OCCUPATIONAL SAFETY
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NOTICE OF PROPOSED MODIFICATIONS TO

CALIFORNIA CODE OF REGULATIONS

TITLE 8: Sections 5184 and 5185
of the General Industry Safety Orders

Storage Battery Systems and Changing and Charging Storage Batteries

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 standards in which modifications are being considered as a result of public comments and/or Board staff consideration.

On January 15, 2015, the Standards Board held a Public Hearing to consider revisions to Title 8, Sections 5184 and 5185 of the General Industry Safety Orders. The Standards Board received comments on the proposed revisions. Section 5185 has been modified as a result of these comments and Board consideration.

A copy of the full text of Section 5185 as originally proposed, with the modifications clearly indicated, is attached for your information. In addition, a summary of all written comments regarding the original proposal and staff responses is included.

Any written comments on these modifications must be received by 5:00 p.m. on April 30, 2015, at the Occupational Safety and Health Standards Board, 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. This proposal will be scheduled for adoption at a future business meeting of the Standards Board.

The Standards Board's rulemaking files on the proposed action are open to public inspection Monday through Friday, from 8:00 a.m. to 4:30 p.m., at the Standards Board's office at 2520 Venture Oaks Way, Suite 350, Sacramento, California 95833.

Inquiries concerning the proposed changes may be directed to the Executive Officer, Marley Hart, at (916) 274-5721.

OCCUPATIONAL SAFETY AND HEALTH
STANDARDS BOARD

Date: April 14, 2015

Marley Hart, Executive Officer

PROPOSED MODIFICATIONS
Modifications are indicated in bold, underline wording for new language and bold strikeout for deleted language.)

STANDARDS PRESENTATION
TO
CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD

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

Amend Section 5185 to read:

§5185. Changing and Charging Storage Batteries.

(a) In addition to the requirements below, the changing and charging of batteries shall comply with applicable requirements of Section 5184.

(~~a~~b) Battery charging installations shall be located in areas designated for that purpose. Employees assigned to work with storage batteries shall be qualified employees and shall be instructed in emergency procedures ~~such as dealing with accidental acid spills~~.

~~(b) The area shall be adequately ventilated to prevent concentrations of flammable gases exceeding 20 percent of the lower explosive limit, and to prevent harmful concentration of mist from the electrolyte.~~

(c) Where storage batteries capable of venting flammable gas or corrosive mist are installed or charged, the space shall be ventilated by natural or mechanical means to prevent concentrations of flammable gases from exceeding 20% of the lower explosive limit of the gas, and harmful levels of mist from the electrolyte.

(~~c~~d) Where corrosive liquids are ~~regularly or frequently~~ handled ~~in open containers or drawn from reservoirs or pipelines, adequate~~ or can potentially be released, means shall be provided to neutralize or dispose of spills and overflows ~~promptly and safely~~.

~~(d) Carboy tilter, siphon, hand-operated bulb or hand-operated pump shall be provided and used for dispensing electrolyte or acid~~.

(e) When dispensing or sampling electrolyte, only devices specifically designed for such activities shall be used.

~~(e) Facilities shall be provided for protecting charging apparatus from damage by mobile equipment.~~

~~(f) Appropriate mechanical lifting and material handling devices or equipment shall be provided for handling batteries.~~

~~(g) Smoking shall be prohibited in the charging area.~~

~~(h) Precautions shall be taken to prevent open flames, sparks, or electric arcs in battery charging areas. When racks are used for support of batteries, they shall be made of materials nonconductive to spark generation or coated or covered to achieve this objective. Tools and other metallic objects shall be kept away from the top of uncovered batteries. Chargers shall be turned off when leads are being connected or disconnected.~~

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

(~~i~~f) Electrolyte (acid or base, and distilled water) for battery cells shall be mixed in a well-ventilated room. Acid or base shall be poured gradually into the water while stirring. Water shall never be poured into concentrated (greater than 75 percent) acid solutions.

