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**INITIAL STATEMENT OF REASONS****CALIFORNIA CODE OF REGULATIONS**

TITLE 8: Article 10.1, Section 3401, Section 3402,
New Sections 3402.1 - 3402.3,
Sections 3403 - 3410, New Section 3410.1, and Section 3411
of the General Industry Safety Orders

Fire Fighters' Personal Protective Clothing and Equipment – AB 2146**SPECIFIC PURPOSE AND FACTUAL BASIS OF PROPOSED ACTION**

On September 29, 2014, the Governor signed Assembly Bill No. 2146: Occupational safety: fire fighters: personal protective equipment. As instructed by the Bill, the Department of Industrial Relations convened advisory committee meetings to evaluate if California's safety orders pertaining to fire fighters' personal protective clothing and equipment (PPE) are aligned with the standards promulgated by the National Fire Protection Association (NFPA). The Occupational Safety and Health Standards Board (Board) staff convened these advisory committee meetings and compared California's existing safety orders to the NFPA standards. The advisory committee concluded that the existing Title 8 safety orders for fire fighters' PPE are largely outdated and need to be updated, and that amending the existing safety orders would provide a greater degree of personal protection.

There was consensus among the members of the advisory committee to update Article 10.1, Personal Protective Clothing and Equipment for Fire Fighters, for the following reasons:

- The description of PPE as written in Article 10.1 is largely obsolete. PPE certified to prior editions of various NFPA standards can no longer be purchased.
- PPE technology has advanced in response to the changing fire environment, but the California safety orders have not changed. Modern buildings (new/different building materials and open space design) and their contents (synthetic materials) have affected the behavior of fires resulting in faster fire propagation, shorter times to flashover, shorter time to collapse, shorter escape times, and unknown respiratory hazards.
- Research has shown that fire fighters have higher incidence rates of digestive and respiratory type cancers than the general public. The proposal seeks to

address possible routes of exposure by requiring more extensive cleaning and maintenance of PPE.

Whereas the advisory committee meetings have concluded, NFPA continues to update their standards to newer editions, which makes it necessary to update the proposal developed as a result of the advisory committee meetings.

The personal protective clothing and equipment prescribed in this proposal takes advantage of the advancement in design, materials, and technology to meet the more rigorous testing requirements of the various NFPA standards referred to in this proposal. Mandating the PPE to meet the prescribed NFPA standards establishes a baseline and a minimum level of safety for all fire fighters in California.

Article 10.1. Personal Protective Clothing and Equipment for Fire Fighters

Section 3401. Application.

This section pertains to the application of the article and the general requirements pertaining to personal protective clothing and equipment for fire fighters.

The proposed amendments are as follows:

- Amends subsection (a), which outlines the scope of the article. The proposal revises the referenced section numbers to reflect the proposed changes in Article 10.1. The proposal includes proximity fire fighting and clarifies that Sections 3402.1 and 3402.3 through 3409 apply to proximity fire fighting, not just structural fire fighting. Examples of proximity fires include hazardous waste fires, fuel fires, and aircraft fires. In addition, the proposal specifies that Sections 3402.2, 3410, and 3410.1 apply to wildland fire fighting as defined in Section 3402.
- Existing subsection (b)(6) requires the employer to develop and use a written plan to administer the safe use, maintenance, utilization, and replacement of equipment. An informational note is proposed to be added to subsection (b)(6) to refer the reader to proposed new Section 3402.3 and Section 3410, which contain new requirements regarding the selection, inspection and maintenance of protective ensembles for structural and proximity fire fighting, and wildland fire fighting, respectively.
- Deletes existing subsection (c), as the provisions for personal alarms were incorrectly placed in the application section pertaining to PPE. This deletion is necessary because the personal alarm provisions have been added to proposed Section 3408 regarding Personal Alert Safety Systems.

Section 3402. Definitions.

This section contains the definitions of terms that are used in Article 10.1. Since the Article is proposed to be updated, it is necessary to update the definitions to reflect the proposed new content of Article 10.1. The proposal deletes obsolete terminologies and the definitions of the terms that are listed in the NFPA standards that are proposed to be incorporated by reference in Article 10.1. This proposal is necessary to prevent inconsistencies and duplication of terminologies.

The proposed amendments are as follows:

- Deletes the following existing definitions: after flame; after glow; break away device; char length; education; emergency pick up labor; energy, absorption system; face shield; fire fighting, structural; flame resistance; heat resistance; helmet; incipient stage fire; injury; interior structural fire fighting activities (private fire brigades); lining; outer shell; protective clothing; retention system; trousers; turnout clothing; vapor barrier; and winter liner. These definitions are no longer necessary because the relevant definitions are contained within the multiple NFPA documents which are proposed to be incorporated by reference.
- Amends the definition of “fire fighter” by substituting the word “worker” in place of the word “employee” to clarify that the provisions apply to all types of fire fighters including: inmates, volunteers, and career fire fighters. The proposal deletes the reference to emergency pick-up labor or other persons who may perform first-aid fire extinguishment as collateral to their regular duties from the fire fighter definition. This reference is outdated, specifically, the term “emergency pick-up labor” (proposed for deletion in Section 3402) which is defined as “personnel consisting of the National Guard, military forces, forest product workers, farm workers, ranchers, and other persons who may be recruited from time to time to help contain and control wildland fires”. When there is a significant wildfire event, the personnel brought in under “mutual aid” or emergency contract to control wildfires are simply called “fire fighters”. Therefore, the reference to emergency pick-up labor or other persons will no longer be used in Article 10.1.
- Amends the definition of “harmful exposure” in order to be consistent with Section 5140, which contains definitions pertaining to harmful dusts, fumes, mists, vapors, and gases.
- Adds the following definitions: overhaul, as this term is proposed to be used in Section 3409; primary eye protection, as this term is proposed to be used in Section 3403; proximity fire fighting, as this term is proposed to apply to Section 3401; structural fire fighting, as this term is proposed to apply to Section 3401; and wildland fire fighting, as this term is proposed to apply to Section 3401. Since the definitions of “proximity fire fighting”, “structural fire fighting”, and “wildland fire fighting” are terms used to determine the application of the various

sections in Article 101, it is important these definitions are listed in Section 3402, Definitions.

New Section 3402.1. Purchase Quality Standards for Personal Protective Clothing and Equipment for Structural Fire Fighting and Proximity Fire Fighting.

