STATE OF CALIFORNIA
DEPARTMENT OF INDUSTRIAL RELATIONS
OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD
2520 Venture Oaks Way, Suite 350
Sacramento, California 95833
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In the Matter of a Petition by:	)	
	)	PETITION FILE NO. 545
Ken Smith	)	DECISION
Interim Director of Environment	)	
Health & Safety	)	
University of California	)	
Office of the President	)	
Financial Management-Risk Services	)	
111 Franklin Avenue, 10th Floor	)	
Oakland, CA 94607-5200	)	
	)	
Applicant.	)	

The Occupational Safety and Health Standards Board hereby adopts the attached PROPOSED DECISION.

OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD

DAVID THOMAS, Chairman

DAVE HARRISON, Member

WILLIAM JACKSON, Member

PATTY QUINLAN, Member

BARBARA SMISKO, Member

LAURA STOCK, Member

By: Marley Hart
Marley Hart, Executive Officer

DATE: 6/18/2015
Attachments

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PROPOSED PETITION DECISION OF THE OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD (PETITION FILE NO. 545)

INTRODUCTION

The Occupational Safety and Health Standards Board (Board) received a petition on December 22, 2014, from Ken Smith, Interim Director Environmental Health and Safety, University of California, (Petitioner). The Petitioner rescinded and replaced the petition on January 8, 2015. The Petitioner requests the Board to amend Title 8, California Code of Regulations, Section 5538 of the General Industry Safety Orders, to "harmonize" the flammable and combustible liquid storage quantities with those in Section 5532 and applicable California building and fire code nomenclature and categories.

Labor Code section 142.2 permits interested persons to propose new or revised regulations concerning occupational safety and health and requires the Board to consider such proposals, and render a decision no later than six months following receipt. Further, as required by Labor Code section 147, any proposed occupational safety or health standard received by the Board from a source other than the Division of Occupational Safety and Health (Division) must be referred to the Division for evaluation, and the Division has 60 days after receipt to submit an evaluation regarding the proposal.

SUMMARY

The Petitioner seeks definitions (and updates to existing definitions) of "Educational Occupancy," "Office Occupancy," "Institutional Occupancy," and "Laboratory" within Title 8 as they relate to Article 141 Container and Portable Tank Storage. The Petitioner seeks to establish a link between the occupancy categories within Title 8 and the occupancy categories within the California Fire Code/California Building Code. Ultimately, this would allow employers to determine the quantity limits/requirements within Sections 5531 through 5543 that apply to specific rooms/buildings based on their occupancy category.

Additionally, the Petitioner seeks a revision (or repeal of) Section 5538(a)(1) which states:

> *(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.*** *[emphasis added]*

Flammable liquids are categorized by their boiling point. Category 1 liquids have their boiling points lower than that of Category 2 or 3. Category 1 liquids have a higher risk of ignition compared to their Category 2 or 3 counterparts.

The Petitioner's proposal would allow the maximum container sizes in Section 5532, Table FL-2 to be stored outside of a flammable liquids storage room or a flammable liquids storage cabinet. The proposal would affect liquids in "metal containers" and "safety cans;" while glass, plastic, and metal drums would remain unaffected. The Petitioner's stated objective is to allow flammable and combustible liquids, purchased in quantities, at their maximum container size, to be stored in laboratories, but outside of a flammable liquids storage cabinet or flammable liquids storage room. Flammable liquids and combustible liquids would be maintained in their original containers for dispensing to the apparatus for experiments (laboratory work).

TABLE FL-2. MAXIMUM ALLOWABLE SIZE OF CONTAINERS AND PORTABLE TANKS (Category 4, Liquids Removed)			
Container Type	*Category 1*	*Category 2*	*Category 3*
Glass or approved plastic	1 pt.	1 qt.	1 gal.
Metal (Other than DOT Drums)	1 gal.	5 gal.	5 gal.
Safety cans	2 gal.	5 gal.	5 gal.

DIVISION'S EVALUATION

The Division's evaluation report dated March 20, 2015, recommended that the Board grant the Petitioner's request to the extent that definitions of "educational occupancy" and "laboratory" be added to Title 8. The Division also recommended that the Board deny the Petitioner's requests pertaining to modifying and updating the definitions of "office occupancy" and "institutional occupancy." Additionally, the Division recommended that the Board deny the Petitioner's request to modify or repeal the maximum container sizes for flammable and combustible liquids within Section 5538(a)(1).

STAFF'S EVALUATION

The primary document in publication today related to flammable and combustible liquids in laboratories is the NFPA 45. It is important to understand that while Section 5538's requirements have been formed from the NFPA 30-1973, it is in fact the NFPA 45 that should serve as the basis for any future rule changes concerning flammable liquids in laboratories. The

NFPA adopted the NFPA 45, specifically to address the fire hazards within laboratories. NFPA 45-2012, currently maintains the one-gallon non-safety can and two-gallon safety can requirements for "Educational Laboratories" and "Instructional Laboratories."