~~(j) Mobile equipment shall be properly positioned and brake applied before attempting to change or charge batteries.~~

~~(k) When charging batteries, the vent caps shall be kept firmly in place to avoid electrolyte spray. Care shall be taken to assure that vent caps are functioning. The battery compartment cover(s) shall be open to dissipate heat.~~

~~(l) Facilities for quick drenching or flushing of the eyes and body shall be provided unless the storage batteries are:~~

~~(1) equipped with explosion resistant or flame arrestor type vents; or~~

~~(2) located in a compartment or other location such as to preclude employee exposure.~~

~~EXCEPTIONS: Automotive servicing facilities and parts stores where:~~

~~1. A suitable neutralizing agent is available.~~

~~2. An adequate supply of clean water is readily available.~~

~~3. The transfer system is essentially a closed system and does not involve handling acid in open containers.~~

(~~m~~g) When taking specific gravity readings, the open end of the hydrometer shall be covered with an acid resistant material while moving it from battery to battery to avoid splashing or throwing the electrolyte.

(~~n~~h) Electrolyte shall only be placed in suitable containers and shall not be stirred with metal objects.

(i) Facilities shall be provided for protecting charging apparatus from damage by mobile equipment. Mobile equipment shall be properly positioned and brake applied before attempting to change or charge batteries.

(j) Mechanical lifting and material handling devices or equipment shall be provided for handling batteries.

(k) Smoking shall be prohibited in the charging area.

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

(l) Precautions shall be taken to prevent static discharge, open flames, sparks, short circuits, or electric arcs in areas where batteries are charged. When racks are used for support of batteries, they shall be made of materials nonconductive to spark generation or coated or covered to achieve this objective. Tools and other metallic objects shall be kept away from the top of uncovered batteries. Chargers shall be turned off when leads are being connected or disconnected.

(m) When charging batteries with vent caps, ~~**they**~~ **the vent caps** shall be kept firmly in place to avoid electrolyte spray. The battery compartment cover(s) shall be open to dissipate heat.

(n) Facilities for quick drenching or flushing of the eyes and body shall be provided in accordance with Section 5162 unless the storage batteries are:

(1) equipped with explosion resistant or flame arrestor type vents; or

(2) located in a compartment or other location such as to preclude employee exposure.

EXCEPTION to Subsection (n): Automotive servicing facilities and parts stores where:

1. A suitable neutralizing agent is available, and

2. An adequate supply of clean water is readily available, and

3. The transfer system is essentially a closed system and does not involve handling acid in open containers.

(o) When a jumper battery is connected to a battery in a vehicle, the ground lead shall connect to ground away from the vehicle's battery. Ignition, lights and accessories on the vehicle shall be turned off before connections are made.

(p) Vent caps shall be in place when batteries are being moved.

EXCEPTION~~S~~ to Subsection (p): Portable equipment battery systems:

Batteries and battery charging equipment of less than 100 watt hours are exempt.

(q) Personal protective equipment shall be provided in accordance with Section 3380.

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

SUMMARY OF AND RESPONSES TO COMMENTS

SUMMARY OF AND RESPONSES TO WRITTEN AND ORAL COMMENTS

I. Written Comments

Mr. David Shiraishi, Area Director, Region IX, OSHA, U.S. Department of Labor, by letter dated January 15, 2015.

Comment:

Mr. Shiraishi commented that the proposed regulation does not appear to be commensurate with Federal OSHA (OSHA) standards because OSHA prescribes the type of eye protection and gloves needed to protect the employees when handling electrolyte or performing certain tasks. It opines that the State's requirement for an employer to perform an assessment to determine which personal protective equipment (PPE) should be used could result in the provision of less protection than is required by the federal regulation.

Response:

The Board does not accept the comment. In the absence of a definition of "commensurate" provided by OSHA, the Board refers to the following from www.merriam-webster.com:

> "Commensurate: Equal or similar to something in size, amount, or degree."

The Board believes that the proposed language is commensurate according to the listed definition.

The complete wording of the federal requirement referenced in the OSHA comment is found in the regulations covering the telecommunication industry, reading as follows:

> 1910.268(b)(2)(i)
> Eye protection devices which provide side as well as frontal eye protection for employees shall be provided when measuring storage battery specific gravity or handling electrolyte, and the employer shall ensure that such devices are used by the employees. The employer shall also ensure that acid resistant gloves and aprons shall be worn for protection against spattering…

The general regulation for OSHA eye protection is found in 1910.133 "Eye and Face Protection," which, in relevant part, requires that employees wear "appropriate" eye protection meeting the requirements of either the 1989 or 2003 version of ANSI Z87.1, which are incorporated by reference.

