

**ENGINEERING OPERATIONS**

Engineering operations include any work done to maintain fully operational railroad track and facilities. The following engineering operations activities that are subject to environmental regulations are discussed in this section:

- Aboveground Storage Tanks
- Air Conditioner/Refrigerator Service and Disposal: CFCs (Chlorofluorocarbons)
- Ballast Replacement, Storage, Disposal
- Building Renovation/Demolition: Asbestos Concerns
- Construction and Facility Maintenance
- Crosstie Replacement and Disposal
- Facility Power Generation/Incineration
- Herbicide Use—Maintenance of Way
- Landfills/Dumps
- Land Issues: Buying and Leasing Property
- Trackage Lubricators
- Transformers and Other Electrical Equipment Containing Insulating Fluids: PCBs
- Underground Storage Tanks
- Wastewater Treatment Systems and Oil-Water Separators
- Underground Injection Control
- Yard Maintenance/Dust Control

# ENGINEERING

## Aboveground Storage Tanks

### **Major compliance issues: Clean Water Act, Storm water runoff**

Aboveground storage tanks (ASTs) are tanks on or above the ground surface. If the underground capacity of the tank plus the capacity of any underground piping exceed 10 percent of the tank's capacity, then the entire tank and piping system is categorized as an *underground* storage tank (See Chapter III - Underground Storage Tanks). ASTs need to be managed properly to reduce spill and leak risks. Spills and leaks of tank contents can cause environmental damage, environmental liabilities, financial loss, and operational disruptions.

### **What to do:**

Certain states now require registration of ASTs and payment of annual fees. Certain states have AST regulations. Storm water regulations also apply to activities associated with aboveground storage tanks.

---

### **Tanks should be included in a program of regular inspection and maintenance:**

- ✓ Inspect aboveground storage tanks, connected piping, and associated pump equipment to guard against possible spills, leaks, or equipment failure.
  - ✓ All tanks should be labeled to identify tank contents.
  - ✓ Adequate secondary containment is vital to preventing spilled material from getting into water systems. Adequate containment includes dikes designed to contain the entire tank volume, plus 10 percent or one foot of additional freeboard of the tanks they surround.
  - ✓ Dikes and tank farm floors should be constructed of an impermeable material such as concrete, membrane liner, or densely packed clay to prevent spilled liquids from leaching into the soil and entering the groundwater.
  - ✓ Underground piping should be pressure tested periodically.
-

---

✓**Case Example:** At one short line facility, a variety of diking systems were installed to prevent fuel storage area storm water runoff from reaching waterways and storm drains. Fuel tanks were diked to prevent storm water runoff and provide spill containment. Under the storm water plans required at this facility, collected rainwater was examined for oil contamination before release. Any identified contamination was treated before releasing storm water to storm drains.

---

### **SPCC Plan Requirements**

Facilities are required under the Clean Water Act to develop Spill Prevention Control and Countermeasure (SPCC) plans if the facility has one aboveground storage tank of at least 660 gallons capacity, two or more aboveground vessel totaling more than 1,320 gallons capacity, or one underground storage of 42,000 gallons *or more* of capacity used for storage of petroleum products or other regulated substances. Plans are specific for each facility location and spell out in detail storage tank location, volumes, contents of each tank, types of secondary containment, and emergency procedures to be followed in case of spill emergency. Some key components of an SPCC are:

- SPCC plan placement for ready identification and use in the event of an emergency (See Section III: Clean Water Act).
- Frequent inspections of fuel storage and handling facilities.
- Visual inspection of tanks, hoses, pumps, and nozzles, prior to using the fueling facility.
- Fueling monitoring at all times.
- Containment to prevent spills from entering any surface water or groundwater. Containment is either a concrete or earthen dike and must be able to hold a volume equal to the largest single tank within the area, with allowance for snow and rainwater.
- Employee training.

SPCC plans are important enough to require review and certification by a registered professional engineer on a periodic basis. *SPCC plans must be revised at least once every three years and must be kept on file.*

#### **For more information:**

See Chapter III: Clean Water Act

## Air Conditioner/Refrigerator Service and Disposal: CFCs (Chlorofluorocarbons)

### **Major compliance issues: Clean Air Act**

Motor vehicle air conditioners, certain appliances (air conditioners, refrigerators, freezers), industrial process refrigeration units, and certain aerosol products and pressurized dispensers may contain chlorofluorocarbons, also called CFCs (e.g., freon), and other class I and class II substances as refrigerants or propellants. These chemicals have been banned from manufacturing and use in *new* refrigeration units due to their negative affects on the ozone layer, the atmospheric layer that filters out the harmful solar radiation. Scientists anticipate that ozone layer depletion will cause an overall increase in the incidence of skin cancers, eye damage, crop damage, and potentially cause global warming. After July 1, 1992, it became unlawful for any person maintaining, servicing, repairing, or disposing of any appliance or industrial process refrigeration unit to willfully vent, release, or dispose of any ozone depleting substances into the environment. Check with state and local authorities to determine if exceptions apply to fire suppression systems and warning horns that may be used by track crews. The Clean Air Act calls for an end to the manufacture and use of these chemicals by the end of the century.