The proposal creates a new requirement to purchase quality standards for structural and proximity fire fighting to ensure that employers purchase personal protective clothing and equipment (PPE) that are of a certain quality to meet the demands of today's structural and proximity fire fighting needs. Approved PPE means that the PPE that are listed, labeled, or certified meet specified design, performance, and testing criteria or governmental or nationally recognized standards. Therefore, the purchasing of "approved" PPE will ensure that the PPE purchased are suitable for the adverse conditions the PPE will be subjected to during fire fighting operations. The proposal requires new purchases of structural and proximity fire fighting PPE to meet the following:

- NFPA 1971, Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting, 2018 Edition. This standard is proposed to be incorporated by reference and provides the specifications for helmets, eye and face protection, hoods, protective garments, hand protection, and protective footwear.
- NFPA 1982, Standard on Personal Alert Safety Systems (PASS), 2018 Edition. This standard is proposed to be incorporated by reference and provides the specifications for personal alert safety systems. Personal alert safety systems notify others in the area when a fire fighter is in distress.
- NFPA 1981, Standard on Open-Circuit Self-Contained Breathing Apparatus (SCBA) for Emergency Services, 2019 Edition. This standard is proposed to be incorporated by reference and provides the specifications for self-contained breathing apparatus. A SCBA is an atmosphere supplying respirator that supplies respirable air atmosphere to the user from a breathing air source that is independent of the ambient environment and designed to be carried by the user.

New Section 3402.2. Purchase Quality Standards for Personal Protective Clothing and Equipment for Wildland Fire Fighting.

The proposal creates a new requirement to purchase quality standards for wildland fire fighting to ensure that employers purchase personal protective clothing and equipment (PPE) that are of a certain quality to meet the demands of today's wildland fire fighting needs. Approved PPE means that the PPE that are listed, labeled, or certified meet specified design, performance, and testing criteria or governmental or nationally recognized standards. Therefore, the purchasing of "approved" PPE will ensure that the PPE purchased are suitable for the adverse conditions the PPE will be subjected to

during fire fighting operations. The proposal requires new purchases of wildland fire fighting PPE to meet the following:

- NFPA 1977, Standard on Protective Clothing and Equipment for Wildland Fire Fighting, 2016 Edition. This standard is proposed for incorporation by reference and provides the specifications for helmets, eye and face protection, hoods, protective garments, hand protection, footwear, chain saw protectors, and load carrying equipment.
- U.S. Department of Agriculture, Forest Service Specification, Shelter, Fire (M-2002), 5100-606C (August 2, 2011). This standard is proposed for incorporation by reference and provides the specifications for fire shelters. Fire shelter is a safety device of last resort used by wildland fire fighters when trapped by wildfires and must shelter in place.

New Section 3402.3. Selection, Inspection, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting.

The proposal creates a new section for selecting, inspecting, and maintaining structural and proximity fire fighting PPE. The selection of the PPE must be based on the hazards and the conditions fire fighters are reasonably expected to encounter. After the PPE is acquired, standards regarding the proper care, inspection, and maintenance are necessary to ensure the PPE's effectiveness. Cleaning the PPE reduces employee exposure to the harmful substances that contaminate the PPE during the course of work.

The proposal requires the following:

- New subsection (a) incorporates by reference NFPA 1851, Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting, 2014 Edition. NFPA 1851 is the fire fighting industry's standards that contains the requirements for selection, inspection, and maintenance of fire fighting protective ensembles.
- New subsection (a) includes an exception that deviates from the recordkeeping requirements in NFPA 1851, Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting, 2014 Edition, which is proposed to be incorporated by reference. The proposed exception requires the employer to retain the records of the implementation of Section 4.3. Records, for 3 years instead of 1 year. The retention of the records may help the employer assess the performance of their chosen PPE.
- New subsection (b) requires helmets that are not compliant to NFPA 1971, Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire

Fighting, 2007 Edition, which is proposed to be incorporated by reference, to be retired 10 years from the date of manufacture. Retired helmets are proposed to be replaced by new purchases of NFPA compliant helmets as required by proposed new Section 3402.1.

- New subsection (c)(1) provides a one (1) year phase-in time period for the implementation of the requirements of Chapter 5 (Selection), Chapter 6 (Inspection), Chapter 7 (Cleaning and Decontamination), Chapter 8 (Repair), Chapter 9 (Storage), and Chapter 12 (Test Procedures) of NFPA 1851, Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting, 2014 Edition, which is proposed to be incorporated by reference, with the exception of Chapter 10 regarding PPE retirement. The phase-in time period allows employers to work towards full implementation of NFPA 1851. The phase-in time period provides employers time to complete assessments, develop procedures, secure contracts, and conduct training.
- New subsection (c)(2) provides a three (3) year phase-in time period to comply with Chapter 10 (Retirement, Disposition, and Special Incident Procedure) of NFPA 1851, Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting, 2014 Edition, which is proposed to be incorporated by reference. This proposal allows for an orderly transition to NFPA compliant equipment. Retired PPE will be replaced with NFPA compliant PPE.

Section 3403. Head Protection.

The existing section contains the requirements for in-service head protection. The provisions from existing Section 3404 regarding eye and face protection are proposed to be relocated to Section 3403, with revisions. This proposal combines the requirements of head, eye, and face protection into one section to improve organization.

The proposed amendments are as follows:

- Amends the title of Section 3403 from “Head Protection” to “Head, Eye and Face Protection” to reflect the proposed contents of the section.
- Deletes the word “General” as this word is unnecessary and in its place includes the words “Head Protection” as a sub-heading in subsection (a). In addition, it is proposed to correct a grammatical error in subsection (a) by including the phrase “provided to each fire fighter” in place of the existing phrase “provided for each fire fighter”.

- Deletes existing subsection (b), which contains the minimum requirements for structural fire fighting helmets. The helmets described in existing subsection (b) refer to NFPA 1972 Structural Fire Fighters' Helmet, dating back to 1985. These helmets can no longer be purchased and are not likely to be in-service or have deteriorated from use. The manufacturers of NFPA compliant helmets only make helmets that meet the requirements of the current edition, not the prior editions.

Helmets that were purchased prior to January 1, 1988 that meet the U.S. Department of Commerce, Model Performance Criteria for Structural Fire Fighters' Helmets, dated August 1977, should no longer be in-service because of age, due to the same reasons as noted above.

