

Advisory Committee Meeting Minutes
Personal Protective Equipment (PPE) for Fire fighters, AB 2146
May 2 – 3, 2016

NOTE: Italics are for further clarification, not said during the advisory committee meeting.

The meeting was called to order at approximately 9:15 AM by the Chair, Maryrose Chan, Senior Safety Engineer, Occupational Safety and Health Standards Board (OSHSB). The Chairperson was assisted by Bernie Osburn, Staff Services Analyst. Also present on the second day of the meeting was Michael Manieri, Principal Safety Engineer for the Standards Board.

The Division of Occupational Safety and Health (Division) was represented by Eric Berg, Deputy Chief of Health, Research and Standards Safety Unit; Keummi Park, Senior Safety Engineer, Research and Standards Safety Unit; and Michael Miller, Senior Safety Engineer, Enforcement Unit.

The Chair welcomed the attendees to the meeting. The meeting took place at the County of Merced, Office of Emergency Services. The Board thanked Nancy Koerperich (Cal-Fire) for providing the physical location for the meeting.

The meeting proceeded with self-introductions to document those in attendance. The Chair briefly explained the rulemaking process, the instructions of Assembly Bill 2146, the role of the advisory committee, and summarized the proposal. Lead by the chair, the committee then proceeded with a section by section review and discussion of the current draft proposal regarding Structural and Proximity Firefighting. On the second day of the meeting, the committee discussed the draft proposal for Wildland Firefighting.

Necessity:

- The existing standards are outdated and have not been updated for over 20 years.
- Building construction, furniture materials and construction have changed over the years affecting the behavior of the fire (intensity and speed of travel). In response to those hazards, PPE technology has changed over the years and it is time to update California's safety orders.
- Research has shown that fire fighters have a higher incidence of digestive and respiratory type cancers than the general public. The proposal seeks to address the possible routes of exposure by requiring the cleaning and maintenance of PPE and updating the respiratory protection standard. The Chair replayed the video clip by the University of Cincinnati making a case for the need to properly clean and maintain PPE.

Summary of the Draft Proposal:

- Section 3402 includes an update of the definitions. Definitions found in NFPA 1971, Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting and NFPA 1851 Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting were deleted from Section 3401 to prevent conflicting or inconsistent definitions. NFPA 1971 and NFPA 1851 will be incorporated by reference; therefore, there is no need to add definitions that are included in those publications. There may be additional definitions that need to be added. For example, Barbara Brenner (City of Sacramento) suggested that we consider adding the definition of “overhaul”.
- New Section 3402.1 contains the purchase quality standards. The proposal informs employers that when they purchase new PPE, they must purchase PPE that meet the most current NFPA 1971 edition, which is the 2013 edition. The proposal includes an exception that states that if the employer purchases PPE that meets a newer edition, the PPE would be deemed acceptable.
- New Section 3402.3 is for the selection, care, and maintenance of PPE. NFPA 1851 is proposed to be incorporated by reference.
- Sections 3403-3407 require that the existing or in-service PPE meet the requirements of a previous NFPA 1971 edition.
- New Section 3408 relocates Personal Alert Safety System (PASS) from Section 3401. The proposal incorporates NFPA 1982 (2007) by reference. NFPA issued a safety alert stating that there were documented cases of PASS made to the specifications prior to the 2007 edition that were failing at high temperatures and water penetration.
- Proposed amendment in Section 3409 incorporates NFPA 1981 and 1852 by reference and addresses overhaul operations.

Discussion and Comments:

- John Crivello (City of Farmville and Volunteer Fire Fighters) inquired as to the purpose of the meeting. He asked if there has been evidence of severe burns or is it just a matter of referencing the NFPA as the standard.
- The Chair explained that the assembly bill instructed the committee to review the NFPA standards and compare them to existing safety orders. If the committee finds that the NFPA standards provide a greater degree of personal protection than existing safety orders, then the Occupational Safety and Health Standards Board (OSHSB) must consider amending the safety orders.

- John Crivello pointed out that the safety orders are probably older than 20 years old. The Chair explained that the committee has already determined that there is a necessity to update our orders and the question before the committee is how the updates should read.
- Mr. Crivello stated that he agrees that NFPA is the best practice, but he is concerned with the cost. City of Farmville serves a population of 10,000 people. His department has 3 other career fire fighters (one serving every shift) and 25 volunteer fire fighters. The department struggles to get by. There are many fire agencies struggling to provide the basics. Without a funding source, the volunteer departments can be regulated out of business and they are the only service available in some areas.
- Mr. Crivello further stated that there is a state statute for a reduction of liability for departments to retire their gear and give it to the California State Fire Fighters Association (CSFA) Surplus Equipment Program and distribute it to the volunteer departments. The gear could be vintage 1992 to 1996 or even 80s retired gear, but to the volunteer departments, it is new gear. The volunteer departments are struggling to provide fuel for their engines and are doing public outreach to raise money. Updating to the NFPA certified standard will be costly.
- Mr. Crivello continued commenting that thanks to funding grants, some of his fire fighters wear 2008 Veridian gear and the majority of the fire fighters wear 1 year old gear made by Globe. He asked if the committee is considering a funding mechanism for the additional proposed requirements.
- The Chair explained that after the proposal is finalized, OSHSB will have to determine the cost of the proposal. The cost impact analysis is anticipated to include a breakdown of costs for volunteer, small, medium and large departments. The committee will provide the information and it is the legislature's role to address the issue of cost and funding.
- John Crivello asked if we have benchmarked our proposal with other states like Oregon and Washington. He said that Oregon went through this process and decided not to adopt a newer rule. The state of Washington currently requires that PPE meet NFPA 1971 (1991) edition. They are currently 2.5 NFPA cycles behind from mandatory retirement.
- The Chair replied that she has reviewed the Washington's safety standards.
- Jim Evans (Solution Safety) asked if volunteers are under the jurisdiction of Cal/OSHA.
- The Chair replied that volunteer fire fighters are considered workers as far as safety is concerned.
- Mr. Evans stated that in Texas, in the year 2001, it took three to five years for the small departments to implement the changes. The proposed grace periods for the implementation of NFPA 1851 are longer.