### **What to do:**

Servicing of air conditioners and refrigeration units containing CFCs must be performed by a trained and certified technician who uses approved refrigerant recycling equipment. *Do not dispose of CFC-containing refrigeration units without properly removing the CFC propellants beforehand.* If not properly removed, CFCs such as freon are often released during refrigerator disposal due to cooling system breakage.

### **For more information:**

See Chapter III: Clean Air Act

### **Ballast Replacement, Storage, Disposal**

Major compliance issues: Regulated waste generation, Storm water runoff

Ballast wastes are not hazardous unless they have been contaminated by hazardous substances (e.g., petroleum products, hazardous materials). If stored on-site, storm water runoff from contaminated or uncontaminated ballast can violate storm water runoff regulations.

#### **What to do:**

If ballast materials became contaminated by petroleum products or hazardous materials, they may need to be stored and disposed of according to the requirements for that particular contaminating substance. It is recommended that uncontaminated ballast also be stored properly to prevent dust releases to the air and water.

- Clean Water Act regulations prohibit the discharge of any substance, including uncontaminated ballast or ballast silt, into the waters of the U.S. without a permit.
- Ballast should be stored away from drains, waterways, and flood plains.
- Uncontaminated ballast may be stored on-site until reused.

#### **For more information:**

See Chapter III: Resource Conservation and Recovery Act or call the RCRA Hotline at 1-800-424-9346.

## Building Renovation/Demolition: Asbestos Concerns

### **Major compliance issues: Asbestos Hazard Emergency Response Act (AHERA)/CAA National Emission Standards for Hazardous Air Pollutants (NESHAPs), Storm water runoff**

Renovation or demolition on your property can affect the environment in two major ways:

- Storm water runoff from your construction site may contaminate local water sources.
- Asbestos fibers released during renovation can create serious worker health and safety problems.

Asbestos issues are discussed below. Storm water compliance from construction sites is discussed in Engineering Operations: Construction and Facility Maintenance.

Asbestos is an insulating material widely used in the past where fire retardation was required or desirable. Applications for asbestos include, but are not limited to, floor tiles, ceiling tiles, siding, and thermal system insulation. Asbestos fibers have been linked to serious adverse health effects from the inhalation of airborne asbestos fibers. The presence of asbestos does not mean that a building's occupants are in danger, however. As long as the material containing the asbestos remains in good condition and is not disturbed, exposure to asbestos fibers is unlikely. Whenever asbestos-containing materials (ACM) are disturbed, through repair, renovation, demolition, or natural disturbances, asbestos fibers may be released.

Government regulations now require that asbestos be phased out of production and use. Many industries and businesses are conducting inventories and removing asbestos where the potential for human exposure exists. *The chances for human exposure to asbestos are highest during maintenance work or building demolition.*

### **What to do:**

Most old building construction materials of unknown content should be considered as likely to contain asbestos. Typical asbestos-containing materials include pipe and duct insulation, fireproofing, roofing materials, floor tile, and transit pipe and sheet goods. Many other building materials, such as ceiling tiles, wall board, plasters, and fire doors, may also contain asbestos.

Although considered a serious health hazard, asbestos is *not* an RCRA hazardous waste. Renovations or demolition operations involving ACM are regulated by the Clean Air Act's National Emission Standards for Hazardous Air Pollutants (NESHAPs). Asbestos disposal requires special handling procedures such as asbestos certified contractors for assessment and demolition of pre-1980 buildings, as well as posting of signs at disposal facilities.

ACM should be removed by qualified personnel in accordance with all applicable state and federal laws, *prior* to any demolition or renovation activity. Asbestos removal professionals use OSHA-

approved personal protective equipment, proper containment devices, and required removal practices. Contact your regional environmental agency representative (see Appendix A for a list of contacts) before renovating or demolishing any building or structure, regardless of whether ACM is present or only suspected. *Do not remove or agitate any asbestos-containing materials, unless performed by properly accredited personnel.*

Other demolition-related issues may require compliance also. Many states have a formal notification process before demolition may begin. In Ohio, for example, at least 10 days notice must be given before any demolition or construction activity begins. Other requirements may include inspection by a licensed building inspector before construction or demolition may begin.

**For more information:**

See Chapter III: Clean Air Act

Call the Asbestos Ombudsman Clearinghouse/Hotline at 1-919-541-0800.