- Adds new subsection (b), which contains the relocated and revised provisions for eye and face protection from existing Section 3404.
 - Adds new subsection (b)(1), which requires the employer to provide eye and/or face protection to fire fighters for protection from potential work-related injuries.
 - Adds new subsection (b)(2), which requires in-service eye and face protection to meet the requirements of NFPA 1971, Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting, 2007 Edition or American National Standards Institute/International Safety Equipment Association, American National Standard for Occupational and Educational Personal Eye and Face Protection Devices, ANSI/ISEA Z87.1-2015, which are both proposed to be incorporated by reference. The "Z87+" mark on the glasses allows for easy identification that the eye and face protection meets the ANSI/ Z87 requirements. This proposal is necessary to ensure that the eye and face protection equipment are of a certain quality.
 - Adds new subsection (b)(3), which requires the use of primary eye protection, unless the employee is wearing a self-contained breathing apparatus (SCBA) facepiece. The SCBA facepiece provides the eye and face protection when the SCBA is in use; therefore, it is not necessary to wear additional eye and face protection.
 - Adds new subsection (b)(3)(A), which requires that the face-mounted regulator to be in use in order for the SCBA facepiece to be considered as providing eye and face protection. If the face-mounted regulator is not in place, there will be an opening; therefore, the face will not be protected.
 - Adds new subsection (b)(4), which adds a requirement to clarify that if the fire fighter is not wearing a full-face respirator, eye protection shall be worn.

Section 3404. Eye and Face Protection.

The existing provisions for eye and face protection contained in this section are proposed to be relocated to Section 3403, with revisions. The ear and neck protection provisions from existing Section 3405 are proposed to be relocated to Section 3404, with revisions.

The proposed amendments are as follows:

- Amends the title of Section 3404 from “Eye and Face Protection” to “Ear and Neck Protection and Protective Hood Interface” to reflect the proposed contents of the section.
- Deletes existing subsections (a) and (b) because the provisions regarding eye and face protection are proposed to be revised and relocated to Section 3403(b).
- Adds new subsection (a) regarding the provisions of ear and neck protection. These requirements are revised and relocated from existing Section 3405(a) to require the employer to provide an ear flap attachment to the helmet and/or hood or shroud. The rest of the means of protection listed in existing Section 3405 are no longer standard components.
- Adds new subsection (b), which requires that in-service hood and coat collars be constructed and tested in accordance with NFPA 1971, Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting, 2007 Edition, which is proposed to be incorporated by reference. These provisions are revised and relocated from existing subsection (c).
- Deletes existing subsection (c) as the testing requirements for hood and coat collars are redundant as a result of proposed new subsection (b).
- Adds new subsection (c), which requires the fabric and non-fabric materials for the ear and neck protection to meet the requirements of NFPA 1971, Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting, 2007 Edition, which is proposed to be incorporated by reference. These provisions are revised and relocated from existing Section 3405(b) and (c).

Section 3405. Ear and Neck Protection.

The existing provisions for ear and neck protection are proposed to be relocated to Section 3404, with revisions. The proposal relocates the provisions for body protection from existing Section 3406 to Section 3405, with revisions.

The proposed amendments are as follows:

- Amends the title of Section 3405 from “Ear and Neck Protection” to “Body Protection” to reflect the proposed contents of the section.
- Deletes existing subsections (a), (b), and (c) because the provisions regarding ear and neck protection are proposed to be revised and relocated to Section 3404.
- Adds new subsection (a), which requires the employers to provide and ensure that body protection is worn by fire fighters when they are fighting structural and proximity fires. This provision is revised and relocated from existing Section 3406(a).
- Adds new subsection (b), which requires the in-service fire fighting protective garments to meet the requirements of NFPA 1971, Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting, 2007 Edition, which is proposed to be incorporated by reference.
- Adds new subsection (c), which requires that the body protection for other than structural fires shall be appropriate for the potential hazards. This provision is revised and relocated from existing Section 3406(d).

Section 3406. Body Protection.

The existing provisions for body protection are proposed to be relocated to Section 3405, with revisions. The proposal relocates the provisions for hand and wrist protection from existing Section 3407 to Section 3406, with revisions.

The proposed amendments are as follows:

- Amends the title of Section 3406 from “Body Protection” to “Hand and Wrist Protection” to reflect the proposed contents of the section.
- Deletes existing subsections (a), (b), (c), and (d) because the provisions regarding body protection are proposed to be revised and relocated to Section 3405.
- Adds new subsection (a), which is revised and relocated from existing Section 3407(a). The proposal requires the employers to provide and require the use of protective gloves to structural and proximity fire fighters. The protective gloves shall be properly sized and suitable to the hazards encountered in fire emergencies.

- Adds new subsection (b), which is revised and relocated from existing Section 3407(b). The proposal requires that the protective gloves be made from durable outer material designed to withstand the effects of flame, heat, vapor, liquids, sharp objects and other hazards that are encountered in fire fighting.
- Adds new subsection (c), which is revised and relocated from existing Section 3407(g). This proposal ensures that the in-service gloves are permanently labeled in accordance with NFPA 1971, Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting, 2007 Edition, which is proposed to be incorporated by reference, instead of being labeled with the lot number, reference to specified test, and date of successful test.

Section 3407. Hand and Wrist Protection.

The existing provisions for hand and wrist protection are proposed to be relocated to Section 3406, with revisions. The proposal relocates the provisions for foot protection from existing Section 3408 to Section 3407, with revisions.

The proposed amendments are as follows:

- Amends the title of Section 3407 from “Hand and Wrist Protection” to “Foot Protection” to reflect the proposed contents of the section.
- Deletes existing subsections (a), (b), (c), (d), (e), (f), and (g) because the provisions regarding hand and wrist protection are proposed to be revised and relocated to Section 3406.
- Adds new subsection (a), which requires foot protection to be provided and worn by structural and proximity fire fighters, not just structural fire fighters. This provision is revised and relocated from existing Section 3408(a).
- Adds new subsection (b), which requires the coordination of the foot protection with the protective clothing system. This provision is relocated verbatim from existing Section 3408(b).
- Adds new subsection (c), which requires that the provisions for in-service foot protection meet the requirements of NFPA 1971, Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting, 2007 Edition, which is proposed to be incorporated by reference.

Section 3408. Foot Protection.

The existing requirements for foot protection are proposed to be relocated to Section 3407, with revisions. This section is proposed to contain the provisions for Personal

Alert Safety Systems (PASS), which are relocated from existing Section 3401(c), with revisions. The purpose of PASS is to alert other emergency personnel when a fire fighter becomes stationary over a period of time and may be in distress.

