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# State Water Resources Control Board

## Division of Water Quality UST Program

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Arnold Schwarzenegger  
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## LG 150-2 (Supersedes LG-150-1)

### UNDERGROUND STORAGE TANK OVERFILL PREVENTION SYSTEMS

(Available electronically at <http://www.waterboards.ca.gov/ust/>)

To: Local Agencies and Other Interested Parties

The purpose of this letter is to explain the overfill prevention requirements for underground storage tank (UST) systems and how they relate to secondary containment requirements for vent and tank riser piping. Enclosed is a table summarizing the requirements discussed in this letter.

### UST Overfill Prevention Requirements

Installation of overfill prevention systems on USTs is required pursuant to Health & Safety Code (H&SC), Section 25290.1(f), 25290.2 (e), 25291(c), and 25292 (d) and California Code of Regulations (CCR), Title 23, Division 3, Chapter 16, Section 2635(b) and 2665. These regulations allow use of the following four options to satisfy UST overfill prevention requirements.

**Option A:** The overfill prevention system alerts the transfer operator when the tank is 90 percent full by restricting the flow into the tank or triggering an audible and visual alarm [Section 2635(b)(2)(A), CCR] and does not allow for manual override. This option allows for the use of one of the following two methods:

- 1) Flow restrictor(s), installed below the vent line and other tank risers, reduce flow to the UST when the UST is 90 percent full, alerting the delivery operator to stop delivery.
- 2) External (audible and visual) alarm alerts the delivery operator when the UST is 90 percent full.

**Option B:** The overfill prevention system restricts delivery of flow to the tank at least 30 minutes before the tank overfills and does not allow for manual override. The flow restriction must occur when the tank is filled to no more than 95 percent of capacity, and must activate an audible alarm at least five minutes before the tank overfills. [Section 2635(b)(2)(B), CCR.]

**Option C:** The overfill prevention system provides positive shut-off of flow to the tank when the tank is filled to no more than 95 percent of capacity [Section 2635(b)(2)(C), CCR] and does not allow for manual override.

**Option D:** The overfill prevention system provides positive shut-off of flow to the tank so that none of the fittings located on top of the tank are exposed to product due to overfilling [Section 2635(b)(2)(D), CCR] and does not allow for manual override.

## Secondary Containment Requirements

All piping connected to a UST constructed pursuant to H&SC, Section 25291 and installed after July 1, 1987 is required to have secondary containment unless it meets the exemption criteria described in Section 2636(a), CCR. UST vent or tank riser piping that is equipped with either the overfill prevention system described in Option B or in Option C above is currently<sup>1</sup> exempt from secondary containment requirements. Please note that this exemption is not authorized for USTs constructed in accordance with H&SC 25290.1 or H&SC 25290.2.

## Overfill Prevention Recommendations

Ball float valves should not be used with suction piping systems or pressure delivery systems. During a product drop, as the tank fills, the ball seat restricts the flow of vapor back to the transport truck or through the tank vent. Vapors can no longer escape and are compressed inside the tank. If a ball float is used in conjunction with a suction piping system, the increased pressure in the tank can push product out through the air eliminator at the dispenser, causing a spill at the fuel island. Additionally, when ball float valves are used in conjunction with pressure delivery systems, fuel delivery could over pressurize and/or overfill the tank.

When using ball float valves, a valve should be installed at each tank top opening from which the tank could vent during delivery. Ball float vent valves protrude into underground storage tanks from the Stage I vapor return riser pipe. As the tank becomes full during a product drop, the ball seat restricts the flow of vapors back to the transport truck or through the tank vent. Vapors cannot escape from the tank, and are instead compressed in the remaining ullage space. As the vapors are compressed, product flow into the tank is severely restricted. If all tank vent openings are not restricted, vapors can exit the tank and product flow will not be restricted.

When using a combination of ball float valves and flapper valves, the flapper valve should be set below the level of the ball float valves. If the ball float valve is installed below the flapper valve, it may interfere with the normal operation of the flapper valve.

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<sup>1</sup> Single-walled components of UST systems may be a source of product or vapor releases to the subsurface environment, even if they do not routinely contain product. Therefore, we recommend installation of secondary containment on all UST components, including those currently exempt from this requirement.