# ENGINEERING

## Construction and Facility Maintenance

**Major compliance issues: Asbestos releases, Storm water runoff, Dust creation, Wetlands, Endangered species.**

Construction projects can negatively impact the environment and create compliance liabilities for your facility in several ways:

- Dust releases may cloud the air and violate local visible air emission standards.
- Storm water runoff may violate Clean Water Act regulations.
- Asbestos releases from old building floor tiles, ceiling tiles, siding, thermal system insulation, or other fire retardation materials may violate Clean Air Act, OSHA standards, and create significant worker health and safety problems.
- Activities may threaten or endanger certain species and contribute to habitat loss.
- Activities that include dredging and filling of wetlands may require the facility to obtain a CWA Section 404 permit.

### **What to do:**

Coordinate construction activities with your construction firm so as not to violate any environmental requirements.

- Construction activities that include dredging and filling of wetlands may require the facility to obtain a CWA Section 404 permit from the EPA and U.S. Army Corps of Engineers. The facility should identify any wetlands that may potentially be impacted by construction activities, consult with their state wetlands coordinator or EPA wetlands contact, and obtain a permit from the appropriate regulatory agency if necessary. Storm water plans are required for construction sites greater than 5 acres in size.
- As required under the Endangered Species Act (ESA), persons engaged in, or planning to engage in, construction activities must be aware if any endangered or threatened species exist on the property involved, or the property is considered part of a listed species' critical habitat. If neither is the case, the ESA does not apply. However, if the action will "take" or degrade critical habitat, some form of mitigating action must be taken to prevent harming the species. Consult your local USFWS in cases where species may be or are present.

### **For more information:**

See Engineering Building Renovation/Demolition: Asbestos concerns

See Chapter III: Clean Air Act

Call the Asbestos Ombudsman Clearinghouse/Hotline at 1-919-541-0800.

## **Crosstie Replacement and Disposal**

### **Major compliance issues: Regulated waste generation, Air pollution**

Creosote is used to treat and protect railroad ties. Spills of creosote liquid can be a significant soil contamination source.

---

#### ***Important Notes:***

- ✓ The presence of creosote has worker health and safety repercussions for crosstie handling.
  - ✓ Crossties may not be burned without special air emission controls. If a crosstie fire occurs, your facility may face fines for air pollution violations.
- 

#### **What to do:**

Any property transaction involving a railroad yard should have an environmental audit performed prior to the transaction. Because most railroad yards contain large quantities of creosote-treated railroad ties, and previously may have used creosote or had creosote treating plants on the property, creosote should be one of the constituents of concern in the audit process. All testing done by the Association of American Railroads on crossties indicates that crossties do not meet the definition of hazardous waste. This testing included new as well as used crossties (see **For more Information** section below).

The preferred method of crosstie disposal is recycling, either for less severe railroad service, landscape use, or cogeneration for energy recovery. If possible, crossties should be reused or sold to an outside company for landscaping or recycling. Crosstie disposal programs may chip crossties and sell them as fuel to facilities with the air permits required to burn creosote materials. If necessary, a cooperative Class I railroad may allow the use of its crosstie recycling program. If no recycling opportunity is available, crossties may be disposed of in state permitted sanitary landfills.

Crossties should be handled only with appropriate protective equipment to prevent skin contact. When practical, use tongs to lift and move creosote treated crossties. *Gloves should be worn at all times during crosstie handling.*

---

✓ **Case Example:** One facility reused some of its crossties for landscaping railroad grounds.

---

# ENGINEERING

## **For more information:**

In Chapter III see:

- Resource Conservation and Recovery Act
- Clean Air Act.

*A Review of Toxicity Characteristic Leaching Procedure Testing of Railroad Crossties*, AAR, 50 F Street, NW, Washington, DC 20001, Publication # R-861, July 1994.

*Management of Used Treated Wood Products*, Treated Wood Lifecycle Management Coalition, AAR, 50 F Street, NW, Washington, DC 20001, 1994.

*AAR Treated Wood Management Workshop*, Notebook containing materials presented at the workshop on crosstie management sponsored by AAR, AAR, 50 F Street, NW, Washington, DC 20001, August 1996.

*Management Practices for Used Treated Wood*, Summers, K.V., @ EPRI TR-104966, Project 2879-02, June 1995. Available from: AAR, 50 F Street, NW, Washington, DC 20001.

### **Facility Power Generation/Incineration**

#### **Major compliance issues: Air pollution, Hazardous substance generation**

The compliance responsibilities of your facility power plant or incinerator will depend on the types of fuel used for power generation, the technologies in place to remove pollutants from stacks, and the air quality of your region. Clean Air Act (CAA) permit requirements might apply or local regulations may limit the amount of visible stack emissions.

#### **What to do:**

Any change in the process or equipment used may result in permitting requirements under the CAA if new pollutants are released, or if there is an increase in process air discharges. If your powerhouse uses steam for electricity generation, local regulations on the amount of visible emissions from your facility may apply. Contact the state CAA permit program to determine if compliance with local air quality regulations is necessary.

