GUIDELINES FOR INSTALLATION OF NEW UNDERGROUND STORAGE TANKS

1. The installation of all underground storage tanks used for the storage of hazardous substances (e.g., solvents, motor vehicle fuels, waste oil) must be approved by the Environmental Health Division.

2. Applicant submits four (4) sets of plans, a completed Facility Modification Application, and the Plan Check fee to the Environmental Health Division at the address noted below. The application should include the UPC forms: *Business Owner/Operator Identification* and *Facility Information* (form A) & *Tank Information/Piping* (form B). These forms can be found at http://www.ochealthinfo.com/regulatory/cupa/forms.htm.

3. All contractors installing or performing work on a UST system must meet specific licensing requirements (see Contractors Requirements below). A copy of the contractor's license and all required certifications should be included in the plans. If a contractor has not been selected then a copy of the contractor's license and required certifications must be submitted **prior** to performing any work on the UST system. Failure to do so may invalidate any work performed.

4. The application and plans will be reviewed and approved or returned to the submitter for modification.

5. The plans for the proposed installation shall include the required information and shall be in compliance with State Law and Regulations (Chapter 6.7, California Health and Safety Code, and Title 23, California Code of Regulations). A complete copy of the laws and regulations can be obtained by contacting the State Water Resources Control Board at (916) 227-4332.

6. The Environmental Health Division may require that plans be prepared or reviewed by a registered professional engineer or corrosion engineer if certain aspects of the installation are determined to require special consideration.

7. When plans are approved, three (3) sets are stamped and returned to the applicant.

8. In addition to this agency, the applicant must submit plans to the appropriate fire department, city building department, the Air Quality Management District and/or other local agencies (if applicable) for their approval.

9. Applicant must provide at least 48 hours notice to Environmental Health and other agencies (as applicable) for an on-site inspection of the installation. Installation inspections include (but are not limited to) holiday tests, pressure tests, and a final installation inspection prior to backfilling.

10. Underground storage tanks with listed corrosion resistant materials, non-metallic reinforced plastic coatings, composite, or equivalent systems must be holiday tested prior to installation.

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11. Before installation, the underground storage tank must be tested for tightness at the site in accordance with the manufacturer's guidelines. If there are no guidelines, the primary and secondary containment must be tested with air pressure between 3-5 psi for a minimum of 30 minutes. In lieu of the above, an equivalent differential pressure test, expressed in inches of mercury vacuum, in the interstitial space of the secondary containment is acceptable.

12. All **new** primary piping and secondary containment systems shall be tested for tightness after the installation in accordance with the Manufacturer's Guidelines. Primary pressurized piping shall be tested for tightness hydrostatically at 150 percent of design operating pressure or pneumatically at 110 percent of design operating pressure. If the calculated test pressure for pressurized piping is less than 40 psi, 40 psi shall be used as the test pressure. Suction and gravity flow piping shall be tested in accordance with the manufacture's guidelines. In all cases, the pressure shall be maintained for a minimum of 30 minutes and all joints shall be soap tested. A failed test, as evidenced by the presence of bubbles, shall require appropriate repairs and retesting. If there are no manufacturer's guidelines, secondary containment systems shall be tested using an applicable method specified in an industry code or engineering standard. Suction piping and gravity flow piping which cannot be isolated from the tank shall be tested after installation in conjunction with an overfill volumetric tank integrity test.

13. After installation but before being placed in service, the underground storage tank(s) shall be tested in operating condition using a tank integrity test that complies with the performance standards specified in Section 2643.1, Title 23, of the California Code of Regulations (CCR) and has been approved by the State Water Resources Control Board.

14. The underground storage tank must be tested after installation (but before being placed in service) using one of the following: enhanced leak detection (ELD), an inert gas pressure test certified by a third party and approved by the State Water Resources (SWRCB), or a test method deemed equivalent to ELD and approved by the SWRCB in regulation.

15. A tank tester who conducts or supervises a tank or piping integrity test must prepare a report detailing the results of the tank tests and maintain a record of the report for a least 3 years, in a specified manner. The tank tester must sign the report with an original signature, under penalty of perjury. Additionally, the tank tester must type or print his or her name and license number on the report.

16. All underground storage tanks shall be installed according to a code of practice developed in accordance with voluntary consensus standards and the manufacturer's written installation instructions. The owner or their agent shall certify that the underground storage tank is installed in accordance with requirements specified in the underground storage tank regulations. Specific requirements are outlined in the owner certification section below. The designated agent must be identified in writing prior to the installation.

17. All underground storage tanks subject to flotation shall be anchored using methods specified by the manufacturer or, if none exist, best engineering practices.

