

**OCCUPATIONAL SAFETY  
AND HEALTH STANDARDS BOARD**

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NOTICE OF PROPOSED MODIFICATIONS TO  
CALIFORNIA CODE OF REGULATIONS

TITLE 8: Section 5605 of the General Industry Safety Orders and  
New Section 1550 of the Construction Safety Orders.

**Tank Storage Subject to Flooding, Precautionary Measures**

Pursuant to Government Code Section 11346.8(c), the Occupational Safety and Health Standards Board (Standards Board) gives notice of the opportunity to submit written comments on the above-named standard in which modifications are being considered as a result of public comments and/or Board staff consideration.

On November 21, 2013, the Standards Board held a Public Hearing to consider revisions of Title 8, Section 5605 of the General Industry Safety Orders and New Section 1550 of the Construction Safety Orders. The Standards Board received written comments on the proposed revisions. The standard has been modified as a result of these comments and Board consideration.

A copy of the full text of the standard, with the modifications clearly indicated, is attached for your information. In addition, a summary of written comments regarding the original proposal and staff responses is included.

Pursuant to Government Code Section 11346.8(d), notice is also given of the opportunity to submit comments concerning the addition to the rulemaking file of the following document relied upon and document incorporated by reference:

**ADDITIONAL DOCUMENT RELIED UPON**

1. Definitions of FEMA Flood Zones as they appeared on February 18, 2014 at <https://msc.fema.gov>

**ADDITIONAL DOCUMENT INCORPORATED BY REFERENCE**

1. National Fire Protection Association (NFPA) 30-1973, *Flammable and Combustible Liquids Code*, Appendix B.

This document is available for review during normal business hours at the Standards Board Office located at the address listed below.

Any written comments on these modifications must be received by 5:00 p.m. on March 10, 2014, at the Standards Board's Office, 2520 Venture Oaks Way, Suite 350, Sacramento, California 95833 or submitted by fax to (916) 274-5743 or e-mailed to [oshsb@dir.ca.gov](mailto:oshsb@dir.ca.gov). This proposal will be scheduled for adoption at a future Business Meeting of the Standards Board.

The Standards Board's rulemaking file on the proposed action is open to public inspection Monday through Friday, from 8:00 a.m. to 4:30 p.m. at the Standards Board's Office. Inquiries concerning the proposed changes may be directed to Marley Hart, Executive Officer at (916) 274-5721.

OCCUPATIONAL SAFETY AND HEALTH  
STANDARDS BOARD

Date: February 21, 2014

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Marley Hart, Executive Officer

**PROPOSED MODIFICATIONS**  
**(Regulatory language to be deleted is shown in bold strike-out and, new language is shown in bold underline.)**

**STANDARDS PRESENTATION  
TO  
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD**

PROPOSED STATE STANDARD,  
TITLE 8, DIVISION 1, CHAPTER 4

Amend Section 5605 to read:

§5605. Protection of Tanks in ~~Locations That May Be Flooded~~ Areas Subject to Flooding.

~~(a) Where an underground or above ground storage tank installed on or after October 1, 2014 is located in an area that may be subjected to flooding as defined by the Federal Emergency Management Agency (FEMA), installation shall conform to be in accordance with the provisions of NFPA No. 30-1973, NFPA 30-2012, Chapter 21, Section 21.7.3, Chapter 22, Section 22.5.2.5, and Section 22.14, Chapter 23, Section 23.14, and Annex A.23.14.1, which are hereby incorporated by reference. Such tanks in areas subject to flooding as defined by FEMA, installed prior to October 1, 2014, shall conform to either the foregoing provisions of the NFPA 30-2012 or to the NFPA 30-1973, Appendix B, which also is hereby incorporated by reference. Chapters 21 Section 21.7.3, Chapter 22, Section 22.5.2.5, and Section 22.14, Chapter 23, Section 23.14, and Annex A.23.14.1, which are hereby incorporated by reference.~~

NOTE: FEMA flood maps and flood zone definitions are found at <https://msc.fema.gov>.

~~(b) In addition to the requirements of subsection (a), the following requirements apply when an underground or above ground storage tank is located in a flood area (i.e., an area prone to flooding):~~

~~(1) No above ground vertical storage tank containing a flammable or combustible liquid shall be located so that the allowable liquid level within the tank is below the established maximum flood stage, unless the tank is provided with a guiding structure such as described in subsections (b) (12), (13), and (14) of this section.~~

~~(2) Independent water supply facilities shall be provided at locations where there is no ample and dependable public water supply available for loading partially empty tanks with water.~~

~~(3) In addition to the preceding requirements, each tank so located that more than 70 percent, but less than 100 percent, of its allowable liquid storage capacity will be submerged at the established maximum flood stage, shall be safeguarded as follows:~~

~~(A) The tank shall be raised, or its height shall be increased, until its top extends above the maximum flood stage a distance equivalent to 30 percent or more of its allowable liquid storage capacity provided the submerged part of the tank shall not exceed two and one-half times the diameter.~~

~~(B) As an alternative to (A), adequate noncombustible structural guides, designed to permit the tank to float vertically without loss of product, shall be provided.~~

STANDARDS PRESENTATION  
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PROPOSED STATE STANDARD,  
TITLE 8, DIVISION 1, CHAPTER 4

Amend Section 5605 to read:

(4) Horizontal tanks that are located where more than 70 percent of the tank's storage capacity will be submerged at the established flood stage shall be secured by one of the following methods:

(A) Anchored to resist movement.