The proposed amendments are as follows:

- Amends the title of Section 3408 from “Foot Protection” to “Personal Alert Safety Systems (PASS)” to reflect the proposed contents of the section.
- Deletes existing subsections (a), (b), (c) (d), and (e), which contains the provisions for foot protection. The provisions of foot protection are proposed to be revised and relocated to Section 3407.
- Adds new subsection (a), which requires that fire fighters be provided and use personal alarms in emergency situations that involve entrapment hazards due to a possible structural collapse of any type or atmospheric hazards such as immediately dangerous to life and health (IDLH) atmospheres. PASS shall also be worn when directed by the incident commander or incident safety officer. The provisions for PASS are revised and relocated from existing Section 3401(c)(1) by deleting the reference to the older edition of the NFPA standard. PASS made to the specifications of NFPA editions prior to 2007 were documented to have failed due to water intrusion and high temperatures.
- Adds the heading “In-Service Personal Alarms” in new subsection (b) to describe the proposed contents of this subsection.
 - Adds new subsection (b)(1), which contains the revised and relocated provisions from existing Section 3401(c)(1), which requires the use of PASS when fire fighters are engaged in interior structural fire fighting activities that require the use of self-contained breathing apparatus (SCBA). The proposal also incorporates by reference NFPA 1982, Standard on Personal Alert Safety Systems, 2007 Edition. PASS made to the specifications of NFPA editions prior to 2007 were documented to have failed due to water intrusion and high temperatures.
 - Adds new subsection (b)(2), which requires that the PASS be certified to indicate compliance with this section. This requirement is relocated verbatim from existing Section 3401(c)(5).

Section 3409. Respiratory Protection.

This section contains the provisions for respiratory protection to protect fire fighters from airborne contaminants.

The proposed amendments are as follows:

- Deletes the heading “Permissible Devices” in subsection (a)(2), and replaces this heading with “Self-Contained Breathing Apparatus (SCBA)” in a new subsection (b), to better reflect the proposed contents in this subsection.
- Renumbers existing subsection (a)(2)(A) to subsection (b)(1) as a result of new subsection (b).
- Adds new subsection (b)(2) to require that SCBA be selected, cleaned, inspected, and maintained in accordance with NFPA 1852, Standard on Selection, Care, and Maintenance of Open-Circuit Self-Contained Breathing Apparatus (SCBA), 2019 Edition, which is proposed to be incorporated by reference. NFPA 1852 lists the acceptable editions of NFPA 1981 for in-service SCBA.
- Adds new subsection (b)(2)(A), which requires SCBA facepieces, if available, to be upgraded in accordance with NFPA 1981, Standard on Open-Circuit Self-Contained Breathing Apparatus (SCBA) for Emergency Services, 2013 or 2019 Edition, which are proposed to be incorporated by reference, for better heat and flame resistance. The employer is provided three (3) years to purchase new facepieces.
- Renumbers existing subsection (a)(2)(B) to subsection (b)(3) as result of new subsection (b).
- Adds new subsection (b)(3)(A) to require that the close-circuit SCBA be National Institute of Occupational Safety and Health (NIOSH) certified with a minimum rated service life of at least two (2) hours and shall operate in the positive-pressure mode only to prevent inward leakage. This requirement is consistent with the NIOSH respiratory approval requirements and the NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2007 Edition.
- Renumbers existing subsection (b) to subsection (c), General Requirements, as a result of new subsection (b).
- Renumbers existing subsection (b)(1) to subsection (c)(1) as a result of new subsection (b) and amends subsection (c)(1) to delete outdated references to ANSI standards, specifically, ANSI Z88.2 (1980), Practices for Respiratory Protection and ANSI Z88.5 (1981), Practices for Respiratory Protection for the Fire Services. The reference to the exemption from the prohibition of the use of contact lenses as specified in outdated ANSI references is proposed for deletion. Contact lenses were never prohibited from being used in conjunction with the use of respirators, and therefore this provision is unnecessary.

- Deletes existing subsection (b)(2), which exempts the cleaning and sanitation of facepieces in emergency conditions. For hygiene purposes, facepieces should be cleaned between uses, especially when the same facepiece is used by other fire fighters.
- Adds new subsection (c)(2), which requires that SCBA shall be worn during overhaul operations. Overhaul is defined in Section 3402 as the final stages of fire extinguishment, after the main body of a fire has been controlled, during which all traces of fire are extinguished, where the potential for harmful exposure still exists. It is necessary to wear SCBA during overhaul operations to protect the respiratory systems of fire fighters from respiratory diseases such as asbestosis, mesothelioma, and cancer.
- Deletes existing subsection (b)(4), which contains specifications regarding automatic warning signal of respiratory protective devices because the criteria is outdated. SCBA contain a warning device call an End of Service Time Indicator (EOSTI) that alerts the user that the reserve air supply is being utilized. More current SCBA EOSTIs are built to more protective requirements than what is required in existing subsection (b)(4). For example, SCBA that are built to NFPA 1981, Standard on Open-Circuit Self-Contained Breathing Apparatus (SCBA) for Emergency Services, 2013 Edition, are required to alarm at 33%, +5/-0 percent of full cylinder pressure.
- Renumbers existing subsections (b)(5) to subsection (c)(4) as a result of deleting existing subsection (b)(4).
- Renumbers existing subsection (b)(6) to subsection (c)(5) as a result of deleting existing subsection (b)(4). This proposal deletes the permissive language that allows air cylinders and the SCBA from different manufacturers to be paired and used. The proposal requires the NIOSH-approved SCBA be used with the approved cylinder from the same manufacturer and specifies that those cylinders that are not labeled as NIOSH-certified cannot be used. This proposal is necessary because the NIOSH approval process certifies the SCBA as a unit from the same manufacturer.
 - Under the proposed exception, cylinders with the same pressure rating from different manufacturers may be used only when cylinders from the same manufacturer are not immediately available on the scene. This narrow exception is necessary because the NIOSH approval is based on the SCBA and air cylinders from the same manufacturer, but there may be emergency situations where it is necessary to use an air cylinder from a different manufacturer.

- Renumbers existing subsection (c) to subsection (d), Positive Pressure, as a result of new subsection (b) and corrects the cross-referenced subsection as a result of the proposed renumbering system.

Section 3410. Wildland Fire Fighting Requirements.