DESIGN AND CONSTRUCTION SUMMARY

A. Design and Construction Requirements for New Underground Storage Tanks (Basic Provisions)

1. All new underground storage tanks including associated piping used for the storage of hazardous substances must have primary and secondary containment. Primary and secondary containment must be "product-tight." "Product tight" means impervious to the liquid and the vapor of the stored substance, to prevent seepage from containment. Secondary containment must be constructed to prevent water intrusion into the underground storage tank system by precipitation, infiltration, or surface runoff. Secondary containment may be manufactured as an integral part of the primary containment or it may be constructed as a separate containment system.

2. The underground storage tank system must be designed and constructed with a continuous monitoring system capable of (1) detecting entry of the liquid substance stored in the primary containment into the secondary containment and (2) detecting water intrusion into the secondary containment.

3. The design and construction of all primary containment including any integral secondary containment system shall be approved by an independent testing organization in accordance with industry codes, voluntary consensus standards, or engineering standards. All other components used to construct the primary containment system, such as special accessories, fittings, coatings or linings, monitoring systems and level controls used to form the underground storage tank system shall also be approved by an independent testing organization. This requirement became effective on July 1, 1991 for underground storage tanks; January 1, 1992 for piping; and on January 1, 1995 for all other components. The exterior surface of underground storage tanks shall bear a marking, code stamp, or label showing the following minimum information.

   (a) Engineering standard used;
   (b) Nominal diameter in feet;
   (c) Nominal capacity in gallons;
   (d) Degree of secondary containment;
   (e) Useable capacity in gallons;
   (f) Design pressure in psig;
   (g) Maximum operating temperature in degrees Fahrenheit;
   (h) Construction materials;
   (i) Year manufactured; and
   (j) Identity of manufacturer.

4. A primary containment system with or without an integral secondary containment system shall have wear plates (striker plates) installed, center to center, below all accessible openings. The plates shall be made of steel or other appropriate material if steel is not compatible with the hazardous substance stored. The width of the plate shall be at least eight inches on each side, or shall be equal to the area of the accessible opening or guide tube, whichever is larger. The thickness of the steel plate shall be at least 1/8 inch and those made of other materials shall be of sufficient thickness to provide equivalent protection. The plate, if less than 1/4 inch thick, shall be rolled to the contours of the underground storage tank and all plates shall be bonded or tack welded in place. A drop tube-mounted bottom protector may fulfill this requirement.

5. A secondary containment system which is not an integral part of primary containment shall be designed and constructed according to an engineering specification approved by a state registered professional engineer or according to a nationally recognized industry code or engineering standard. The engineering specification shall include the construction procedures. Materials used to construct the secondary containment system shall have sufficient thickness, density, and corrosion resistance to prevent structural weakening or damage to the secondary containment system as a result of contact with any released hazardous substance. Consult the regulations for the requirements that apply to these secondary containment systems.

6. The secondary containment system shall be constructed to contain at least the following volumes:

   (a) One hundred percent of the usable capacity of the primary containment system where only one primary container is within the secondary containment system.

   (b) In the case of multiple primary containers within a single secondary containment system, the secondary containment system shall be large enough to contain 150 percent of the volume of the largest primary container within it, or 10 percent of the aggregate internal volume of all primary containers within the secondary containment system, whichever is greater. When all primary containers are completely enclosed within the secondary containment system, the restrictions do not apply. (1) Primary containment shall be product tight and compatible with stored product.

7. Secondary containment shall be product tight and constructed to prevent structural weakening as a result of contact with any hazardous substances released from the primary containment, and also shall be capable of storing the hazardous substances for the maximum anticipated period of time necessary for the recovery of any released hazardous substance.

8. Secondary containment shall be constructed to prevent any water intrusion into the system by precipitation, infiltration, or surface runoff.

9. The underground tank system shall be designed and constructed with a continuous monitoring system capable of detecting the entry of the liquid- or vapor-phase of the hazardous substance stored in the primary containment into the secondary containment and capable of detecting water intrusion into the secondary containment.

   (a) The interstitial space of the underground storage tank shall be maintained under constant vacuum or pressure such that a breach in the primary or secondary containment is detected before the liquid or vapor-phase of the hazardous substance stored in the underground storage tank is released into the environment. The use of interstitial liquid level measurement methods satisfies the requirements of this subdivision.

(b) The underground storage tank shall be provided with equipment to prevent spills and overfills from the primary tank.

(c) If different substances are stored in the same tank and in combination may cause a fire or explosion, or the production of flammable, toxic, or poisonous gas, or the deterioration of a primary or secondary container, those substances shall be separated in both the primary and secondary containment so as to avoid potential intermixing.