#### **For more information:**

See Chapter III: Clean Air Act

# ENGINEERING

## Herbicide Use -Maintenance of Way

### **Major compliance issues: Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)**

Improperly applied pesticides or herbicides can be harmful to both the environment and the employee. Pesticide and herbicide overuse can contaminate soil, water, and air, causing damage to plant and animal life. Pesticides and herbicides have been found to be significant causes of reproductive problems in many species of animals, and health problems in improperly protected pesticide application employees.

#### **What to do:**

The requirements of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) govern the application of pesticides or herbicides. FIFRA requires the application of pesticides and herbicides as stated on product labels. FIFRA establishes two categories of pesticides: General use and Restricted use. General use pesticides have fewer application and certification requirements. Restricted use pesticides require the certification of the application employee or contractor.

Care should be taken to avoid the discharge or spray of pesticides or herbicides into water. If accidental water releases occur, contact your state water environmental agency immediately (see Appendix A). Make sure that all pesticide application employees and contractors are properly certified for the pesticides in use at your facility. When disposed of, old, unused pesticides may need to be managed as a hazardous waste depending on the hazardous constituents present.

#### **For more information:**

See Chapter III: Federal Insecticide, Fungicide, and Rodenticide Act

## **Landfills/Dumps**

### **Major compliance issues: Resource Conservation and Recovery Act, Clean Water Act, The Comprehensive Environmental Response, Compensation, and Liability Act**

Although onsite landfills and dumps are discouraged, the environmental compliance requirements that apply to your on-site dump depend on the types of wastes at the location.

The distinction between hazardous and nonhazardous wastes is important in determining the status of your dump or landfill. Some examples of nonhazardous railroad solid wastes include some crossties, demolition/construction debris not contaminated with asbestos, discarded cardboard boxes, food wastes, and waste papers. All state laws prohibit the open dumping of nonhazardous solid waste materials without proper permitting. These materials must be disposed of at sanitary landfills or other state approved special landfills.

If hazardous materials have been disposed of in your landfill, cleanup actions may be required under the Comprehensive Environmental Response, Compensation, and Liability Act, also called Superfund. *Your company may be held liable for cleanup of the hazardous waste site even if it had no knowledge of the dumping of the hazardous materials placed there in the past by previous property holders.* Abandoned containers and drums at your dump should be disposed of properly. Unmarked drums should be treated as if they contain hazardous materials until they can be tested and proven otherwise.

### **What to do:**

Conduct assessments of all dumps on your property to determine waste constituents. If only nonhazardous materials are present in your dumps, local or state permitting is necessary. If hazardous wastes are disposed of at your facility, you must be permitted under the Resource Conservation and Recovery Act as a treatment, storage, and disposal facility (TSDF), and you may face legal action for cleanup of any of your facility's sites contaminated with hazardous wastes.

### **For more information:**

In Chapter III see:

- Resource Conservation and Recovery Act
- Comprehensive Environmental Response, Compensation and Liability Act.

## **Land Issues: Buying and Leasing Property**

### **Major compliance issues:**

Under environmental laws, your company is ultimately responsible for the environmental liabilities on any land you own or lease, *even if generated by lessees/licensees*.

### **What to do:**

The environmental compliance responsibilities of any prospective tenants should be examined carefully before leasing property. Environmental assessments should be conducted of any land under speculation for purchase. Property assessments are usually conducted by outside contractors.

### **For more information:**

See Chapter III: Comprehensive Environmental Response, Compensation, and Liability Act

## **Trackside Lubricators**

### **Major compliance issues: Regulated waste generation, Spill cleanup**

Trackside lubricator grease discharges can contaminate the soil and track lubricator used grease liners may be regulated wastes in your state. Trackside lubricator grease is relatively immobile. A report by the Association of American Railroads (AAR), *The Environmental Impact of Wayside Rail Lubrication*, indicates the rail lubricator grease does not leach, and is generally limited to the area immediately adjacent to the lubricator. If lubricator oil is allowed to accumulate over time, cleanup activities may be required. In addition, ballast contaminated with large quantities of oil or petroleum residues must be treated as oil-contaminated waste. Ballast contaminated in this way will have to be specially stored to prevent oily storm water discharges.

### **What to do:**

*As a best management practice, absorbent fabric could be placed around rail lubricators to prevent ground contamination with oil.* Used liners should be put into a grease bucket or other container and kept sealed with a lid. Empty lubricant containers should be reused, recycled, or disposed of as nonhazardous solid waste.

### **For more information:**

See Chapter III: Resource Conservation and Recovery Act.

*The Environmental Impact of Wayside Rail Lubrication*, Report # R-835, AAR, 50 F Street, NW, Washington, DC 20001, 202-639-2251, May 1993.