ANSI Z87.1-2003 states "Protectors shall be required where there is a reasonable probability of an eye or face injury that could be minimized or prevented by the use of such protection (Section 6.2.1 General Requirements)." Section 6.2.2 "Hazard Assessment" recommends performing a

hazard assessment to determine which types of eye or face protection are appropriate for each workplace situation.

To summarize the OSHA requirements, for general situations where employees are exposed to eye hazards, employers must comply with ANSI Z87.1 (1989 or 2003). The eye protection must be appropriate and the ANSI standard requires its use "where there is a reasonable probability" for injury as determined by an evaluation of the work situation. For work in the telecommunication industry, employees measuring storage battery specific gravity or handling electrolyte shall wear "eye protection devices which provide side as well as frontal eye protection." Additionally, telecom workers shall wear acid resistant gloves and aprons for these tasks.

The Board's proposed amendment requires that employers perform a hazard assessment to determine the PPE necessary to provide protection to employees from the hazards to which they are exposed. Section 3380 requires the employer to select "safety devices and safeguards of the proper type for the exposure and of such design, strength and quality as to eliminate, preclude or mitigate the hazard." The section also requires PPE to be "approved" as defined in Section 3206, meaning that the devices "have been approved, listed, labeled, or certified as conforming to applicable governmental or other nationally recognized standards, or applicable scientific principles." Section 3380(e) requires that "Protectors shall be of such design, fit and durability as to provide adequate protection against the hazards for which they are designed." Finally, Section 3380(f) "Hazard assessment and equipment selection" states in part that "The employer shall assess the workplace to determine if hazards are present, or are likely to be present, which necessitate the use of personal protective equipment (PPE)."

The proposed amendment is "equal or similar" (commensurate) to OSHA's general eye protection requirement because it includes wording similar to that required in ANSI Z87.1 (2003). The Board, however, asserts that the proposed language will provide equal or better protection to employees in the telecom industry as well.

The federal telecom language requires eye protection devices with front and side protection. "Eye protection devices" could mean safety glasses with side shields or goggles with ventilation slots on the sides, neither of which are appropriate for handling corrosive liquids, but both of which would comply with 1910.268(b)(2)(i). Similarly, not all acid resistant gloves are appropriate for all corrosive liquids. For example, organic and inorganic acids can require different types of glove materials. Furthermore, the strength of the acid in the electrolyte may need to be accounted for and generic "acid resistant gloves" may not be appropriate.

The proposed amendment will require that the PPE provided by an employer is "proper" for the exposure, mitigates the hazard, and is "approved" and "adequate" to protect against the hazard. Instead of relying on labels like "eye protection" or "acid resistant," the employer will need to consult Safety Data Sheets, industry best practices, experts, or other sources to determine the proper PPE. Such requirements will ensure that the employer properly scales the PPE requirements commensurate with the hazard being abated. The State language does not allow for a "one-size fits all" solution as could be allowed by the OSHA regulation.

Strict compliance with the State's proposed language will result in the provision of all necessary PPE, including appropriate eye protection, gloves and an apron. Strict compliance with the OSHA language may or may not result in the proper PPE being used by an employee. The California Division of Occupational Safety and Health is charged with ensuring that the proposed amendment is accurately followed.

While OSHA is concerned that insufficient PPE could be selected as a result of the hazard evaluation required by Section 3380, the employer who selects PPE contrary to approved best practices and consensus standards would be cited for not providing adequate protection to its employees. The OSHA comment hints that even where no hazard exists, the federal language would require eye protection, gloves, and an apron, but this would not be the case. If there is no hazard, OSHA would be unable to cite an employer for not providing the listed PPE. Employees handling a sealed battery with a gelled electrolyte or measuring specific gravity remotely (or electronically) would not be exposed to a hazard requiring the listed PPE. The proposed amendment would take this situation into account, where the OSHA language could appear confusing and/or burdensome to an employer.