(d) Underground pressurized piping that conveys a hazardous substance shall be equipped with an automatic line leak detector.

(e) Before the underground storage tank is covered, enclosed, or placed in use, the standard installation testing requirements for underground storage systems specified in Section 2.4 of the Flammable and Combustible Liquids Code, adopted by the National Fire Protection Association (NFPA 30), as amended and published in the respective edition of the Uniform Fire Code, shall be followed.

(f) Before it is placed in use, the underground storage tank shall be tested after installation using one of the following methods to demonstrate that the tank is product tight:

(1) Enhanced leak detection.
(2) An inert gas pressure test that has been certified by a third party and approved by the board.
(3) A test method deemed equivalent to enhanced leak detection or an inert gas pressure test by the board in regulations adopted pursuant to this chapter. An underground storage tank installed and tested in accordance with this subdivision is exempt from the requirements of Section 25292.5.

10. If the secondary containment system is open to rainfall, it shall be constructed to accommodate the volume of precipitation which could enter the secondary containment system during a 24-hour, 25-year storm in addition to the volume specified above.

11. Laminated, coated, or clad materials shall be considered a single wall and do not fulfill the requirements of both primary and secondary containment.

12. Underground storage tanks with integral secondary containment systems, which satisfy the construction requirements, fulfill the volumetric requirements for secondary containment specified above.

13. Underground storage tanks with secondary containment systems shall be designed and installed so that any loss of a hazardous substance from the primary containment will be detected by an interstitial monitoring device or method.

14. Sumps are required on all tank openings, except annular risers and ATG risers. All secondary contained sumps/underground dispenser containment units must be continuously monitored by liquid, vacuum and pressure. Liquid sensors are required inside all sumps and underdispenser containment units. Sensors inside sumps are not required if the interior of the sump is maintained under constant pressure, liquid, or vacuum monitoring.

TANK INFORMATION - PRIMARY CONTAINMENT

1. Identify construction material and composition. All tanks must be chemically compatible with material being stored. All underground storage tank systems installed must be cathodically protected.
2. Identify the volume of the primary container.
3. Identify the manufacturer of the primary containment.
4. Special installation instructions, such as anchoring for high groundwater, are required to be identified on the plans.
5. Identify the manufacture of the monitoring system and its location.

SECONDARY CONTAINMENT

1. Specify the type of secondary containment to be used (e.g., double wall tank, liner, etc.).
2. Indicate the volume of secondary containment system (not required for double wall tanks).
3. Membrane liner and other secondary containment systems must meet the specification requirements outlined in Section 2631, Title 23, CCR.
4. Include a compatibility statement for the secondary containment material with the product to be stored.
5. Indicate that the proposed slope of the secondary containment, if applicable, will direct a leak to a monitoring sump.
6. Identify manufacturer of secondary containment (not required for double wall tanks).
7. Special installation instructions, when required, are to be included on the plans.
8. Backfill in liner systems must be free of sharp objects or protrusions and must follow the manufacturer's specifications. Identify the backfill material to be used. All primary containers and piping in contact with backfill must be protected against corrosion.
9. Any alternative methods of construction for motor vehicle fuels only, must follow the provisions specified in Section 2633, Title 23, CCR.
10. Identify the method of secondary containment (Liquid, Vacuum, Pressure).

PIPING SYSTEM

1. All primary piping (product, vent and vapor) must have secondary containment and be continuously monitored by liquid, or vacuum, and pressure, except annular risers or ATG risers.

2. Suction piping is exempt from secondary containment requirements if the piping is designed, constructed, and installed as follows:

   A. The below-grade piping operates at less than atmospheric pressure (suction piping);
   B. The below-grade piping is sloped so that the contents of the pipe will drain back into the storage tank if the suction is released (gravity-flow piping);

C. No valves or pumps are installed below grade in the suction line. Only one check valve is located directly below and as close as practical to the suction pump;

D. An inspection method is provided which readily demonstrates compliance with A through C above.

3. Primary piping in contact with hazardous substances under normal operating conditions shall be installed inside a secondary containment system which is monitored continuously by vacuum, pressure or hydrostatically.

4. Lined trench systems used as part of a secondary containment system shall be designed and constructed according to a code of practice or engineering standard approved by a state registered professional engineer.

5. Identify the construction material of the piping and the secondary containment system.

6. Identify the manufacturer of the piping system and leak detector.

7. Include a statement of the compatibility of the piping material with hazardous substance to be stored. All piping must be UL971 compliant.

8. Indicate the proposed slope of the piping to direct a leak to a low point/sump for monitoring.

9. Special installation instructions, when required, are to be included on the plans (e.g., field installed cathodic protection systems).

