



**NASA Ames Research Center
Ames Environmental Procedural Requirements**

Chapter 10 - Underground Storage Tanks

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10.1 Applicability

This instruction is applicable to all civil servants, contractor employees, resident agency personnel and partners at Ames Research Center (Ames), Moffett Federal Airfield (MFA), and Crows Landing Flight Facility.

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10.2 Purpose

This chapter sets forth Ames policies and requirements for the design, construction, operation and maintenance, monitoring, and reporting underground storage tanks (USTs).

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10.3 Policy

It is the policy of the Ames Research Center to:

1. Comply with all pertinent statutory and regulatory requirements and Executive Orders related to storage tank management. Ames recognizes and will comply with all applicable Federal, state, and local regulations.
2. Maintain and update permits as required by regulations.
3. Consult about the best techniques and methods to manage storage tanks, as appropriate, with Federal, state, and local agencies, including:
 - U.S. Environmental Protection Agency (EPA)
 - California Office of Emergency Services (OES)
 - State Water Resources Control Board (SWRCB)
 - Regional Water Quality Control Board, San Francisco Bay Region
 - Bay Area Air Quality Management Department (BAAQMD)
 - Santa Clara County Health Department
4. Promote employee awareness of storage tank management through training and active information dissemination including alarms, leak detection, and proper operating and maintenance procedures.

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10.4 Authority

All relevant Federal, state, and local laws and regulations pertaining to the management, design, construction, and operation of underground storage tanks, including but not limited to:

1. Federal Water Pollution Control Act, as amended by the Clean Water Act of

- 1977 and the Water Quality Act of 1987 (33 U.S.C. Section 311 et seq.)
2. Public Law 101-380, Oil Pollution Act 1990
 3. Public Law 42 U.S.C. Section 6002, Resource Conservation and Recovery Act (RCRA)
 4. Code of Federal Regulations, Title 40 (40 CFR):
 - Part 112 et seq.-Oil Pollution Prevention (40 CFR 112)
 - Part 260 et seq.-Hazardous waste management system: General (40 CFR 260)
 - Part 262 et seq.-Standards applicable to generators of hazardous waste (40 CFR 262)
 - Part 265 et seq.-Hazardous waste storage tanks (40 CFR 265)
 - Part 270 et seq.-EPA administered permit programs: The Hazardous Waste Permit Program (40 CFR 270)
 - Part 280 et seq.-Technical standards and corrective action requirements for owners and operators of USTs (40 CFR 280)
 5. California Code of Regulations, Title 22, Section 66265.195, Tank Inspections
 6. California Code of Regulations, Title 23, Sections 2610 -2728, Underground Tank Regulations
 7. California Health and Safety Code (H&SC), Division 20 (Miscellaneous Health and Safety Provisions):
 - H&SC, Chapter 6.70-Underground Storage of Hazardous Substances
 - H&SC, Chapter 6.75-Petroleum Underground Storage Tank Cleanup
 - H&SC, Chapter 6.95-Hazardous Materials Release Response Plans and Inventory
 8. Santa Clara County Department of Public Health:
 - Hazardous Materials Storage Permit Ordinance NS-517.31
 - Guidelines for Permanent Closure of Hazardous Materials Tanks
 - Monitoring Guidelines for Existing Single Wall Underground Tanks
 9. Uniform Fire Code, Article 79
 10. National Fire Protection Association (NFPA) 30-Flammability and Combustibility Code
 11. National Fire Protection Association Pamphlet 329-Recommended Practice and Handling Underground Leakage of Flammable and Combustible Liquids
 12. BAAQMD (Regulation 8, Rules 7 and 40)

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10.5 Responsibilities

10.5.1 Environmental Services Office, Code QE (Environmental Office)

1. Maintain the official file of any permits and forward copies of any correspondence and required permit applications to the appropriate regulatory agencies and onsite contractors performing installation of USTs.
2. Forward operating permits to users.
3. Review plans and drawings related to storage tanks for new construction, maintenance, or remodeling to determine compliance with applicable regulations.
4. Submit construction specification plans to the appropriate agencies to obtain permits for

tank removals, modifications, and installations.

5. Recommend facility modifications to achieve compliance with applicable regulations.
6. Submit updated hazardous materials business plans to the Santa Clara County Health Department.
7. Perform annual facility surveys to determine compliance with applicable regulations.
8. Implement, monitor, and maintain the UST program, including tank integrity testing.
9. Coordinate regulatory agency inspections of UST sites.
10. Report tank and/or piping leaks to the applicable agency (ies).
11. Notify Public Affairs of any large tank spills. See Chapter 14, Emergency Planning and Community Right-to-Know, and Chapter 15, Emergency Response, for additional reporting requirements.
12. Ensure training provided as noted in Section 10.7.2 of this handbook and maintain training records.
13. Submit closure plans and reports to regulatory agencies.