## Transformers and Other Electrical Equipment Containing Insulating Fluids: PCBs

### **Major compliance issues: Toxic Substances Control Act (TSCA)**

In varying concentrations, the heat-resistant chemicals called polychlorinated biphenyls (PCBs) have been used in the past as an insulating fluid in electrical equipment such as transformers, capacitors, and lighting ballast. PCBs are suspect carcinogens and are regulated under the Toxic Substances Control Act (TSCA). PCBs are now banned from manufacture and PCB-containing equipment must be properly managed to prevent PCB releases to the environment. The three categories of PCB-containing materials under TSCA follow:

- *Non-PCB transformers* contain PCBs in concentrations of less than 50 parts per million (ppm). These units are not regulated and have no restrictions on use, disposal, and servicing. They can be sold at the end of their useful service lives.
- *PCB-contaminated transformers* contain PCBs in concentrations of between 50 and 499 ppm. Although these units have no restrictions on in-service use, disposal of the coolant is regulated.
- *PCB transformers* contain PCB concentrations of 500 ppm or greater. They are closely regulated and some are banned outright. Exterior labeling and periodic inspections and reporting are required for the units not banned.

For spills of PCBs containing 50 ppm or more, several release reporting and spill cleanup requirements, other than those under TSCA, must be satisfied under several statutes. These statutes include the Clean Water Act, and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), also known as Superfund. Cleanup standards and requirements exist for certain PCB spill situations: spills directly into surface waters, drinking water, sewers, grazing lands, and vegetable gardens. *These types of spills are subject to final cleanup standards and immediate notification requirements to federal and state agencies.*

### **What to do:**

All electrical equipment manufactured before 1978 containing insulating fluids should be assumed to contain PCBs unless tests or records indicate otherwise.

PCB or PCB-contaminated equipment cannot be sold. Known in-use PCB equipment (i.e., equipment containing fluid with a PCB concentration equal to or greater than 500 parts per million) must be inspected quarterly for leaks. Records must be kept of these inspections. If PCB waste or PCB equipment is disposed of, PCB levels must be ascertained via laboratory analysis. Contact your state environmental agency for sampling and/or disposal instructions (see Appendix A).

**PCB equipment *designated for disposal* must be stored in a designated PCB storage area following manner:**

- ✓ PCB items must not be stored for more than 30 days.
- ✓ No leaking PCB item should be stored without being placed in a suitable non-leaking container or over pack drum with enough sorbent material to soak up all fluid released.
- ✓ Place 6" x 6" labels, "CAUTION contains PCBs" on all items and doorways.
- ✓ Make sure that the roof and walls of your storage facility prevent rain from reaching PCB items.
- ✓ Use a relatively impervious floor with a 6" high curb and no drain or other openings. Contained volume must equal at least twice the volume of the largest item stored or 1/4 the volume of all items.
- ✓ The storage area floor must be above the 100-year floodplain.
- ✓ If PCB items are to be shipped, they must move under a hazardous waste manifest and hazardous material waybill.

Any spill of one gallon or more of insulating fluid should be assumed to be a PCB spill, *unless tests or records indicate otherwise*. Regulated spills should be reported to the U.S. EPA regional office, the National Response Center, and state and local authorities. All electrical equipment involved in spills or emergencies should similarly be assumed to be PCB equipment, unless tests or records indicate otherwise. If regulated and involved in a spill, the following actions must be taken:

- Cleanup of PCB spills must be initiated within 24 hours and completed within 48 hours *regardless of holidays or weekends*.
- Cleanup of all PCB spills must be conducted by personnel trained in PCB spill remediation.
- There are short- and long-range record keeping requirements that result from a spill of PCB-containing, or PCB-suspect, insulating fluids. A clear-cut narrative must be developed describing: detection of the spill (e.g., time, location, date, description of site), steps taken to mitigate environmental impact of spill; steps taken to clean up the spill; notification activities, and verification of the effectiveness of the cleanup.

Cleanup requirements are developed at the discretion of the regional EPA office. Contact your state environmental agency for more information (see Appendix A).

Appropriate personal protective clothing should always be worn when working with substances that contain or come into contact with PCBs. Any protective or work clothing (including boots, gloves, etc.) which comes into contact with PCB fluid must be disposed of as PCB debris. In the case of

## ENGINEERING

inadvertent skin contact with PCBs, the contact area should be washed with soap and water. PCBs are not toxic in short term exposures.

If PCB-containing transformers are involved in a fire, a report should be made to the National Response Center at 1-800-424-8802. ***It is important to notify fire-fighting authorities when PCB materials are involved in a fire.*** PCB materials can form dioxins, another suspect carcinogen, during a fire; smoke from burning PCB items may be toxic.