10. All corrodible underground piping, if in direct contact with backfill material, shall be protected against corrosion. Piping constructed of fiberglass-reinforced plastic, steel with cathodic protection, or steel isolated from direct contact with backfill, fulfills this corrosion protection requirement. Cathodic protection shall meet the requirements of section 2635(a)(2), Title 23, CCR.

MONITORING SYSTEM

1. Identify the type, manufacturer, detection capabilities, and location of the monitoring system to be installed.

2. Provide information indicating the monitor can detect the stored substance.

3. A continuous monitor, capable of detecting standing liquid, vapor, or a loss of pressure and activates an audible/visual alarm is required for all double wall tanks.

4. All other underground storage tank systems shall be installed with a system that is capable of detecting the entry of the stored substance in the primary containment into the secondary containment utilizing one of the methods specified in Section 2632, Title 23, CCR.

OVERFILL PROTECTION

All underground storage tanks shall be equipped with a spill container and an overfill prevention system as follows:

1. The spill container must be designed to collect any hazardous substances spilled during tank filling operations to prevent the hazardous substance from entering the subsurface environment. The spill container must meet the following requirements:

   A. The exterior wall must be protected from galvanic corrosion if made of metal.
   B. It must have at least a minimum capacity of five gallons (19 liters).
   C. It must have a drain valve which allows drainage of the collected spill into the primary container or provide a means to keep the container empty.

2. The overfill prevention system shall not allow for manual override and shall meet one of the following requirements:

   A. Alert the transfer operator when the tank is 90 percent full by restricting the flow into the tank or triggering an audible and visual alarm; or
   B. Restrict delivery of flow to the tank at least 30 minutes prior to tank overfill, provided the restriction occurs when the tank is filled to no more than 95 percent of capacity, and provide audible alarm sounds at least five minutes prior to overfill; or
   C. Provide positive shut-off of flow to the tank when the tank is filled to no more than 95 percent full.
   D. Provide positive shut-off flow to the tank so that none of the fittings located on the top of the tank are exposed to product due to overfilling.

OWNER CERTIFICATION

For all installations of new underground tanks and piping, owners or their agents are required to certify, on forms provided by this Agency, that the installation of the underground storage tanks and piping meets all of the following conditions:

1. The installer has been adequately trained and certified by the tank and piping manufacturers.

2. The installer has been certified or licensed by the Contractors State License Board.

3. The underground storage tank, any primary piping, and any secondary containment system was installed in accordance with an industry code of practice developed in accordance with voluntary consensus standards and any manufacturer's written installation instruction.

4. All work listed in the manufacturer's installation checklist has been completed.

5. The installation has been inspected and approved by the local agency, or, if required by the local agency, inspected and certified by a registered professional engineer who has education in and experience with underground storage tank system installations/modifications.

This certification shall be made on a "Certificate of Compliance for Underground Storage Tanks Installation Form C." You can obtain this form by calling the Underground Storage Tank Program at (714) 433-6000.

CONTRACTOR REQUIREMENTS

1. Section 7058.7 of the Business and Professions Code requires contractor licensing for any improvement, installation and/or removal of UST's if the aggregate costs of such work is $500.00 or

more. This includes upgrading UST's with interior linings and coatings, or retrofitting with a new primary containment system with interstitial monitoring.

2. Under current Contractors State License Board policy, only those contractors holding the following classifications are properly licensed to contract solely for the installation, removal, and/or modification of underground storage tanks:

   A. A valid, current Class "A" General Engineering Contractor License, C-10 Electrical Contractor License, C-34 Pipeline Contractor License, C-36 Plumbing Contractor License, or a C-61 (D40) Limited Specialty Service Station Equipment and Maintenance contractor License issued by the Contractors State License Board, as applicable.
   B. A valid, current certificate of training from the manufacturer(s) of the component (s) being installed.
   C. A valid, current UST Installation/Retrofitting certificate issued by the International Code Council (ICC).
   D. A valid, current hazardous substance certification issued by the Contractors State License Board.

3. The contractor should be aware that they are subject to all laws and regulations enforced by California Occupational Safety and Health Administration (Cal-OSHA).

4. The qualified individual must be on-site providing direct and personal supervision at all times when the work is being done on the UST system.

5. As a condition of plan approval, a copy of the contractor's license issued by the Contractors License Board, certificate of training from the manufacturer(s) of the component (s) being installed, UST Installation/Retrofitting certificate issued by the International Code Council (ICC), and hazardous substance certification issued by the California State License Board must be received by this office before the plans can be approved.

The installation is complete only after successful compliance with the above requirements. If you have any questions or need additional information, please contact the Underground Storage Tank program at (714) 433-6000.