Section 5538 was written without the distinction between 'Instructional/Educational Laboratories' and non-instructional/non-educational laboratories. The Petitioner's characterization that the requirements in Section 5538(a)(1) are "antiquated" is incorrect. The requirements still exist within the current edition of the NFPA 45.

Board staff discussed with CAL FIRE whether there was a concern in increasing the maximum quantities of those listed in Table FL-2. More specifically, was there a concern in increasing the maximum container sizes from one-gallon non-safety cans and two-gallon safety cans to five gallons for both. CAL FIRE representatives did not express a concern regarding the proposed increase.

The change regarding maximum container sizes sought by the Petitioner would not affect the quantities stored in safety storage cabinet/rooms, nor would the Petitioner's request affect the "maximum allowable quantities" found in the California Fire Codes. The Petitioner seeks larger individual containers for flammable liquids stored in laboratory areas. The storage of these containers would be outside of a safety storage cabinet or storage room. The distinction is the safeguard normally afforded by isolation and ventilation within safety storage cabinets and storage rooms is not afforded to those containers left in the laboratory space itself.

There is a greater risk of fire when the maximum container size is increased. That risk is twofold— first, in the event of a spill or the rupture of a container, a release of up to five gallons could occur from a single container, instead of one, or two gallons from the smaller containers currently allowed.

Second, the hazard posed by increasing the container size, is the increased vapor space within the container once a portion of the liquid has been dispensed. The fuel-air mixture above the liquid represents the main source of danger from flammable liquids. The fuel-air mixture is susceptible to ignition by flames, sparks, or static electricity. As liquids in these containers are dispensed, the 'vapor space' within the container increases. Since containers of flammable liquids and combustible liquids contain more air as the liquid is poured out, the fuel-air mixture within the container increases in volume. The higher the fuel-air volume within the container the greater the size of a flash and a fire. Dispensing the flammable liquid introduces the third element to the fire triangle, ignition source from static electricty or other open flames such as bunsen burners.

It is also of significance that safety cans are designed with features such as self closing lids and flame arresters to prevent ingition sources from entering the safety can. Other safeguards such as low center of gravity and presssure relief characteristics of safety cans contribute to the overall advisablility of safety cans over those of their non-safety can counterparts. In contrast, Section 5523, Table FL-2's quantity limits for both non-safety can (metal containers) and safety cans are identical for both category 2 and category 3 flammable liquids.

Under the current California Fire Code, quantities of flammable and combustible liquids shall not exceed those "necessary for demonstration, treatment, laboratory work, maintenance purposes and operation of equipment" and predefined quantity limits under the "maximum allowable quantities per control area" within the flammable liquids section. This applies to Group A, B, E, I, and F occupancies (among others) within the California Fire Codes. The Section 5538(a) requirements that apply to Office, Educational, and Institutional, match the requirements of the California Fire Code.

Board staff recommends the Petitioner's request for the addition of a definition of "Educational Occupancy" to the General Industry Safety Orders be DENIED.

Board staff recommends the Petitioner's request for updated definitions of "Institutional Occupancy" and "Office Occupancy" be DENIED.

Board staff recommends the Petitioner's request for the addition of a definition of "laboratory" to the General Industry Safety Orders be GRANTED to the extent that the definition specifically excludes both "Educational Laboratories" and "Instructional Laboratories" as defined in NFPA 45. Board Staff recommends "Educational Laboratories" and "Instructional Laboratories" maintain the 1-gallon non-safety container and two-gallon safety can requirements consistent with the NFPA 45 to maintain consistency with Section 5532, Table FL-2.

Board staff recommends that an advisory committee discuss the necessity for rulemaking to Section 5538 to increase the maximum flammable liquid container sizes in laboratory settings *other than* Educational and Instructional Laboratories.

CONCLUSION AND ORDER

The Board has considered the Petition and the recommendations of the Division and Board staff. For reasons stated in the preceding discussion, the Petitioner's requests for the addition of a definition of "Educational Occupancy" and for updated definitions of "Institutional Occupancy" and "Office Occupancy" to the General Industry Safety Orders are DENIED.

The Petitioner's request is GRANTED to the extent that an advisory committee be convened to define "laboratory," specifically excluding "Educational Laboratory" and "Instructional Laboratory." The committee should also consider modifying container size limits within Section 5538(a)(1) for laboratories other than "Educational Laboratories" and "Instructional Laboratories" and such additional possible rulemaking as the Board staff deems appropriate in light of its review of the petition. The Petitioner should be invited to participate in this advisory committee.