(B) Attached to a foundation of steel and concrete or of concrete having sufficient weight to provide load for the tank when filled with liquid and submerged by floodwater to established flood stage.

(C) Secured from floating by other means.

(5) At locations where there is no ample and dependable water supply, or where filling of underground tanks with liquids is impracticable because of the character of their contents, their use, or for other reasons, each tank shall be safeguarded against movement when empty and submerged by high ground water or floodwaters by anchoring, weighting with concrete or other approved solid loading material, or each tank shall be secured by other means. Each such tank shall be so constructed and installed that it will safely resist external pressures due to high ground water or floodwaters.

(6) At locations where there is an ample and dependable water supply available, underground tanks containing flammable or combustible liquids, so installed that more than 70 percent of their storage capacity will be submerged at the maximum flood stage, shall be so anchored, weighted, or secured by other means, as to prevent movement of such tanks when filled with flammable or combustible liquids and submerged by floodwaters to the established flood stage.

(7) Pipe connections below the allowable liquid level in a tank shall be provided with valves or cocks located as closely as practicable to the tank shell. Such valves and their connections to tanks shall be of steel or other material suitable for use with the liquid being stored. Cast iron shall not be permitted.

(8) At locations where an independent water supply is required, it shall be entirely independent of public power and water supply. Independent source of water shall be available when flood waters reach a level not less than 10 feet below the bottom of the lowest tank on a property.

(9) The self-contained power and pumping unit shall be so located or so designed that pumping into tanks may be carried on continuously throughout the rise in floodwaters from a level 10 feet below the lowest tank to the level of the potential flood stage.

STANDARDS PRESENTATION  
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PROPOSED STATE STANDARD,  
TITLE 8, DIVISION 1, CHAPTER 4

(10) Capacity of the pumping unit shall be such that the rate of rise of water in all tanks shall be equivalent to the established potential average rate of rise of floodwaters at any stage.

Amend Section 5605 to read:

(11) Each independent pumping unit shall be tested periodically to insure that it is in satisfactory operating condition.

(12) Structural guides for holding floating tanks above their foundations shall be so designed that there will be no resistance to the free rise of a tank and shall be constructed of noncombustible material.

(13) The strength of the structure shall be adequate to resist lateral movement of a tank subject to a horizontal force in any direction equivalent to not less than 25 pounds per square foot acting on the projected vertical cross-sectional area of the tank.

(14) Where tanks are situated on exposed points or bends in a shoreline where swift currents in floodwaters will be present, the structures shall be designed to withstand a unit force of not less than 50 pounds per square foot.

(15) The filling of a tank to be protected by water loading (i.e., to load the tank with water to help secure and strengthen it) shall be started as soon as floodwaters reach flood stage. The rate of filling shall be at least equal to the rate of rise of the floodwaters (or the established average potential rate of rise).

(16) Sufficient fuel to operate the water pumps shall be available at all times to insure adequate power to fill all tankage with water.

(17) All valves on connecting pipelines shall be closed and locked in closed position when water loading has been completed.

(18) Where structural guides are provided for the protection of floating tanks, all rigid connections between tanks and pipelines shall be disconnected and blanked off or blinded before the floodwaters reach the bottom of the tank, unless control valves and their connections to the tank are of a type designed to prevent breakage between the valve and the tank shell.

(19) All valves attached to tanks other than those used in connection with water loading operations shall be closed and locked.

(20) If a tank is equipped with a swing line, the swing pipe shall be raised to and secured at its highest position.

**STANDARDS PRESENTATION  
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PROPOSED STATE STANDARD,  
TITLE 8, DIVISION 1, CHAPTER 4

**(21) Inspections. The Chief of the Division of Occupational Safety and Health Administration shall ensure, and the Chief or the Chief's authorized representative shall conduct periodic inspections to verify:**

**Amend Section 5605 to read:**

**(A) That all flammable or combustible liquid storage tanks are in compliance with these requirements and so maintained.**

**(B) That detailed printed instructions of what to do in flood emergencies are properly posted.**

**(C) That station operators and other employees depended upon to carry out such instructions are thoroughly informed as to the location and operation of such valves and other equipment necessary to effect these requirements.**

NOTE: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

**STANDARDS PRESENTATION  
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PROPOSED STATE STANDARD,  
TITLE 8, DIVISION 1, CHAPTER 4

**Add New Section 1550 to read:**

**§1550. Tanks are subject to the requirements of Section 5605 of the General Industry Safety Orders.**

**Tanks are subject to the requirements of Section 5605 of the General Industry Safety Orders.**

**NOTE: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.**

## **SUMMARY OF AND RESPONSE TO COMMENTS**

## SUMMARY AND RESPONSE TO WRITTEN COMMENTS

### I. Written Comments

Mr. Fredrick Chun, Assistant Fire Marshal, City of Anaheim, by letter dated November 20, 2013.

