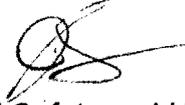


# Memorandum

**To:** Marley Hart, Executive Officer  
Occupational Safety and Health Standards Board  
2520 Venture Oaks Way, Suite 350  
Sacramento, CA 95833

**Date:** March 20, 2015

**From:** Juliann Sum, Chief   
Division of Occupational Safety and Health

**Subject:** Evaluation Report, Petition No. 545  
Ken Smith

This letter is written in response to Petition No. 545 which was received by the Occupational Safety and Health Standards Board (OSHSB) on January 12, 2015. The petition was submitted by Ken Smith who requested an amendment to the California Code of Regulations (CCR), Title 8, General Industry Safety Orders, section 5538. The petitioner is requesting to update and harmonize the provisions of this section with the recently amended section 5532 and applicable California Building and Fire Codes.

## 1.0 Background

The petitioner is the Interim Director of Environment, Health & Safety at the University of California, Office of the President and has submitted this petition as a representative of the Regents of the University of California. CCR, Title 8, sections 5532 and 5538 were amended in 2014 as a part of Globally Harmonized System (GHS) updates to the Hazard Communication Standard and related sections to replace obsolete flammable liquids classifications with the newer GHS flammable categories. During the rulemaking process, representatives of the Regents of the University of California submitted written comments requesting to update the occupancy types in section 5538 and to delete section 5538(a)(1), which restricts the maximum container size for flammables. The Board declined to address these requests, as they were not sufficiently related to the scope of the rulemaking proposal.

## 2.0 Petition Request

The petitioner is requesting a change to Title 8 section 5538.

Group 20. Flammable Liquids, Gases and Vapors  
Article 141. Container and Portable Tank Storage

§5538. Office, Educational and Institutional Occupancies.

(a) Storage shall be limited to that required for operation of office equipment, maintenance, demonstration, treatment, and laboratory work. All liquids in laboratories and at other points of use shall meet the following storage provisions:

- (1) No container for Category 1, 2 or 3 flammable liquids shall exceed a capacity of one gallon except that safety cans can be of two gallons capacity.
- (2) Not more than 10 gallons of Category 1, 2 or 3 flammable liquids combined shall be stored outside of a storage cabinet or storage room, except in safety cans.
- (3) Not more than 25 gallons of Category 1, 2 or 3 flammable liquids combined shall be stored in safety cans outside of a storage room or storage cabinet.
- (4) Not more than 60 gallons of combustible liquids shall be stored outside of a storage room or storage cabinet.
- (5) Quantities of flammable and combustible liquids in excess of those set forth in this section shall be stored in an inside storage room or storage cabinet.

The petitioner seeks the following change to 5538:

1. Add definitions of "educational occupancy" and "laboratory".
2. Change the terms "office" and "institutional" occupancies used in section 5538 to be consistent with the current occupancy classifications used in California Building and Fire Codes.
3. Delete section 5538(a)(1) which limits the storage container size for flammable liquids in the office, educational and institutional occupancies, and replace it with the Table FL-2 in section 5532.

### **3.0 Applicable Standards**

#### **3.1 Definitions of "Office" and "Institutional" Occupancy**

CCR, Title 8, section 3207 has definitions for office occupancy and institutional occupancy:

**Institutional Occupancy.** The occupancy or use of a building or structure or any portion thereof by persons harbored or detained to receive medical, charitable or other care or treatment, or by persons involuntarily detained.

**Office Occupancy.** The occupancy or use of a building or structure or any portion thereof for the transaction of business, or the rendering or receiving of professional services.

The definitions in the Federal OSHA regulations are identical to those in Title 8 and are found in CFR, Title 29, sections 1910.106(a)(16) and (24).

2013 California Building Code and Fire Code are parts of CCR, Title 24, California Building Standards Code and relevant occupancy classifications are as follows:

**Business Group B.** Business Group B occupancy includes, among others, the use of a building or structure, or a portion thereof, for office, professional or service-type transactions, including storage of records and accounts.

Educational Group E. Educational Group E occupancy includes, among others, the use of a building or structure, or a portion thereof, by more than six persons at any one time for educational purposes through the 12th grade.

Institutional Group I. Institutional Group I occupancy includes, among others, the use of a building or structure, or a portion thereof, in which care or supervision is provided to persons who are or are not capable of self-preservation without physical assistance or in which persons are detained for penal or correctional purposes or in which the liberty of the occupants is restricted.

**3.2 Storage Container Size Limits**

CCR, Title 8, section 5532 addresses the design, construction, and capacity of containers for flammable and combustible liquids and subsection (c) includes a table that outlines the maximum allowable size of containers and portable tanks:

5532. Design, Construction, and Capacity of Containers

(c) Containers and portable tanks for flammable and combustible liquids shall conform to Table FL-2.