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10.5.2 Facilities Engineering Branch, Code FEF

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10.5.3 Line Management

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10.5.4 Protective Services Office, Code JP

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10.6 Definitions

10.6.1 Underground Storage Tank (UST)

An UST includes all tanks and associated piping or combination of tanks where 10 percent or more of the tank's volume is below ground surface. Exceptions to the UST definition applicable to Ames include septic tanks, storm water and wastewater collection systems, and tanks located in a basement but completely visible.

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10.7 General Management Requirements

10.7.1 Permits

- All USTs must be registered with the State Water Resources Control Board. There is a fee associated with state registry.
- The storage of a hazardous material and/or hazardous waste requires a hazardous materials storage permit issued by the Santa Clara County Health Department, Hazardous Materials Compliance Division. There is a yearly fee required.
- All gasoline dispensing facilities must have a BAAQMD permit to operate. There is a yearly fee required.

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10.7.2 Training

- All personnel who handle or store petroleum products must be trained in spill prevention procedures, as discussed in NASA's Spill Prevention Control and Countermeasures (SPCC) Plan, Chapter 7, Environmental Training, and Chapter 13, Spill Prevention Control and Countermeasures and Facility Response Plan.
- All personnel who handle or store petroleum products must be trained in Hazard Communication per 29 CFR, §1910.1200. See Chapter 7, Environmental Training, and also the Ames Health and Safety Manual AHB 1700, Chapter 24, Chemical Hazard Communication Plan.
- All personnel who operate tank systems must be trained in filling, dispensing, and monitoring procedures. The tank/monitoring device manufacturer (or designee) typically trains onsite personnel on new tank systems. Personnel requiring training on existing

tank systems may need to contact the tank manufacturer and arrange for a training session.

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10.8 Specific Management Requirements

10.8.1 Storage Conditions

1. The contents being stored in USTs must be compatible with the construction material of the tank.
2. UST's must be labeled with the contents being stored.
3. Tank contents must be stored at the proper temperature and pressure.
4. Storage areas must be secured to prevent unauthorized use and tampering with USTs.
5. Tank areas must have a nearby lighting source in the event of nighttime emergency responses.
6. All storage tank areas must be equipped with spill response supplies.
7. Refer to Chapter 3, Hazardous Materials Management, and Chapter 4, Hazardous Waste Management, for additional storage requirements.
8. All tanks and associated piping must be secondarily contained. Secondary containment must be constructed as follows:
 - Secondary containment must be constructed of materials that are compatible with the materials stored inside the tank.
 - Secondary containment must be large enough to contain at least 110 percent of the volume of the tank.
9. All tanks must be posted with specific filling procedures.

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10.8.2 Inspections

1. Conduct yearly compliance inspections to ensure that:
 - Proper spill equipment is present for each UST location
 - All tanks are properly labeled and posted with specific filling procedures
 - All tanks are secured to prevent unauthorized use and tampering
 - Correct corrosion protection is present and tested where needed (cathodic protection)
 - Proper fire protection equipment is available
 - Tank contents are compatible with tank material
2. Storm water from tank secondary containment structure(s) must be visually inspected or tested prior to discharging into the sanitary sewer or into the landscaping.
3. UST integrity testing must be performed by an independent third party certified by the State of California.
4. USTs containing hazardous waste must also meet Federal and state hazardous waste management requirements (see Chapter 4 of this handbook, Hazardous Waste Management). Specific tank inspection requirements are listed as follows (see 22 CCR 66265.195 and 40 CFR part 265, parts 265.174 and 265.195):
 - Where present, the following must be inspected at least once each day:
 - Overfill/spill control equipment (e.g., waste-feed cutoff systems, bypass systems,

- and drainage systems) to ensure that it is in good working order;
- The aboveground portions of the tank system, to detect corrosion or releases of waste;
- Data gathered from monitoring equipment and leak-detection equipment (e.g., pressure and temperature gauges, monitoring wells) to ensure that the tank system is being operated according to its design; and
- The construction materials and the area immediately surrounding the externally accessible portion of the tank system, including secondary containment structures (e.g., dikes) to detect erosion or signs of releases of hazardous waste (e.g., wet spots, dead vegetation).