The existing standard regarding wildland fire fighting requirements is proposed to be relocated to proposed new Section 3410.1, with revisions. New Section 3410 is proposed to contain the selection, inspection, and maintenance requirements of protective ensembles for wildland fire fighting.

The proposed amendments are as follows:

- Amends the title of Section 3410 from “Wildland Fire Fighting Requirements” to “Selection, Inspection, and Maintenance of Protective Ensembles for Wildland Fire Fighting” to reflect the proposed contents of this section.
- Deletes existing subsections (a), (b), (c), (d), (e), (f) and (g) because the provisions for wildland fire fighting personal protective equipment is proposed to be relocated to new Section 3410.1.
- Adds new subsection (a), which requires the employer to perform a risk assessment prior to the selection of personal protective equipment. The proposal specifies the required contents of the written risk assessment.
 - New subsections (a)(1) through (a)(7) list the criteria to be considered for the selection of PPE.

Risk assessment is necessary in order to characterize the exposure and the hazards associated with the work.

- Adds new subsection (b) regarding the selection of protective ensembles. The selection of PPE is dependent on the results of the risk assessments. These operational requirements will dictate the criteria for the protective ensemble.
 - The employer is required to document how they arrived at their selection by identifying the garment configuration and component of the wildland fire fighting PPE, and specifying the performance criteria for each wildland fire fighter PPE garment and its components, as stated in new subsections (b)(1) and (b)(2).
 - New subsection (b)(2)(A)1. requires the employer when specifying performance criteria for wildland fire fighting PPE to comply with NFPA 1977, Standard on Protective Clothing and Equipment for

Wildland Fire Fighting, 2011 Edition, which is proposed to be incorporated by reference.

- New subsections (b)(2)(A)2. through 4. require the employer to consider Radiant Protection Performance (RPP), Thermal Health Loss (THL), and Thermal Protective Performance (TPP).
- New subsection (b)(3) includes other selection factors, such as design features, comfort, compatibility, and sizing.

This proposal is necessary to ensure that the criteria listed are considered in the selection of the protective ensembles for the wildland fire fighters' operations.

- Adds new subsection (c) regarding inspection of protective ensembles according to the manufacturer's recommendation.
 - New subsections (c)(1) and (c)(2) require PPE to be inspected routinely and annually to ensure that the PPE functions as intended.
 - New subsection (c)(3) specifies what to look for during the inspection, such as, but not limited to: contamination and soiling, rips, tears, holes, irregularities, damages, discoloration, etc.
 - New subsection (c)(4) requires that PPE be repaired in accordance to the manufacturer's specification or be removed from service. This proposal will ensure that repairs are done properly and defective equipment will not be used.

This proposal is necessary to ensure that protective ensembles are adequately inspected so that appropriate maintenance or repair can be done.

- Adds new subsection (d) regarding the cleaning of protective ensembles according to the manufacturer's recommendations, specifically, the frequency of cleaning, the cleaning agents, spot cleaning and machine washing procedures, and drying procedures. This proposal is necessary to prevent undue exposures from contaminated protective ensembles.
- Adds new subsection (e), which requires that employees be trained regarding the proper fit or sizing, limitations, proper use, donning and doffing, cleaning procedures, inspection procedures and frequencies, and storage of personal protective equipment. This proposal is necessary to ensure that employees know what they need to do in order to properly use and care for their equipment.

- Adds new subsection (f) regarding the retirement of the PPE.
 - Adds new subsection (f)(1), which requires that PPE be retired 10 years from the date of manufacture. This proposal is necessary to ensure that outdated equipment are removed from service every 10 years.
 - Adds new subsection (f)(2), which requires PPE that do not meet NFPA 1977, Standard on Protective Clothing and Equipment for Wildland Fire Fighting, 2011 Edition, which is proposed to be incorporated by reference, be retired by July 1, 2021. This proposal is necessary to ensure that in-service PPE meet specified quality standards.
 - Adds new subsection (f)(3), which requires that retired PPE be destroyed or disposed of in a manner that it will not be used for any fire fighting. This proposal is necessary to prevent the use of ineffective or defective PPE.
- Adds new subsection (g), which requires employers to maintain records to document employee PPE training and the retirement of PPE. This proposal is necessary to verify the training of employees and for evaluating the performance of the selected PPE.

New Section 3410.1. Personal Protective Equipment for Wildland Fire Fighting.

The proposal creates a new Section 3410.1 which contains provisions relocated from existing Section 3410 regarding PPE requirements for wildland fire fighters, with revisions. A complete protective fire fighting ensemble is necessary to protect fire fighters from the hazards of fire fighting.

The proposal contains the requirements for in-service PPE as follows:

- Adds new subsections (a) and (a)(1), which specifies the provisions for head protection. This provision is relocated from existing Section 3410(a)(1), with an editorial revision that head protection shall be provided “to”, instead of provided “for”, fire fighters when exposed to a head injury hazard. The other provisions are relocated verbatim and require that head protection be worn by fire fighters when they are exposed to head injury hazards and that the head protection be maintained in a location readily available to the fire fighter.
- Adds new subsection (a)(2), which requires in-service helmets be suitable for either wildland or structural fire fighting, meaning they are interchangeable. The helmets shall conform to one of the following:
 - Adds new subsection (a)(2)(A), which requires in-service helmets to comply with NFPA 1977, Standard on Protective Clothing and Equipment

for Wildland Fire Fighting, 2011 Edition, which is proposed to be incorporated by reference.

