercial processes.

Liquid materials spilled, leaked or lost from tanks and storage containers can accumulate on surrounding surfaces or soils where they may come into contact with rain and stormwater runoff, or in large enough amounts, flow directly to the stormwater drainage system, surface waters, or groundwater.

Pollution Prevention and Control Measures

For above-ground liquid storage tanks:

- All liquid storage tanks should be placed in a designated paved area with a secondary containment system, such as curbing, berms, dikes, liner, vault, or double-walled tank such that contents will not discharge, flow or be washed into the stormwater drainage system, surface waters or groundwater if the tank leaks or ruptures.
- Employ safeguards against accidental releases including:
    - Overflow protection devices, to either automatically shut down pumps and lines, or with alarms to alert the operator
    - Shut off valve at the tank (ideally an automatic shear valve with the shut-off located inside the tank)
    - Manual release valves should be kept locked in the closed position
    - Clear labeling of tanks and valves to reduce human error
- Provide barriers such as posts or guardrails around tanks and piping to prevent collision damage from a vehicle or equipment.
- Visually inspect new tank installations for loose fittings, poor welding and improper or poorly fitted gaskets.
- Secure and restrict access to tank storage areas to prevent vandalism-caused contamination.

For portable liquid storage containers:

- All storage containers (new or secondary) should have tight fitting lids and be properly labeled with the contents, and any possible hazards [see Section B4 (Hazardous Materials/Waste Management) for more information].
- Wherever possible, store liquid containers indoors or use storage sheds.
- Where feasible, outdoor storage areas should be paved and covered with a roof, and utilize a
- berm or secondary containment system to prevent contact with rain and stormwater runoff as shown in Figure A2-1.
- Raise storage containers off the ground by use of pallets or similar method, with provisions for spill control.

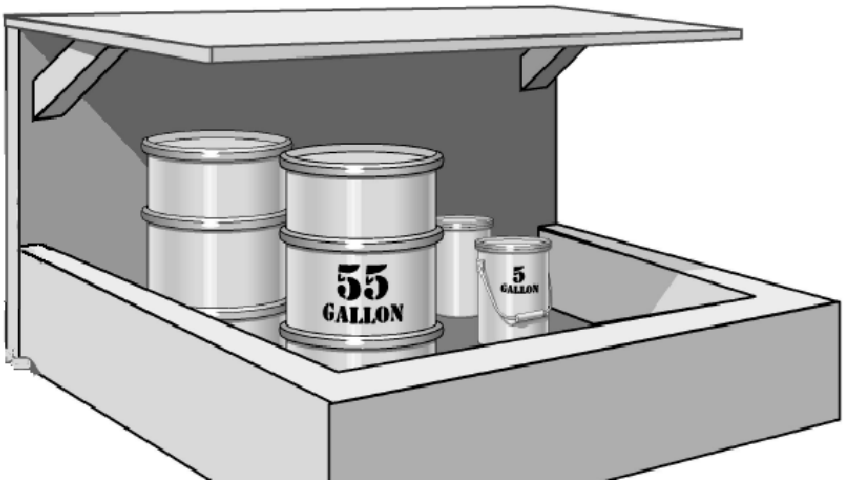

Figure A2-1 Example of Outdoor Storage with Roof and Secondary Containment

- Place drip pans or absorbent materials beneath all container taps, and at all potential drip and spill locations during filling and unloading of containers.
- If liquid chemicals are corrosive, use containers made of compatible materials.
- Secure and restrict access to liquid container storage areas to prevent vandalism-caused contamination.

Storage Area Design Features

- Designated areas for liquid tanks, liquid storage containers, and dumpsters should be paved with Portland cement concrete, free of cracks and gaps, and impervious in order to contain leaks and spills. Special coatings may be required for some liquid materials.
- Install alarms and/or pump shutoff systems.
- Secondary containment should be sized, at a minimum, to contain 10% of the volume of all tanks or containers, or 110% of the volume of the largest tank or container, whichever is greater.
- The storage area should be designed to prevent the release of spilled liquids or contaminated stormwater runoff by sloping to a drain connected to a dead-end sump or sanitary sewer. A dead-end sump is an underground storage container which does not discharge to the stormwater drainage system.
- Some local governments require that secondary containment areas, regardless of size, be connected to the sanitary sewer and/or require pretreatment. Contact the local wastewater provider for more information.
- If the liquid being stored is oil, gas or other material that separates from and floats on water, install a spill control device (such as an oil/water separator) in catch basins that collect stormwater runoff from the storage area.
- Ensure that all stormwater from the site is treated by an appropriate structural or non-structural stormwater control. Stormwater controls that provide water quality treatment for the contaminant(s) in question may be found in *Volume 2, Technical Handbook*.