The Board's proposal is a performance standard that will provide protection to employees measuring specific gravity or handling electrolyte at least equal or similar to the requirements of OSHA. Because the proposed language provides protection equivalent to the federal language, the Board rejects the comment and finds no reason to modify the original proposal.

The Board thanks Mr. Shiraishi for his comment and participation in the Board's rulemaking process.

Mr. Jay Weir, Senior Manager – EHS Strategic Compliance, AT&T Environment Health & Safety, by letter dated January 15, 2015.

Comment:

Mr. Weir commented in support of most of the proposed changes, but suggested that the word "qualified" be replaced with the word "trained" in Section 5185(b). He said that the term qualified can be ambiguous and may lead to questions of "qualified by whom?"

Response:

The Board does not accept the comment. Section 3207 defines someone who is qualified as

> "A person designated by the employer who by reason of his training and experience has demonstrated his ability to safely perform his duties and, where required, is properly licensed in accordance with federal, state, or local laws and regulations."

The term "qualified" already incorporates the training requirements proposed by the Commenter. Although the training and experience requirements for traditional lead acid batteries may be minimal, newer technologies can be much more complex and require extensive training and

experience. The Board uses the term "qualified" to allow for flexibility in addressing training and experience requirements for a range of battery technologies.

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

Mr. Gary Schongar, Corporate Safety & Environmental Compliance, Verizon, by letter dated January 14, 2015.

Comment:

Mr. Schongar commented that the proposed rule is a flexible and balanced approach to regulating storage battery safety. He proposes changing the term "qualified employee" to "qualified person, attendant, or operator" to better reflect the definition used in Section 3207 and avoid possible interpretive disputes in the future. He also has concerns with Section 5185(l), covering areas where batteries are charged. He describes a battery rack used at Verizon and possibly other workplaces where batteries are arranged in a metal case that may not be compliant with the current wording. He suggests adding a statement that the racks only need to be non-conductive, or coated to be so, when a potential exists for batteries to contact the metal racks.

Response:

The Board does not accept the comment. The word "qualified" is the important part of the phrase used in Section 5185(b) and defined in Section 3207. The Board does not anticipate that the term "qualified employee" will lead to any confusion when used to indicate that the person, attendant, or operator working with a storage battery must be qualified to perform such work. Regarding the Commenter's concern with Section 5185(l), the only change made by the Board was to relocate the subsection from current Section 5185(h) to proposed subsection 5185(l). The relocation was done to group similar requirements together for clarity. The wording of the existing language is not subject to comment because no change to the regulation is proposed. Should the Commenter wish to propose such a change for a future rulemaking, he is referred to the Board's website for information on petitioning the Board to amend a regulation.

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

Mr. Stephen McCluer, Senior Manager, External Codes & Standards, Schneider Electric, by letter dated December 9, 2014.

Comment:

Mr. McCluer provided several comments which are summarized below:

1) The definition of a battery system provided in 5184(b) should be modified because the system may not always have a rectifier, inverter, converter, or other equipment listed in the proposed definition.

2) The allowable percentage of the lower flammability limit (LFL) mentioned in Section 5185(c) should be 25% as used in various standards, including NFPA, International Fire Code, and the California Fire Code, instead of 20% as currently used in California.

3) In regard to the electrolyte handling requirements mentioned in Section 5185(f), electrolyte should never be mixed outside of a battery factory and should only be provided by the battery manufacturer. Only water should be added to a battery. The statement "water shall never be poured into concentrated…acid solutions" should be clarified. Distilled water may not be the only acceptable type of water that can be added to batteries. The addition of water should be in accordance with the manufacturer's instructions.

4) The proposed amendment does not differentiate between mobile and stationary batteries and battery systems. The minutes of the April 16, 2014 advisory meeting do not include details about a presentation delivered by the Commenter, nor his suggestion that the section be reorganized to address more clearly each type of battery application.

5) The word "appropriate" as used in Section 5185(j) may be difficult to enforce. The intent of the requirement for lifting and handling batteries is to ensure that the equipment used is correct for the job. Only equipment specifically designed for the application should be used to lift or handle the batteries. Such equipment is available from most battery manufacturers.