### **For more information:**

See Chapter III: Toxic Substances Control Act (TSCA)

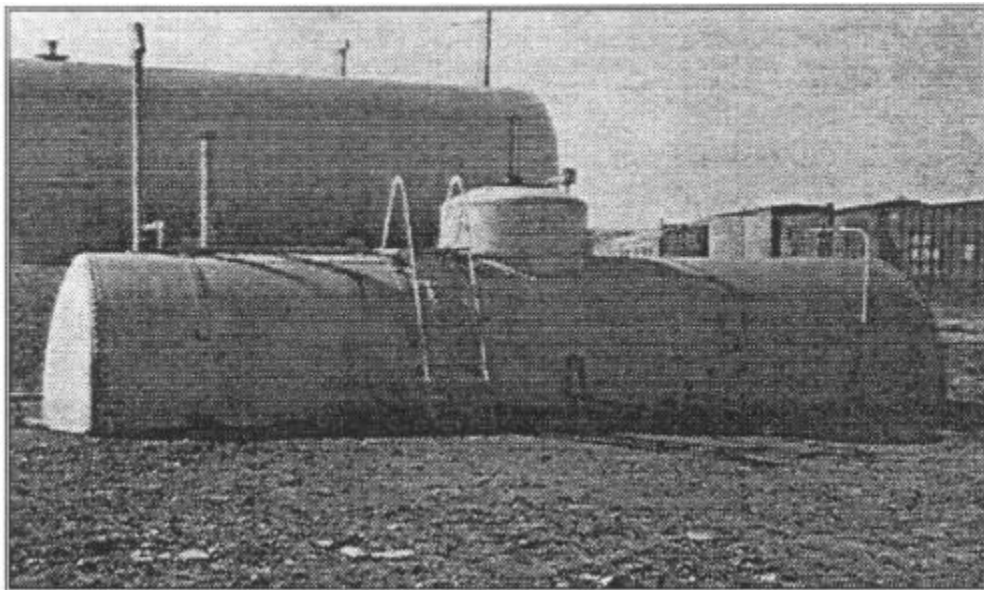
### Underground Storage Tanks

**Major compliance areas: Resource Conservation and Recovery Act, Comprehensive Environmental Response, Compensation, and Liability Act, Clean Water Act**

According to EPA, an underground storage tank (UST) is “any one or combination of tanks (including underground pipes connected thereto) that is used to contain an accumulation of regulated substances, and the volume of which (including the volume of underground pipes connected thereto) is 10 percent or more beneath the surface of the ground” (see figure below).

USTs are subject to strict state and federal requirements. Federal regulations of USTs, contained in 40 CFR Part 280, require that all regulated UST systems be designed and constructed to retain their structural integrity throughout their operating life, and all USTs and attached piping be protected from corrosion. In addition, all systems must be equipped with spill and overfill protection and leak detection monitoring. The UST requirements do not apply to any tanks on or above the floor of underground areas, such as basements or tunnels.

Subtitle I of Resource Conservation and Recovery Act (RCRA) governs activities and requirements related to UST systems. Subtitle I established a new and comprehensive regulatory program for UST systems containing petroleum products or substances defined as hazardous under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).



**Figure 4: Underground storage tank**

*Note: Only 10% of total tank volume, including piping must be underground for tank to receive underground classification.*

# ENGINEERING

Subtitle I includes the following provisions for USTs systems:

- Design, construction, installation, operating and notification requirements for new and existing systems;
- Release detection, reporting, investigation, confirmation, release response, and corrective action for systems containing petroleum or hazardous substances; and
- System closure requirements.

States generally have the same requirements as RCRA Subtitle I. However, some States (and municipalities) have more stringent UST regulations. You should contact your state UST office and your local municipality to determine if there are additional UST regulations you must comply with.

The federal UST regulations do not apply to:

- Tanks with a capacity of 110 gallons or less;
- Farm or residential tanks holding 1,100 gallons or less of motor fuel used for noncommercial purposes;
- Tanks storing heating oil where the oil is used on the property where it is stored;
- Tanks on or above the floor in underground areas (e.g., basements);
- Septic tanks and systems for collecting storm water and wastewater;
- flow-through process tanks; and
- Emergency spill and overfill tanks.

## **What to do:**

There are detailed requirements applicable to the operation of USTs. Facilities are responsible for assuring that there are no leaks or spills from USTs, including assuring that USTs maintain their integrity and are protected from spills, overfills, and corrosion. Facilities should regularly review areas around the tanks to observe any signs of tank spills, overflows, and leaks. In addition, facilities are required to maintain all records including permits, registrations, and installation or closure records, and submit appropriate notification information to EPA or the state or local implementing agency. Requirements for notification, recordkeeping, leak detection, and spill, overfill, and corrosion protection are described below. Federal and state laws mandate strict penalties for failure to report or to respond properly to spills or leakage once detected. Penalties also apply to violations of the requirements for the installation, monitoring, testing, registration, and removal or closure of USTs.

**Notification.** A facility must report to the regulatory authority on the following occasions:

- **UST installation.** When an UST is installed, fill out a notification form. The form must be submitted to the responsible State UST program office for all onsite UST systems. The Notification Form includes certification of compliance with federal requirements for

installation, cathodic protection, release detection, and financial responsibility for UST systems installed after December 22, 1988.