Additional Considerations

- All specific standards set by Federal and Georgia laws concerning the storage of oil and hazardous materials must be met, including:
    - Spill Prevention Control and Countermeasure (SPCC) Plan
    - Secondary containment
    - Integrity and leak detection monitoring
    - Emergency preparedness plans
- Storage of reactive, ignitable or flammable liquids should comply with the Uniform Fire Code and the National Electric Code, and any local requirements.
- Local fire regulations should be consulted on the clearance of roof covers over flammable materials.
- Follow appropriate practices and protocols for the loading, filling and/or unloading of liquid materials. See Section B1 (Loading/Unloading Operations) for more details.

Inspection and Preventive Maintenance Requirements

Table A2-1
Typical Inspection and Preventive Maintenance Activities for Above-Ground Liquid Storage Tanks

Activity	**Schedule**
Inspect storage areas, tanks, and secondary containment areas for leaks and spills	Daily
Conduct routine inspections and check tanks, foundations, connections, valves and piping system/hoses for corrosion, structural failure, leaks, cracks, and overfills.	Weekly
Check for leaks or spills during pumping of liquids to or from a storage facility	Ongoing
Have periodic integrity testing conducted by a qualified professional	Annually or as recommended
Replace tanks that are leaking, corroded, or otherwise deteriorating	As needed
Tank storage areas should be swept and cleaned when needed and leaked/spilled materials should be collected and disposed of properly. Do not hose down paved areas.	As needed (frequently/seasonally)
Inspect berms, curbing, and secondary containment systems.	Perform repairs as needed. Weekly
Inspect spill control devices regularly to remove separated floatable liquids.	After storm events, or as required by manufacturer guidelines or a maintenance agreement

Table A2-2
Typical Inspection and Preventive Maintenance Activities for Portable Liquid Storage Containers

Activity	**Schedule**
Inspect storage areas and check material containers and dumpsters for leaks, spills and external corrosion and structural failure.	Daily
Replace containers that are leaking, corroded, or otherwise deteriorating.	As needed
Storage areas should be swept and cleaned when needed and leaked/spilled materials should be collected and disposed of properly. Do not hose down paved areas.	As needed (frequently/seasonally)
Inspect berms, curbing, and secondary containment systems.	Perform repairs as needed. Weekly

Spill Prevention and Response

- For applicable facilities storing liquid petroleum and related materials, a Spill Prevention Control and Countermeasure (SPCC) Plan must be developed and kept up-to-date. Regulatory requirements and sample SPCC Plans can be found at *www.epa.gov/oilspill*
- Develop Standard Operating Procedures (SOPs) for spill prevention and clean up (see Section 2.1.5).
- Have an emergency plan, equipment and trained personnel ready at all times to deal immediately with major spills.
- Store and maintain appropriate spill cleanup materials on site in a location near the liquid tank or container storage area(s).

Considerations for Local Government-Owned or Operated Facilities and Operations

- The following local government functions and departments often undertake operations and activities that involve outdoor liquid materials storage:
  - Public works
  - Transportation (streets & highways)
  - Water and wastewater utilities
  - Facilities management

Local government entities that store liquid materials outdoors should adopt these pollution prevention and control measures, and develop appropriate Standard Operating Procedures (SOPs) for implementing them.

Considerations for Industrial NPDES (Georgia IGP) Stormwater Pollution Prevention Plans (SWPPPs)

- Applicable industrial activity sectors with coverage under the Georgia IGP that often involve outdoor liquid materials storage include, but are not limited to:

  Sector C: Chemical and Allied Products
  Sector I: Oil and Gas Extraction
  Sector M: Automobile Salvage Yards
  Sector N: Scrap Recycling Facilities
  Sector P: Land Transportation and Warehousing
  Sector Q: Water Transportation Maintenance/Cleaning
  Sector S: Air Transportation Facilities
  Sector U: Food and Kindred Products
  Please see Appendix B for the SIC codes that correspond to each industrial activity sector
- The SWPPP Team leader is responsible for ensuring containment area valves are locked and for inspection of accumulated storm water prior to release.

Specific State Regulations and Requirements

- Georgia Oil or Hazardous Materials Spills or Releases Act (O.C.G.A. 12-14-1)
- Construction, design, and installation of Aboveground Storage Tanks (ASTs): O.C.G.A. 25-2-16 and Rules and Regulations of the State of Georgia (GRR) 120-3-11