- Adds new subsection (a)(2)(B), which requires the helmets to meet the requirements for structural fire fighting set forth in Section 3403.
- Adds new subsection (a)(3) regarding the provisions of labeling of helmets. This provision is relocated verbatim from existing Section 3410(a)(6).
- Adds new subsection (b), which specifies the provisions for in-service eye protection. These provisions are relocated from existing Section 3410(b), with revisions, to incorporate by reference either NFPA 1977, Standard on Protective Clothing and Equipment for Wildland Fire Fighting, 2011 Edition or American National Standard Institute/International Safety Equipment Association, American National Standard for Occupational and Educational Personal Eye and Face Protection Devices, ANSI/ISEA Z87.1-2015. This subsection also requires that protective goggles have a means of attachment designed to be used with head protection.
- Adds new subsection (c) regarding the provisions of respiratory protection from wildfire smoke.
 - Adds new subsection (c)(1), which requires fire fighters to use the respirator provided by the employer that are approved and certified in accordance with Section 5144 and NIOSH, under 42 CFR part 84. This provision is revised and relocated from existing Section 3409(a)(1).
 - Adds new subsection (c)(2), which requires the employer to provide air purifying respirators that are in compliance with NFPA 1984, Standard on Respirators for Wildland Fire-Fighting Operations, 2016 Edition, which is proposed to be incorporated by reference. Currently, there are no NFPA 1984 approved respirator; therefore, an exception is provided for market availability. The proposed exception states that employers are given one year to provide NFPA approved respirators to fire fighters after the product is released in the market.
- Adds new subsection (d) regarding the provisions for in-service ear and neck protection. These provisions are revised and relocated from existing Section 3410(c), to suggest the means to protect against burns on the ears and neck. The fabric for ear and neck protection must meet the requirements of NFPA 1977, Standard on Protective Clothing and Equipment for Wildland Fire Fighting, 2011 Edition, which is proposed to be incorporated by reference.

- Adds new subsection (e), which specified the provisions regarding in-service body protection.
 - Adds new subsection (e)(1) regarding in-service body protection, which is revised and relocated from existing Section 3410(d), to require that employer-provided protective garments meet the requirements of NFPA 1977, Standard on Protective Clothing and Equipment for Wildland Fire Fighting, 2011 Edition, which is proposed to be incorporated by reference.
 - Adds new subsection (e)(2), which requires the employer to provide in-service chainsaw protectors to protect the legs from accidental contact with a chainsaw. The chainsaw protector chaps must meet the requirements of U.S. Department of Agriculture, Forest Service Specification, Chaps, Chainsaw, 6170-4G, September 6, 2011, which is proposed to be incorporated by reference.
- Adds new subsection (f), which provides the provisions for protective gloves.
 - New subsection (f)(1) is relocated from existing Section 3410(e)(1), with editorial revisions that protective gloves shall be provided “to”, instead of provided “for” wildland fire fighters and to divide the first sentence in existing Section 3410(e)(1) into two separate sentences for clarity as provided in this subsection. The other provisions are relocated verbatim and require the fire fighters to wear protective gloves when exposed to a hazardous environment that may cause injury to the hand or wrist.
 - New subsection (f)(2) requires in-service protective gloves to meet the requirements of NFPA 1977, Standard on Protective Clothing and Equipment for Wildland Fire Fighting, 2011 Edition, which is proposed to be incorporated by reference.
- Adds new subsection (g), which provides the provisions for foot protection. These provisions for foot protection are revised and relocated from existing Section 3410(f).
 - New subsection (g)(1) requires fire fighters to wear protective footwear while engaged in wildland fire fighting activities. This provision is relocated verbatim from existing Section 3410(f)(1).
 - New subsection (g)(2) requires that protective footwear shall meet the requirements of NFPA 1977, Standard on Protective Clothing and Equipment for Wildland Fire Fighting, 2011 Edition, which is proposed to be incorporated by reference.

- Adds new subsection (h), which provides the provisions for in-service fire shelters. This provision is relocated from existing Section 3410(g), with revisions, to require that fire shelters meet or exceed the U.S. Department of Agriculture, Forest Service Specification, Shelter, Fire (M-2002), 5100-606C, August 22, 2011, which is proposed to be incorporated by reference.
- Adds new subsection (i), which provides provisions regarding in-service load carrying equipment. This provision requires that employer-provided load carrying equipment meets the requirements of NFPA 1977, Standard on Protective Clothing and Equipment for Wildland Fire Fighting, 2011 Edition, which is proposed to be incorporated by reference.

Section 3411. Private Fire Brigades.

This section contains the requirements for fire fighters within private fire brigades who do not work for city, county, or state government. Private fire brigades are typically employed by refineries, amusement parks, large aerospace companies, and other private companies whose operations present a need for fire protection.

The proposal revises existing subsection (d) by providing a cross-reference to proposed Sections 3402.1 and 3402.3 through 3409 that pertain to PPE. The new cross-references necessitate the deletion of existing subsections (d)(1) through (d)(6), and (e) to avoid duplication.

The proposal is necessary to be consistent with the proposed revisions to Article 10.1, Personal Protective Clothing and Equipment for Fire Fighters, to ensure that all fire fighters, both public and private, are provided the same level of protection when fighting fires.

TECHNICAL, THEORETICAL AND/OR EMPIRICAL STUDIES, REPORTS OR DOCUMENTS RELIED ON BY THE BOARD

1. Assembly Bill No. 2146 (Chapter 811), Skinner, Occupational Safety: Firefighters: Personal Protective Equipment, 2013 - 2014.
http://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201320140AB2146
2. October 22 – 23, 2015 Advisory Committee (AC) Meetings: AC Members' Roster, AC Attendance Sheets, and AC Minutes.
https://www.dir.ca.gov/oshsb/Personal_Protective_Clothing_and_Equipment_for_Firefighters_AC.html
3. January 20, 2016 AC Meeting: AC Members' Roster, AC Attendance Sheets, and AC Minutes.

<https://www.dir.ca.gov/oshsb/Personal-Protective-Clothing-and-Equipment-for-Firefighters-2nd-AC.html>