EXCEPTIONS:

(1) Medicines, beverages, foodstuffs, cosmetics, and other common consumer items, when packaged according to commonly accepted practices, shall be exempt from the requirements of 5532(a).

(2) Glass or approved plastic containers of no more than 1-gallon capacity may be used for a Category 1 or 2 flammable liquid if:

(A) Such liquid either would be rendered unfit for its intended use by contact with metal or would excessively corrode a metal container so as to create a leakage hazard; and

(B) The user's process either would require more than 1 pint of a Category 1 flammable liquid or more than 1 quart of a Category 2 flammable liquid of a single assay lot to be used at one time, or would require the maintenance of an analytical standard liquid of a quality which is not met by the specified standards of liquids available, and the quantity of the analytical standard liquid required to be used in any one control process exceeds one-sixteenth the capacity of the container allowed under Table FL-2 for the category of liquid; or

(3) The containers are intended for direct export outside the United States.

TABLE FL-2. MAXIMUM ALLOWABLE SIZE OF CONTAINERS AND PORTABLE TANKS

Container Type	Category 1	Category 2	Category 3	Category 4 & combustible
Glass or approved plastic	1 pt.	1 qt.	1 gal.	1 gal.
Metal (Other than DOT Drums)	1 gal.	5 gal.	5 gal.	5 gal.
Safety cans	2 gal.	5 gal.	5 gal.	5 gal.

Metal Drum (DOT Spec)	60 gal.	60 gal.	60 gal.	60 gal.
Approved Portable Tanks	660 gal.	660 gal.	660 gal.	660 gal.

Federal OSHA does not have a specific regulation for educational and institutional occupancies. The comparable Federal OSHA regulation for office occupancy is found in CFR, Title 29, section 1910.106(d)(5)(iii):

"Office occupancies." Storage shall be prohibited except that which is required for maintenance and operation of building and operation of equipment. Such storage shall be kept in closed metal containers stored in a storage cabinet or in safety cans or in an inside storage room not having a door that opens into that portion of the building used by the public.

CFR, Title 29, section 1910.106(d)(2)(iii) addresses the size of flammable liquid containers:

1910.106(d)(2)(iii)

Size. Flammable liquid containers shall be in accordance with Table H-12, except that glass or plastic containers of no more than 1-gallon capacity may be used for a Category 1 or 2 flammable liquid if:

1910.106(d)(2)(iii)(a)(1)

Such liquid either would be rendered unfit for its intended use by contact with metal or would excessively corrode a metal container so as to create a leakage hazard; and

1910.106(d)(2)(iii)(a)(2)

The user's process either would require more than 1 pint of a Category 1 flammable liquid or more than 1 quart of a Category 2 flammable liquid of a single assay lot to be used at one time, or would require the maintenance of an analytical standard liquid of a quality which is not met by the specified standards of liquids available, and the quantity of the analytical standard liquid required to be used in any one control process exceeds one-sixteenth the capacity of the container allowed under Table H-12 for the category of liquid; or

1910.106(d)(2)(iii)(b)

The containers are intended for direct export outside the United States.

Table H-12--Maximum Allowable Size of Containers and Portable Tanks for Flammable Liquids

Container type	Category 1	Category 2	Category 3	Category 4
Glass or approved plastic.....	1 pt.....	1 qt.....	1 gal.....	1 gal
Metal (other than DOT drums)....	1 gal.....	5 gal.....	5 gal.....	5 gal
Safety cans.....	2 gal.....	5 gal.....	5 gal.....	5 gal
Metal drums (DOT specifications)	60 gal.....	60 gal.....	60 gal.....	60 gal
Approved portable tanks.....	660 gal.....	660 gal.....	660 gal.....	660 gal

Note: Container exemptions: (a) Medicines, beverages, foodstuffs, cosmetics, and other common consumer items, when packaged according to commonly accepted practices, shall be exempt from the requirements of 1910.106(d)(2)(i) and (ii).

2013 California Fire Code references section 9.4 of the National Fire Protection Association (NFPA) 30 for design, construction and capacity of containers and portable tanks:

5704.3.1 Design, construction and capacity of containers and portable tanks. The design, construction and capacity of containers for the storage of Class I, II and IIIA liquids shall be in accordance with this section and Section 9.4 of NFPA 30.

Section 9.4.3 of NFPA 30 – 2012 states:

9.4.3 The maximum allowable size of a container, intermediate bulk container, or metal portable tank for Class I, Class II, and Class IIIA liquids shall not exceed that specified in Table 9.4.3.