- **Suspected release.** Report suspected releases to the regulatory authority. If a release is confirmed, the facility must also report follow-up actions planned and take corrective actions to correct the damage caused by the UST.
- **UST closure.** Notify the regulatory authority 30 days before the facility permanently closes the UST.

**Recordkeeping.** Leak detection, corrosion protection, financial responsibility, closure and corrective action records must be maintained onsite.

- Leak detection records include: the past year's monitoring results and most recent tightness test; copies of performance claims; and maintenance, repair, and calibration of leak detection equipment.
- Corrosion protection records include results of the last two test proving the cathodic protection system is working and the last three inspections proving that impressed current systems are operating properly.
- Financial responsibility documentation showing you (1) have either insurance coverage; a guarantee from another firm; a surety bond; or a letter of credit; (2) have passed a financial test; (3) have a trust fund; (4) participate in a state financial assurance fund; or (5) use another financial method(s) of coverage approved by your state.
- Closure records document that the UST was removed from service in accordance with federal requirements for notification and correct, safe closure.
- Corrective action records document that any releases from USTs have been reported to the appropriate agency and have been responded to as required.

**Leak Detection.** Facilities must check their USTs at least once a month to see if they are leaking. The facility must conduct one of the three following methods of leak detection:

- All USTs can use **monthly monitoring** consisting of one of the following methods or other methods approved by the regulatory agency. Check with the state UST program to determine which methods are acceptable.
  - Automatic tank gauging.
  - Vapor monitoring.
  - Interstitial monitoring.
  - Groundwater monitoring.
  - Statistical inventory reconciliation.

## ENGINEERING

- USTs installed before December 22, 1998 can temporarily use monthly inventory control and annual tank tightness testing. *This is not an acceptable method after December 22, 1998.*
- USTs installed or upgraded with spill, overflow and corrosion protection can temporarily use monthly inventory control combined with tank tightness testing every 5 years. This combined method can be used only for 10 years after the tank has been installed or retrofitted with corrosion protection or until December 22, 1998, whichever is later.

In addition, facilities must conduct leak detection on any pressurized piping by (1) monthly monitoring (as described above) or annual line testing, and (2) an automatic flow restrictor, an automatic shutoff device or a continuous alarm system.

***Spill, Overflow, and Corrosion Protection.*** USTs installed on or before December 22, 1988 must meet spill, overflow, and corrosion protection requirements no later than December 22, 1998. USTs installed after December 22, 1988 were required to be constructed with spill, overflow, and corrosion protection.

- Spill and overflow protection. USTs must have catchment basins to contain spills. In addition, the facility and the fuel deliverer must follow industry standards for correct filling practices. New USTs must have overflow protection devices when they are installed. The three main types of overflow protection devices are automatic shutoff devices, overflow alarms, and ball float valves.
- Corrosion protection. Corrosion is the dissolution or gradual wearing away of materials, especially by chemical action. Metal is especially susceptible to corrosion. If your UST or piping is made of metal or has metal components, you must have some form of corrosion protection for them. All corrosion protection systems must be operated and maintained to provide continuous corrosion protection to the metal components of the portion of the UST and piping that are in contact with the ground and routinely contain petroleum products or hazardous substances.

---

**✓Case Example:** One facility uses an automatic tank gauging system to monitor for any potential leaks from its USTs. With careful inflow-outflow accounting, leak detection devices such as this type provide a way to monitor the amount of material contained in a tank for evidence that the UST may be leaking.

---

### **For more information:**

In Chapter III, see the Clean Water Act; Comprehensive Environmental Response, Compensation, and Liability Act; and the Resource Conservation and Recovery Act. To find out more about federal UST requirements, you can receive free explanatory publications and assistance by calling EPA's UST Hotline at 1-800-424-9346 or by visiting EPA's Office of Underground Storage Tanks website at <http://www.epa.gov/OUST/>. State and local UST requirements can differ from federal requirements so be sure to check with appropriate State and local regulatory agencies.

## Wastewater Treatment Systems and Oil-Water Separators

### **Major compliance issues: Clean Water Act**

The discharge of wastewaters from your facility is governed by the Clean Water Act (CWA). Review of CWA requirements presented in Chapter III is helpful in understanding the information presented below.

The proper operation of your oil-water separator or other wastewater treatment facility is important for compliance with CWA environmental regulations. Permits (called NPDES permits) are required by the CWA for the direct discharge of your wastewaters into the waters of the U.S. These permits require specific removal efficiencies for particular pollutants (e.g., oil). If your facility does not discharge directly to a waterway but discharges to a local treatment plant (publicly owned treatment works, or POTW), arrangements may have been made for pollutant removal, also called pretreatment, before your wastewaters enter the sewer. In both of these scenarios, permit violations and fines may result if spills or upset conditions overload your treatment system. Other compliance issues for your wastewater treatment involve sludges that may have special disposal requirements.