NOTE: 40 CFR Section 265.15 (c) requires the remedy of any deterioration or malfunction found. 40 CFR Section 265.196 requires notification to the Regional Administrator within 24 hours of confirming a release. Also, 40 CFR Part 302, Federal Emergency Planning and Community Right-to-Know regulations, may require notification of a release to the National Response Center. **Notifications to these regulatory agencies are made only by the Environmental Office.**

- Where present, the cathodic protection systems must be inspected according to, at a minimum, the following schedule to ensure that they are functioning properly:
- Proper operation of the cathodic protection systems must be confirmed within six months after initial installation, and annually thereafter;
- All sources of impressed current must be inspected and/or tested, as appropriate, at least bimonthly.

NOTE: The practices described in the National Association of Corrosion Engineers (NACE) standard, "Recommended Practice (RP-02-85) Control of External Corrosion on Metallic Buried, Partially Buried, or Submerged Liquid Storage Systems," and the American Petroleum Institute (API) Publication 1632, "Cathodic Protection of Underground Petroleum Storage Tanks and Piping Systems," may be used, where applicable, as guidelines in maintaining and inspecting cathodic protection systems.

- Documentation of the items listed must be kept in the operating record of the facility.

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10.8.3 Integrity Program

1. Underground Storage Tanks

UST integrity testing must be conducted by an entity holding a current and valid tank testing license issued by the State of California. Integrity testing must be performed annually on single-wall USTs and on an "as-needed" basis on secondarily contained USTs.

2. Hazardous Waste Tanks

Existing tanks that do not have secondary containment systems must have a written assessment reviewed and certified by an independent, qualified, professional engineer, registered in California, who attests to the tank system's integrity. This assessment shall determine that the tank system is adequately designed and has sufficient structural strength and compatibility with the waste(s) to be transferred, stored, or treated to ensure that it will not collapse, rupture, or fail.

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10.8.4 Physical Attributes

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10.8.5 Installation Activities

1. All tank installations require a permit issued by the Santa Clara County Health Department, Hazardous Materials Compliance Division, prior to installation. See more details regarding construction projects in Chapter 17, Environmental Requirements for Construction Projects.
2. All tank installations require an Ames construction permit. See more details regarding construction projects in Chapter 17, Environmental Requirements for Construction Projects.
3. Installation activities for tanks must follow applicable Santa Clara County Hazardous Materials Compliance Division guidelines for tank installation and, if applicable, CCR Title 26 regulations for hazardous waste tanks and BAAQMD regulations and rules.
4. The Santa Clara County Health Department requires integrity testing of tanks and associated piping prior to installation and service, following manufacturer's specifications. Often a representative of the tank manufacturer is present to conduct the tank testing. The Santa Clara County Health Department requires at least a 48-hour notification prior to integrity testing so that a county inspector can witness the test.
5. All new tanks and their associated piping must be secondarily contained.
6. Fire protection must be provided in accordance with nationally recognized standards. The method of fire protection used depends on the size and type of tank, location of the tank (i.e., distances from buildings, property lines, and public ways) and the class of liquid in the tank. Refer to the UFC 79.510 for details.

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10.8.6 Closure Activities

1. All tank closure activities require a permit issued by the Santa Clara County Health Department, Hazardous Materials Compliance Division.
2. All tank closure activities require a permit issued by the BAAQMD (Regulation 8, Rule 40)
3. Tank closure activities must follow applicable Santa Clara County Hazardous Material Compliance Division guidelines.
4. All tanks, their associated piping, and equipment must be disposed of as hazardous waste and transported by a licensed hazardous waste hauler.
5. The soils beneath and surrounding the tank require soil sampling as specified by the Santa Clara County Health Department Guidelines. If groundwater is encountered during the tank removal, a groundwater sample is required. Soil and/or groundwater samples are analyzed for contaminants, as directed by either the Santa Clara County Health Department Guidelines or the Santa Clara Valley Water District. Analyses required depend on the contents of the tank. For illustration, if the tank contained a diesel fuel, the typical analysis is TPH (total petroleum hydrocarbons) for diesel.
6. Sampling must be witnessed by a representative of the Santa Clara County Health Department. A 48-hour notification is required.
7. See Chapter 11, Closure Requirements, for additional guidance.

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10.9 Metrics

- a. Number of Violations vs. Inspections

Goal = 0

- b. Total number of releases.
Goal = 0
- c. Number of releases reported properly.
Goal = 100%
- d. Number of releases cleaned up in 24 hours.
Goal = 100%
- e. Percentage of tank operators trained.
Goal = 100%

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10.10 Sources of Additional Information or Assistance

- 1. Environmental Office [REDACTED]
- 2. SPCC Plan available at the Ames Library

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