Table 9.4.3 Maximum Allowable Size — Containers, Intermediate Bulk Containers (IBCs), and Portable Tanks

Container Type	Flammable Liquids			Combustible Liquids	
	Class IA	Class IB	Class IC	Class II	Class IIIA
Glass	1 pt (0.5 L)	1 qt (1 L)	1.3 gal (5 L)	1.3 gal (5 L)	5.3 gal (20 L)
Metal (other than drums) or approved plastic	1.3 gal (5 L)	5.3 gal (20 L)	5.3 gal (20 L)	5.3 gal (20 L)	5.3 gal (20 L)
Safety cans	2.6 gal (10 L)	5.3 gal (20 L)	5.3 gal (20 L)	5.3 gal (20 L)	5.3 gal (20 L)
Metal drum (e.g. UN 1A1/1A2)	119 gal (450 L)	119 gal (450 L)	119 gal (450 L)	119 gal (450 L)	119 gal (450 L)
Approved metal portable tanks and IBCs	793 gal (3000 L)	793 gal (3000 L)	793 gal (3000 L)	793 gal (3000 L)	793 gal (3000 L)
Rigid plastic IBCs (UN 31H1 or 31H2) and composite IBCs with rigid inner receptacle (UN31HZ1)	NP	NP	NP	793 gal (3000 L)	793 gal (3000 L)
Composite IBCs with flexible inner receptacle (UN31HZ2) and DOT/UN-approved flexible IBCs	NP	NP	NP	NP	NP
Non-bulk Bag-in-Box	NP	NP	NP	NP	NP
Polyethylene UN1H1 and UN1H2, or as authorized by DOT exemption	1.3 gal (5 L)	5.3 gal (20 L)	5.3 gal (20 L)	119 gal (450 L)	119 gal (450 L)
Fiber drum NMFC or UFC Type 2A; Types 3A, 3B-H, or 3B-L; or Type 4A	NP	NP	NP	119 gal (450 L)	119 gal (450 L)

## 4.0 Discussion

### 4.1 Definition of "Educational Occupancy"

The petitioner stated that there is no applicable regulatory definition of "educational occupancy." CCR Title 8, section 5538 was derived from the 1973 edition of NFPA 30 and it defined "educational occupancy" as follows:

Educational Occupancy shall mean the occupancy or use of a building or structure or any portion thereof by persons assembled for the purpose of learning or of receiving educational instruction.

The definition of "educational occupancy" in NFPA 30 has changed over the years and it is defined in the 2012 edition as follows:

3.3.39.6 Educational Occupancy. An occupancy used to house for educational purposes through the twelfth grade by six or more persons for 4 or more hours per day or more than 12 hours per week.

Current definitions of "educational occupancy" in the California Building and Fire Codes and NFPA Code exclude post-secondary education whereas the intent of section 5538 is to include post-secondary education. In order to ensure that post-secondary education is not excluded from the scope of 5538, it is necessary to add a definition of "educational occupancy," as originally defined in the 1973 edition of NFPA 30, in the Title 8 regulation.

### 4.2 Definition of "Laboratory"

Merriam-Webster dictionary defines "laboratory" as:

1 a : a place equipped for experimental study in a science or for testing and analysis; *broadly* : a place providing opportunity for experimentation, observation, or practice in a field of study

b : a place like a laboratory for testing, experimentation, or practice

2 : an academic period set aside for laboratory work

NFPA 30 does not include a definition of "laboratory". However, the 1975 edition of NFPA 45 defined a "laboratory" as:

Laboratory. A room or space for testing, analysis, research, instruction or similar activities which involves the use of chemical materials.

2013 California Fire Code defines "laboratory" as:

Laboratory. [SFM<sup>1</sup>] A room, building or area where the use and storage of hazardous materials are utilized for testing, analysis, instruction, research or developmental activities.

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<sup>1</sup> State Fire Marshal

CCR Title 8, section 5191 Occupational Exposure to Hazardous Chemicals in Laboratories defines laboratory, but incorporates two additional definitions within the definition of laboratory. The section includes the following definitions of "laboratory," "laboratory scale," and "laboratory use of hazardous chemicals:"

- **Laboratory.** A facility where the "laboratory use of hazardous chemicals" occurs. It is a workplace where relatively small quantities of hazardous chemicals are used on a non-production basis.
- **Laboratory scale.** Work with substances in which the containers used for reactions, transfers, and other handling of substances are designed to be easily and safely manipulated by one person. "Laboratory scale" excludes those workplaces whose function is to produce commercial quantities of materials.
- **Laboratory use of hazardous chemicals.** Handling or use of such chemicals in which all of the following conditions are met:
  - (1) Chemical manipulations are carried out on a "laboratory scale";
  - (2) Multiple chemical procedures or chemicals are used;
  - (3) The procedures involved are not part of a production process, nor in any way simulate a production process; and
  - (4) "Protective laboratory practices and equipment" are available and in common use industry-wide to minimize the potential for employee exposure to hazardous chemicals.