### **What to do:**

If your facility routes its wastewaters to a local POTW, contact the POTW to discuss pretreatment requirements if they are not already in place. A discharge permit must be obtained if your wastewaters are discharged directly to the waters of the U.S.; *it is illegal under the CWA to discharge wastewaters directly without a permit*. If a municipal treatment plant is not available or will not accept your waste, install a treatment system and obtain a permit. Alternatively, you can route the wastewater to a UST for proper accumulation and disposal, however, under these circumstances, your oil-water separator UST is subject to corrective action requirements under RCRA's Subtitle I. Also, in these cases, any oil-water separator USTs installed after May 1985 must meet requirements for corrosion protection, structural design, and compatibility of product stored (see RCRA Subtitle I). Finally, USTs that store oil generated as a result of the oil-water separator process are fully regulated as USTs storing petroleum. If the wastewaters are hazardous, they have to be managed as a hazardous waste under RCRA.

Berms or dikes should be constructed around hazardous material storage areas to prevent spills that may get into drains and overload treatment systems. Emergency shut-off valves on system plumbing are another good line of defense against system overload.

Keep wastewater from service bays out of storm water drains unless they drain into oil-water separators or other treatment systems. Industrial waste discharges to septic systems, drain fields, dry wells, cesspools, pits, or separate storm drains may be in violation of federal, state, or local requirements and subject to monetary penalties.

## ENGINEERING

---

✓*Case Example:* The operation specifications of an oil-water separator at one facility were closely coordinated with a local sewer utility to determine the maximum amount of waste products that could be disposed of legally to the local sewer system.

---

**For more information:**

See Chapter III: Clean Water Act

## **Underground Injection Control**

Major Compliance issues: Safe Drinking Water Act

Part C of the Safe Drinking Water Act directs EPA to establish minimum standards for State Underground Injection Control (UIC) Programs to protect public water supplies from contamination by injection wells. The most common types of “injection wells” are onsite wastewater disposal systems and other shallow drainage wells (Class V wells) which release fluids into the shallow subsurface above or directly into the water table. These are also the type of injection wells which are the most likely to contaminate groundwater.

The kinds of onsite systems used to dispose of industrial wastewater that have contaminated groundwater include:

- floor drains and dry wells
- sumps
- septic systems
- cesspools
- storm water drains.

These kinds of wells provide little or no treatment to spent solvents, degreasers, acid and alkaline solutions, etc., which pass through them unchanged into the environment.

### **What this means to short line railroad facilities:**

Short line railroad facilities which dispose of process wastewaters or other fluids into the ground through shallow drainage wells must notify their Federal or State UIC Program director that they have an injection well and submit inventory information. The shallow drainage well then becomes subject to the applicable UIC program requirements for that state or Indian Tribe. For example, the director may require a facility to demonstrate that its disposal practice will not endanger an underground source of drinking water.

### **Federally-Implemented UIC Program:**

A short line railroad facility located in any of the following jurisdictions shall contact the appropriate EPA Regional Office which has primary enforcement authority (primacy) for the UIC Program and shallow drainage wells:

Alaska	Iowa	New York	District of Columbia
Arizona	Indiana	Pennsylvania	All Indian Tribes
California	Kentucky	South Dakota	
Colorado	Michigan	Tennessee	
Hawaii	Minnesota	Virginia	

## ENGINEERING

### **State-Implemented UIC Program:**

EPA has delegated primacy over shallow drainage wells to the remaining 35 states. Each of these states has tailored its UIC Program to meet its own needs. The short line railroad facility can contact the appropriate state agency which has primary enforcement authority (primacy) for the UIC Program and shallow drainage wells.

### **For more information:**

For more information on UIC regulations applicable to your facility, contact the Safe Drinking Water Hotline at 1-800-426-4791. Additional information can be obtained by accessing EPA's Office of Groundwater and Drinking Water at <http://www.epa.gov/OGWDW/>.

## **Yard Maintenance/Dust Control**

### **Major compliance issues: Air pollution**

The control of fugitive dust and exhaust from your intermodal facilities, unpaved yards, locomotive sanding towers, and bulk handling facilities may be required in order to comply with local regulations on visible air pollution from your facility under the Clean Air Act (CAA).

#### **What to do:**

Actions to reduce dust emissions from your yard can include spraying dirt roads with water during dry and windy days, capping or carefully maintaining locomotive sanding towers to prevent sand loss, or using crusting compounds to contain open hopper cars. While use of used oil as a dust suppressant is prohibited under the federal used oil regulations, some states may authorize its use. While most railroads do not feel that use of used oil is an environmentally sound practice, it may be allowed in some states. Check with your state before engaging in this practice.

---

**✓Case Example:** At one railroad facility, a CAA violation was issued due to the fugitive dust from its coal piles. A water spraying system was installed to suppress the dust.

---

#### **For more information:**

See Chapter III: Clean Air Act

**ENGINEERING**

*NOTES*

---