4. May 2 – 3, 2016 AC Meetings: AC Members' Roster and AC Minutes.
<https://www.dir.ca.gov/oshsb/Personal-Protective-Clothing-and-Equipment-for-Firefighters-3rd-AC.html>
5. Occupational Environmental Medicine; Mortality and Cancer Incidence in a Pooled Cohort of U.S. Firefighters from San Francisco, Chicago, and Philadelphia (1950-2009); Robert D. Daniels; Travis L. Kubale; James H. Yiin, et al.; BMJ Publishing Group Ltd.; Published Online on October 14, 2013; Pages 1 - 18.
<https://oem.bmj.com/content/71/6/388>
6. Journal of Environmental Medicine; Cancer Risk Among Firefighters: A Review and Meta-analysis of 32 Studies; Grace K LeMasters, PhD; Ash M. Genaidy, PhD; Paul Succop, PhD; James Deddens, PhD; Tarek Sobeih, MD, PhD; Heriberto Barriera-Viruet, PhD; Kari Dunning, PhD; and James Lockey, MD, MS; American College of Occupational and Environmental Medicine; Volume 48; Number 11; November 2006; Pages 1189 - 1202.
7. National Fire Protection Association (NFPA), News & Research, NFPA Update on PASS Performance Issues, PASS Performance Issues Addressed in 2007 Edition of NFPA Standard, Safety Alert Issued on February 9, 2007.
<https://www.nfpa.org/News-and-Research/Resources/Emergency-Responders/Health-and-Wellness/NFPA-update-on-PASS-performance-issues>
8. American Industrial Hygiene Association Journal (AIHAJ); Characterization of Firefighter Exposures During Fire Overhaul; Dawn M. Bostad-Johnson, Jefferey L. Burgess, Clifton D. Crutchfield, Steve Storment, Richard Gerkin, and Jeffrey R. Wilson; AIHAJ 61:636-641 (2000); September/October 2000; Pages 636 - 641.
9. National Fire Protection Association (NFPA) 1500, 1720, and 1851; Understanding & Implementing Standards; NFPA 1851 Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Firefighting, 2008 Edition, Pages 36 - 49.
https://www.nfpa.org/Assets/files/AboutTheCodes/1500/Standards_Guide_1500_1720_1851.pdf
10. FEMA; U.S. Fire Administration; National Institute of Standards and Technology (NIST); NIST Technical Note 1724; Fire Exposures of Fire Fighter Self-Contained Breathing Apparatus Facepiece Lenses; Amy Mensch, George Braga, and Nelson Bryner; November 2011; Fire Research Division; Engineering Laboratory; NIST; Gaithersburg, MD 20899-8661; Pages 1 - 36.
https://tsapps.nist.gov/publication/get_pdf.cfm?pub_id=909917

11. U.S. Department of Commerce, NIST, Study Finds Failure Points in Firefighter Protective Equipment, December 6, 2011, Pages 1 - 4.
<https://www.nist.gov/news-events/news/2011/12/study-finds-failure-points-firefighter-protective-equipment>
12. Department of Homeland Security (DHS); Science and Technology Directorate (S&T); Advanced Personal Protection System (APPS), Wildland Firefighter Personal Protective Equipment (WLFF PPE) Clothing System Program, Final Report; Version 1.1; June 30, 2014; Responder Technologies Program; DHS; S&T; Washington, D.C.; U.S. Army Natick Soldier Research, Development and Engineering Center, Natick, MA; Pages 1 - 67.
<https://www.dhs.gov/sites/default/files/publications/APPS%20-%20WLFF%20PPE%20FINAL%20REPORT.pdf>
13. United States Department of Agriculture; Forest Service; Office of Safety and Occupational Health; Safety Alert, NO. 2009-01; Subject: United States Forest Service (USFS) chain saw chaps constructed using USFS specification 6170 4E, or prior, do not meet current USFS requirements for chain saw leg protection; June 25, 2009; Pages 1 and 2.
<https://sbbch.org/wp-content/uploads/2009/07/alert-chain-saw-chaps.pdf>
14. Journal of Occupational and Environmental Hygiene; 1:593-606; Baseline Measurements of Smoke Exposure Among Wildland Firefighters; Timothy E. Reinhardt and Roger D. Ottmar; September 2004; Pages 593 - 606.
15. United States Department of Agriculture; Forest Service; Pacific Northwest Research Station; Smoke Exposure at Western Wildfires; Timothy E. Reinhardt and Roger D. Ottmar; Research Paper PNW-RP-525; July 2000; Pages 1 - 72.
https://www.fs.fed.us/pnw/pubs/pnw_rp525.pdf
16. Utah State University; DigitalCommons@USU; All Graduate Plan B and Other Reports; Graduate Studies; Paper 356; Wildland Firefighter Smoke Exposure Study; George Anthony Broyles, February 2013; Pages 1 - 83.
<https://digitalcommons.usu.edu/cgi/viewcontent.cgi?article=1356&context=gradreports>
17. United States Department of Agriculture; Forest Service; Technology & Development Program; Fire Tech Tips; What's New with the New Generation Fire Shelter?; Tony Petrilli, Project Leader; April 2006; 5100; 0651-2322P-MTDC; Pages 1 - 6.
<https://www.fs.fed.us/t-d/pubs/pdfpubs/pdf06512322/pdf06512322dpi72.pdf>
18. Institut de recherche Robert-Sauvé en santé et en sécurité du travail (IRSST); Chemical Substances and Biological Agents; Studies and Research Projects; Report R-572; Wildland Firefighter Health Risks and Respiratory Protection; Claire

- Austin, PhD, CMC, CIH, Consultant; September 2008; Page 21; Table 2, Carboxyhemoglobin (COHb) and Related Signs and Symptoms.
<https://www.irsst.qc.ca/media/documents/PubIRSST/R-572.pdf>
19. National Fire Protection Association (NFPA); NFPA 1500; Standard on Fire Department Occupational Safety and Health Program; 2007 Edition; Chapter 7, Protective Clothing and Protective Equipment; Section 7.11, Respiratory Protection Equipment; Section 7.11.1.4; Page 1500-20; Technical Committee on Fire Service Occupational Safety and Health; 1 Batterymarch Park, Quincy, MA, 02169.
 20. California Department of Forestry and Fire Protection (CAL FIRE), What is CAL FIRE?, September 2018.
<https://www.fire.ca.gov/media/4925/whatiscalefire.pdf>
 21. U.S. Fire Administration – National Fire Department Registry (accessed June 16, 2020).
 22. Illinois Fire Service Institute; Firefighter Fatalities and Injuries - The Role of Heat Stress and PPE; July 2008; Technical Report; Firefighter Life Safety Research Center, Illinois Fire Service Institute; University of Illinois at Urbana-Champaign.
https://www.fsi.illinois.edu/documents/research/FFLSRC_FinalReport.pdf
 23. FEMA; Fire-Related Firefighter Injuries Reported to the National Fire Incident Reporting System (2012-2014); Topical Fire Report Series; Volume 17; Issue 6; August 2016; U.S. Department of Homeland Security; U.S. Fire Administration; National Fire data Center; Emmitsburg, Maryland; Page 1 – 12.
<https://nfa.usfa.fema.gov/downloads/pdf/statistics/v17i6.pdf>
 24. NFPA (2016); Fourth Needs Assessment of the U.S. Fire Service; Conducted in 2015 and Including Comparisons to the 2001, 2005, and 2010 Needs Assessment Surveys; November 2016; National Fire Protection Association, Quincy, MA.
<https://www.nfpa.org/-/media/Files/News-and-Research/Fire-statistics-and-reports/Emergency-responders/Needs-Assessment/OSFourthNeedsAssessment.ashx>
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<https://nfpa.org/-/media/Files/News-and-Research/Fire-statistics-and-reports/Emergency-responders/RFPPECareandMaintenance.ashx>

The Standards Board's rulemaking files on the proposed action are open for public inspection BY APPOINTMENT Monday through Friday from 8:00 a.m. to 4:30 p.m. at the Standards Board Office located at 2520 Venture Oaks Way, Suite 350, Sacramento, California. Appointments can be scheduled via email at oshsb@dir.ca.gov or by calling (916) 274-5721.