Since the regulatory definition of "laboratory" involves the use of chemicals or hazardous materials and it has narrower meaning than the dictionary definition of the term, it is necessary to add a definition of "laboratory" to section 5538. A clear definition of "laboratory" will help avoid confusion as to what locations are covered by 5538.

#### **4.3 "Office" and "Institutional" Nomenclature**

The petitioner stated that the nomenclature for the categories of occupancies (office and institutional) used in the section is obsolete since it is no longer used in California Building and Fire Codes. The Division of Occupational Safety and Health (Cal/OSHA) disagrees and believes the terms "office" and "institutional" used in section 5538 are still relevant. "Office" and "institutional" occupancies are terms for specific workplace locations which are well understood by the general public. The terms are also clearly defined in title 8, and the fact that the occupancy nomenclatures are no longer used in the California Building and Fire Codes is not relevant. As of September 30<sup>th</sup>, 2002, regulations adopted by the Occupational Safety and Health Standards Board are no longer considered building standards and do not need to be included in Title 24 in order to be enforceable due to the amendment of Health and Safety Code section 18909(j)<sup>2</sup>:

"Building standard" does not include any regulation adopted by the California Integrated Waste Management Board, the Department of Toxic Substances Control, the Occupational Safety and Health Standards Board, or the State Water Resources Control Board concerning the discharge of waste to land or the treatment, transfer, storage, resource recovery, disposal, or recycling of the waste.

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<sup>2</sup> *United States Cold Storage of California*, Denial of Petition for Reconsideration No. 11-R2D4-1342.

Therefore, it is not necessary to replace the occupancy terminology in section 5538 with the occupancy nomenclature used in the California Building and Fire Codes.

#### **4.4 Storage Container Size Limits**

The petitioner also requested to delete CCR, Title 8, section 5538(a)(1) and replace it with the Table FL-2 in section 5532 which was updated in May 2014. The flammable classification terminology in Table FL-2 was updated to the GHS categories in May 2014, but no other changes were made. Table FL-2 in section 5532 is a general standard and applies to all flammable containers at all work locations, whereas section 5538 is limited in scope to office, educational and institutional work places. The intent of section 5538 is to require smaller quantities of flammables liquids at specific non-industrial work locations. Table FL-2 in section 5532 allows for larger flammable containers than allowed in section 5538(a)(1). As a result, the petitioner's request to delete section 5538(a)(1) and reference Table FL-2 of section 5532 would reduce safety in office, educational and institutional occupancies. Moreover, NFPA 45 – 2015, Chapter 10 covers the flammable and combustible liquids in laboratories and the container size limitation for educational and instructional laboratory work areas matches the current requirement of section 5538(a)(1).

#### **5.0 Conclusion**

After review of the petition and examination of the applicable Federal and State standards, 2013 California Fire and Building Codes, NFPA 30 and NFPA 45, Cal/OSHA supports adding definitions of "educational occupancy" and "laboratory" to section 5538.

- The 1973 NFPA 30 definition for "educational occupancy" should be used so as not to exclude post-secondary educational institutions from section 5538.
- To enhance the clarity of section 5538, a definition of laboratory should be added. The 1975 NFPA 45 or the 2013 California Fire Code definition of "laboratory" are nearly identical and either could be used in the regulation. The definition contained in Title 8 section 5191 is not recommended because it incorporates two additional definitions, making it more confusing and less concise.

The petitioner's request to update the occupancy classification terminology (office and institutional) in section 5538 is unnecessary because the terms in Title 8 are clearly defined and well understood by the general public. It is not necessary for the Title 8 terms to be identical to terms used in the California Fire and Building Code.

In addition, the request to delete subsection 5538(a)(1) is not acceptable because it would allow larger flammable containers in office, educational and institutional settings and therefore reduce employee safety in those settings.

**Recommendations Action**

Cal/OSHA recommends that the petitioner's request to add definitions of "educational occupancy" and "laboratory" be GRANTED. Petitioner's request to amend the occupancy classification terminology in section 5538 is not necessary, and the request to delete section 5538(a)(1) does not afford a level of workplace safety equal to that provided by the current regulations. Therefore, Cal/OSHA recommends that these parts of the petition be DENIED.

cc: Keummi Park  
Eric Berg