6) The sentence "The battery compartment cover(s) shall be open to dissipate heat" should be deleted from Section 5185(m) because the term "battery compartment" is not clear and the text may already be covered by Section 5185(c). Also, when Section 5185(m) states "When charging batteries with vent caps, they shall be kept firmly in place…," he asks if "they" refers to the batteries or the vent caps.

7) The term "vent caps" in 5185(p) should be replaced with "shipping plugs" in the regulation. Also, the phrase "with free-flowing electrolyte" should be added to the subsection to harmonize it with the California Fire Code.

<u>Response:</u>

The Board does not accept the comments.

1) The definition used in the proposed amendment is taken from the 2010 California Fire Code; therefore, the Board opts to leave it as written.

2) Although the advisory committee discussed whether the 20% LFL value should be achieved by natural or mechanical means, nobody commented in favor of raising the limit to 25% LFL to conform to other standards. Because ample opportunity to suggest this change was provided and none of the stakeholders present expressed a concern, including the Commenter who was present, the Board chooses to leave the

value at 20% of the LFL as currently required. In the absence of a compelling justification for the change, it is unlikely that the advisory committee would have come to a consensus to raise the LFL value.

3) The committee did not discuss the merits of using manufacturer-supplied electrolyte as the sole source of electrolyte. However, the committee did discuss the language addressing the addition of water to batteries and adding water to acid. Because no consensus was reached to necessitate a change, the language was left alone. The Board chooses to honor the intent of the committee and not make any substantive changes to the language. The only proposed change was to relocate the subsection from (i) to (f).

4) Proposed Section 5185(i) is the combination of existing subsections (e) and (j). The subsections were combined because they both relate to mobile equipment and the advisory committee determined that combining them could add clarity to the regulation.

   In regard to the omitted commentary (by Mr. Mcluer) from the advisory committee meeting, the minutes are not intended to be a transcript of the meeting. Instead, they are a summary of the key points that lead to the proposed language. Because the committee decided not to create separate sections for "stationary, motive, [and] automotive [batteries], etc.," the minutes did not include the discussion. The Board thanks Mr. Mcluer for his participation in the committee, including his informative presentation on several different battery types.

5) The word "appropriate" does not appear in the proposed Section 5185(j) and was noticed for deletion in agreement with the comment. The committee considered using the word "approved" (as defined in Title 8 Section 3206), which would have produced the same result requested by the Commenter, but after discussion, did not feel that the change was necessary. The Board feels that making such a change now would be contrary to the consensus of the advisory committee and chooses to leave the language as proposed.

6) The advisory committee discussed the requirement to keep the battery compartment cover open to dissipate heat, but was unsure why the requirement appeared in the section, or where it applied. To avoid making a change with potential unintended consequences, the committee decided not to change the existing language. The only modification to the subsection is to relocate it nearer to subsections with similar requirements and rearrange the wording so that it applies only to batteries with vent caps. In accordance with the advisory meeting consensus, the Board chooses not to delete the reference to battery compartment covers.

   As pointed out by the Commenter, the word "they" in the subsection could refer to the batteries or the vent caps. Originally, the sentence read: "When charging batteries, the vent caps shall be kept firmly in place to avoid electrolyte spray." The original language was modified to clarify that the requirement only applied to

batteries with vent caps; therefore, the word "they" refers to the vent caps. The Board will replace the word "they" with the words "the vent caps" to avoid further confusion.

7) The committee discussed whether shipping plugs should be required instead of vent caps when batteries are moved, as proposed by the Commenter, but was unable to come to a consensus on the need for a change; therefore, the subsection was left unchanged. The Board chooses to honor the intent of the committee and not make any changes to the language.

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

II. Oral Comments

Oral comments received at the January 15, 2015, Public Hearing in Costa Mesa, California.

Ms. Elizabeth Treanor, Phylmar Regulatory Roundtable, in testimony given on January 15, 2015.

Comment:

Ms. Treanor stated that her organization supports the proposal and thanks the Board for its work.

Response:

The Board thanks Ms. Treanor for her comments and participation in the Board's rulemaking process.

Mr. Jay Weir, AT&T, in testimony given on January 15, 2015.

Comment:

Mr. Weir stated that his organization supports the proposal, but has a concern with the use of the word "qualified." He said that he submitted his comment in writing as well.

Response:

The Board refers the Commenter to the response to his written comment above.

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