#### Comment:

Mr. Chun stated that the proposed amendments appear to be vague and ambiguous in that the areas subject to flooding are not well-defined. He recommended that the term “areas subject to flooding” be defined. Mr. Chun commented that the regulations are not clear as to whether the scope will only apply to new installations or be retroactive to any Underground Storage Tanks (UST) or Aboveground Storage Tanks (AST) sites that are in areas prone to flooding. He also noted that the proposed Section 5605(b) and its subsections appear to be more stringent on the implementation than its Federal counterpart standard. Finally, Mr. Chun was concerned that the proposed changes had not been fully evaluated to ensure that they do not conflict with other regulatory agencies.

#### Response:

The Board agrees with Mr. Chun’s comments and has addressed his concerns in the amendments to the proposal. See Board staff’s response to Mr. Bohon’s comments below.

The Board thanks Mr. Chun for his comments and participation in the Board’s rulemaking process.

Mr. Bill Taylor, PASMA-South Chapter, Legislative and Regulatory Representative, by letter, dated November 20, 2013.

#### Comment:

Mr. Taylor commented that the proposed regulation appears to be vague and ambiguous in that the areas subject to flooding are not well-defined. He suggested that the term “areas prone to flooding” be defined, otherwise any underground or above ground tank located in an area that may be on a flood zone map, regardless of the relative risk of flood, may likely have to comply with this requirement. Mr. Taylor opined that this could cost employers several hundred million dollars for permitting, excavation, securing, backfilling, and installation of new ground cover. Further, Mr. Taylor is concerned that the proposed amendments would conflict with other regulatory requirements from other state agencies.

#### Response:

The Board acknowledges Mr. Taylor’s comments and has resolved his issues in the amendments to the proposal. See Board staff’s response to Mr. Bohon’s comments below.

The Board thanks Mr. Taylor for his comments and participation in the Board’s rulemaking process.

Mr. Jim Bohon, Assistant Secretary, Local Program Coordination and Emergency Response, California Environmental Protection Agency, by letter dated November 22, 2013 .

Comment:

Mr. Bohon stated that the California Environmental Protection Agency (Cal/EPA) is concerned that the proposed changes have not been fully coordinated with and evaluated by the other state and local agencies that have regulatory oversight responsibilities for USTs and ASTs. He notes that adoption of these regulations without adequate consultation and review by other state and local agencies that regulate USTs and ASTs could have a negative impact on the State's efforts to regulate these tanks, as well as impacting numerous other stakeholders. Mr. Bohon strongly encourages the Board to consult with affected agencies prior to proceeding with the proposal.

Response:

The Board accepts Mr. Bohon's comments regarding the need to coordinate the proposed changes with state and local agencies. Board staff coordinated a face to face meeting with the affected agencies (Cal/EPA, Cal/Fire, State Water Resources Control Board, and local fire district) at the Standards Board office to discuss the issues and to develop language acceptable to each agency's scope of responsibility. After several weeks of discussions for developing suitable language, Board staff modified the proposal to incorporate by reference the provisions of the NFPA 30-2012 edition chapters specific to tanks flooding and grandfathering existing tanks by providing the option of complying with either the most recent NFPA 30 edition at a future date (e.g., October 1, 2014) or the 1973 edition.

In a subsequent telephone conference held between Board staff and the agencies involved, it was agreed that the federal language initially proposed will be withdrawn and replaced with language stipulating that USTs and ASTs installed prior to October 1, 2014 located in areas that may be subjected to flooding, as defined by the Federal Emergency Management Agency, will be in accordance with the provisions of Appendix B of NFPA 30-1973 edition or the designated provisions of the NFPA 30-2012. Tanks installed on or after October 1, 2014 shall conform to the provisions of specific chapters of the NFPA 30-2012 edition which are hereby incorporated by reference. There were no additional comments following these amendments.

The Board thanks Mr. Bohon for his comments and participation in the Board's rulemaking process.

II. Oral Comments

Oral comments received at the November 21, 2013 Public Hearing in San Diego, California.

Mr. Bill Jackson, Board Member

Comment:

Mr. Jackson stated that this proposal only applies to tanks in Group 20 and that the proposed Section 1550 is not necessary. He stated that this proposal will apply to tanks associated with construction operations regardless of whether or not it is addressed in the construction standards,

because the general industry standard applies to all things that are not specifically different in the construction standards. Mr. Jackson concluded stating that the revision is not required to make it at least as effective as the federal standard.

Response:

The Board accepts Mr. Jackson's comments and Section 1550 has been removed from the proposal