DOCUMENTS INCORPORATED BY REFERENCE

1. National Fire Protection Association (NFPA) 1971, Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting, 2018 Edition.
2. NFPA 1982, Standard on Personal Alert Safety Systems (PASS), 2018 Edition.
3. NFPA 1981, Standard on Open-Circuit Self-Contained Breathing Apparatus (SCBA) for Emergency Services, 2019 Edition.
4. NFPA 1977, Standard on Protective Clothing and Equipment for Wildland Fire Fighting, 2016 Edition.
5. U.S. Department of Agriculture, Forest Service, Specification, Shelter, Fire (M-2002), 5100-606C, August 22, 2011.
6. NFPA 1851, Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting, 2014 Edition.
7. NFPA 1971, Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting, 2007 Edition.
8. American National Standard Institute (ANSI)/International Safety Equipment Association (ISEA), American National Standard for Occupational and Educational Personal Eye and Face Protection Devices, ANSI/ISEA Z87.1-2015.
9. NFPA 1982, Standard on Personal Alert Safety Systems (PASS), 2007 Edition.
10. NFPA 1852, Standard on Selection, Care, and Maintenance of Open-Circuit Self-Contained Breathing Apparatus (SCBA), 2019 Edition.

11. NFPA 1981, Standard on Open-Circuit Self-Contained Breathing Apparatus (SCBA) for Emergency Services, 2013 Edition.
12. NFPA 1977, Standard on Protective Clothing and Equipment for Wildland Fire Fighting, 2011 Edition.
13. NFPA 1984, Standard on Respirators for Wildland Fire-Fighting Operations, 2016 Edition.
14. U.S. Department of Agriculture, Forest Service, Specification, Chaps, Chainsaw, 6170-4G, September 6, 2011.

These documents are too cumbersome or impractical to publish in Title 8 or may include copyrighted items. Therefore, it is proposed to incorporate the documents by reference.

The Standards Board's rulemaking files on the proposed action are open for public inspection BY APPOINTMENT Monday through Friday from 8:00 a.m. to 4:30 p.m. at the Standards Board Office located at 2520 Venture Oaks Way, Suite 350, Sacramento, California. Appointments can be scheduled via email at oshsb@dir.ca.gov or by calling (916) 274-5721.

PETITION

This proposal was not the result of a petition.

ADVISORY COMMITTEE

This proposal was developed with the assistance of an advisory committee. A list of advisory committee members, attendance sheets, and minutes are included as Documents Relied Upon.

FIRE PREVENTION STATEMENT

This proposal includes fire prevention or protection standards. Therefore, approval of the State Fire Marshal pursuant to Government Code Section 11359 and/or Health and Safety Code Section 18930(a)(9) is required.

SPECIFIC TECHNOLOGY OR EQUIPMENT

This proposal mandates specific personal protective clothing and equipment for fire fighters. The proposal requires that the specialized personal protective clothing and equipment used by fire fighters meet performance standards to ensure that the equipment can withstand the demands of the hazardous nature of the job.

ECONOMIC IMPACT ANALYSIS/ASSESSMENT

The proposal to update Article 10.1, Personal Protective Clothing and Equipment for Fire Fighters, will impact the fire fighting industry that engage in structural, proximity, and wildland fire fighting. The manufacturers of personal protective equipment may see an increase in sales as fire fighters upgrade to better performing PPE. There may be an increase in demand from companies that perform the inspection, cleaning and repair of PPE.

For private fire brigades, the estimated total initial compliance cost is \$350,770 and the estimated total annual on-going cost is \$1,142,325.

This proposal will have no significant adverse economic impact on businesses. This proposal will not create or eliminate jobs. The proposal will not create or eliminate new businesses. The proposal will not expand existing business in California.

FISCAL IMPACT STATEMENT

For local government, the estimated initial compliance cost is \$13.6 million and the estimated annual on-going cost is \$44.3 million.

For state government, the estimated initial compliance cost is \$668,000 and the estimated annual on-going cost is \$2.2 million.

BENEFITS OF THE PROPOSED ACTION

This proposal benefits worker safety. Advanced personal protective equipment may reduce injuries and mortality, providing fire stations with increased continuity of staff service and productivity. Statewide benefits include direct benefits from injury and fatality reduction of about \$13 million per year on average.

The long term macroeconomic growth is approximately between \$50 and \$200 million. Therefore total statewide benefits for this regulation over its lifetime will range from \$63 million to \$213 million.

Any benefit to the health and welfare of California residents and the state's environment will be an indirect effect of providing better personal protective clothing and equipment to fire fighters who work to limit the death and destruction caused by structural and wildland fires.

EVIDENCE SUPPORTING FINDING OF NO SIGNIFICANT STATEWIDE ADVERSE ECONOMIC IMPACT DIRECTLY AFFECTING BUSINESSES

The Board has made an initial determination that this proposal will not result in a significant, statewide adverse economic impact directly affecting businesses/individuals,

including the ability of California businesses to compete with businesses in other states. This proposal primarily affects city, county, and state fire departments, with minimal impact to the private industry.

**REASONABLE ALTERNATIVES TO THE PROPOSAL AND THE BOARD'S
REASONS FOR REJECTING THOSE ALTERNATIVES**

No reasonable alternatives to the proposal were identified or brought to the Board's attention. The Board was directed by Assembly Bill 2146, Skinner, Occupational safety: firefighters: personal protective equipment to convene an advisory committee to evaluate whether changes are needed to align certain safety orders relating to personal protective clothing and equipment for fire fighters with standards promulgated by NFPA. The advisory committee concluded that the existing Title 8 safety orders for fire fighters' PPE are largely outdated and need to be updated, and that amending the existing safety orders would provide a greater degree of personal protection. Further, AB 2146 directs the Board to render a decision regarding the adoption of changes, in order to maintain alignment with the applicable NFPA standards.