## **California Air Resources Board (CARB) and Local Air Districts**

Overfill prevention systems and spill containment boxes have an impact on the performance of vapor recovery systems of UST systems storing gasoline. Any such components may be subject to certification or other requirements implemented and enforced by CARB and the local air districts. Installation, removal, and maintenance of these components may require prior approval from the local Air Quality Management District, so removal of these components for routine annual inspection or testing is not recommended unless manufacturer's instructions or site-specific conditions indicate that it is necessary. For more information regarding these requirements, please refer to CARB's website: <http://www.arb.ca.gov/vapor/vapor.htm>.

## **Local UST Implementing Agencies**

Some of the local UST implementing agencies may have established requirements more stringent than the state requirements. For a list of local implementing agencies, please refer to the CalEPA website: <http://www.calepa.ca.gov/CUPA/>.

If you have any questions regarding this letter, please contact the UST Program at (916) 341-5775, or log onto our website: <http://www.waterboards.ca.gov/ust/>.

Sincerely,

*Original signed by*

Kevin Graves, Manager  
Underground Storage Tank Program

Enclosure

[LG 150-2 Summary Table](#)

**Summary of Underground Storage Tank Overfill Prevention Options**  
Health & Safety Code (H&SC), Sections 25281.5, 25290.1, 25290.2, 25291, and 25292  
CCR, Title 23, Division 3, Chapter 16, Sections 2635, 2636, and 2665

				<i>H&amp;SC 25291</i>	<i>H&amp;SC 25290.1 &amp; 25290.2</i>			
<i>Option</i>	<i>Overfill Prevention System</i>	<i>Overfill Prevention Mechanism "Examples"</i>	<i>Product Level</i>	<i>Regulatory Citation CCR, Title 23</i>	<i>Vent/Tank Riser Piping Subject to Corrosion Protection? §2636(b)</i>	<i>Vent/Tank Riser Piping Subject to Secondary Containment<sup>4</sup>? §2636(a)(1)</i>	<i>Vent/Tank Riser Piping Subject to Secondary Containment?</i>	
<b>A</b>	1	Flow restrictor	Ball float <sup>1</sup>	90%	§2635(b)(2)(A)	YES	YES <sup>4</sup>	YES
	2	External alarm	Audible and visual alarm	90%	§2635(b)(2)(A)	YES	YES <sup>4</sup>	YES
<b>B</b>	Flow restrictor	Ball float <sup>1</sup> And External alarm	At least 30 minutes before tank overfills & filled to no more than 95% of tank capacity	§2635(b)(2)(B)	NO <sup>3</sup>	NO <sup>5</sup>	YES	
			At least five minutes before tank overfills					
<b>C</b>	Positive shut off valve	Fill tube <sup>2</sup> valve (flapper)	95%	§2635(b)(2)(C)	NO <sup>3</sup>	NO <sup>5</sup>	YES	
<b>D</b>	Positive shut off valve	Fill tube <sup>2</sup> valve (flapper)	Below tank top fittings	§2635(b)(2)(D)	YES	YES <sup>4</sup>	YES	

<sup>1</sup> In order to provide proper flow restriction, a ball float is required under all open risers except the fill riser and automatic tank gauging port.

<sup>2</sup> If both types of overfill prevention systems (ball float and fill tube valve) are installed, the ball float may interfere with the operation of the fill tube valve if the ball float is installed lower than the fill tube valve. Therefore, the ball float should be installed at a higher level than the fill tube valve so that the fill tube valve is activated prior to any flow restriction.

<sup>3</sup> Corrosion protection is not required in this case because the vent/tank riser piping is exempt from the definition of “pipe” pursuant to H&SC §25281.5. However, it is a best management practice to provide corrosion protection for all corrodible piping in contact with the backfill.

<sup>4</sup> Secondary containment is required at post July 1, 1987 installations because with this type of overfill prevention the components do not meet the exemption criteria of Section 2636 (a)(1), CCR.

<sup>5</sup> Single-walled components of UST systems may be a source of product or vapor releases to the subsurface environment, even if they do not routinely contain product. Therefore, we recommend installation of secondary containment on all UST components, including those currently exempt from this requirement.