- Mr. Crivello asked the committee to consider the cost implication if the grants to purchase PPE are discontinued. Steve Weinstein (Honeywell), commented that the committee in, deciding the proposed language, should not use cost as the primary consideration for creating the proposal. Ken Lombardi (San Francisco Fire Department) commented that it is not realistic to not consider the cost. Crafting a proposal that employers cannot comply with is probably not beneficial.

Section by Section Review & Discussion of the Proposal.

§3402. Definitions.

The committee was given time to read the distributed draft proposal.

Discussion and Comments:

- Jorge Santana (CDCR, Camp Liaison) commented on the definition of “fire fighters” and “inmate fire fighters”. The proposal explicitly mentions “inmate fire fighters”. Explicitly mentioning “inmate fire fighters” may lead people to believe that if provisions do not explicitly mention “inmate fire fighters”, then they do not apply to “inmate fire fighters”.
- The Chair asked if he wanted to include “inmate fire fighters” in the definition of “fire fighters”. Jorge Santana replied yes, because he does not want to exclude “inmate fire fighters” from the provisions that do not explicitly call out “inmate fire fighters”.
- The Chair asked the committee if it is clear to everyone that the term “fire fighters” already includes “inmate fire fighters” and if there is a need to explicitly use the term “inmate fire fighters”. The committee responded that they understand the word “fire fighters” to include “inmate fire fighters” without explicitly mentioning it. As a result, the Chair proposed the deletion of the word “inmate” from the proposed sections regarding wildland firefighting, which contained the term “inmate”.
- Another person suggested adding the term “fire crew”. The Chair tentatively placed the term in the definitions. If it is used in the standard, the definition will be added. After the meeting ended, it was determined that the term “fire crew” was not used in the proposal, therefore it will not be added to the definitions.
- Barbara Brenner (City of Sacramento) stated that “overhaul” needs to be defined. She proposed a definition for overhaul as “all post extinguishment around recently burnt materials where the potential for harmful exposures still exists”. There were further discussions to exempt wildland from the definition of “overhaul”. The term “overhaul” is not used in wildland fire fighting; therefore there is no need for exception.
- The Chair provided context regarding the use of the word “overhaul”. The term “overhaul” is proposed to be used in Section 3409. The definition of overhaul has to make clear when SCBAs shall be used.

- Ms. Brenner initially proposed a definition. Chris Farrell (NFPA) was consulted and asked to provide the definitions of overhaul from the NFPA glossary. The committee refined the definition of overhaul with the context of Section 3409 in mind. In a collaborative effort, Barbara Brenner, Steve Weinstein (Honeywell) and Nancy Koerperich (Cal Fire) proposed a definition that the committee agreed on:

“Overhaul”. 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”.

§3402.1 Personal Protective Equipment Purchase Quality Standards for Structural and Proximity Fire Fighting.

This proposed new section is a purchase quality standard, which requires that when employers purchase new equipment, the PPE shall meet the latest edition of NFPA 1971 (currently 2013 edition), which will be incorporated by reference.

- The Committee had no comments.

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

NFPA 1851 is proposed to be incorporated by reference with the exception of recordkeeping. The proposal requires that records be kept for 3 years instead of 1 year.

The committee discussed the issue of non NFPA compliant helmets. The proposal addresses the retirement of the non NFPA compliant helmets (helmets that are not certified to any edition). It is necessary to have a specific requirement to retire non-compliant helmets, because NFPA 1851 scope is limited to NFPA certified PPE.

The Chair invited discussion regarding the proposed effective dates of specific chapters of the NFPA 1851 standard. *Given that without explicit effective dates, the proposed section will become effective on a quarterly basis after OAL approval.*

Discussion and Comments regarding Subsection (c) Effective Dates:

- Kirk Owen (Veridian) asked the committee to remove Chapter 11 regarding Independent Service Provider (ISP) from Subsection (c) Effective Dates. He stated that the provisions regarding ISP do not affect the operations of the fire department. It is to protect departments to ensure that they are contracting with a business that is verified to be able to clean, inspect, and repair PPE in accordance with NFPA 1851. The Chair deleted Chapter 11 from subsection (c)(2).

Changing the effective date of Chapter 11 regarding ISP has an effect on the other chapters of the NFPA 1851, such as Chapter 12 Test Procedures. The entity that will be

performing advanced inspection, whether it is the ISP or a manufacturer trained organization they are required to follow Chapter 12 Test Procedures.

- Jim Evans (Solution Safety) commented that 5 years for advance cleaning is too long.
- Mr. Evans proposed 1 year from the approval date.
- Chris Anaya (Fire fighter) stated he agrees with 1 year.
- Nancy Koerperich (Cal-Fire) stated she supports the 1 year.
- Barbara Brenner (City of Sacramento) stated 2 years would cover the budget cycle.
- The Chair moved routine cleaning and inspection, advance cleaning and inspection, and test procedures to 1 year from the approval date. Richard Weise (SAFER) stated that there are a lot of departments that do not conduct advance inspections of the moisture barriers, but did not suggest a timeline.
- Kirk Owen commented that there are many different ways to comply with the requirement to perform advanced cleaning. It is not limited to utilizing the services of an ISP.
- Ken Lombardi (San Francisco Fire Department) questioned Subsection (c) Effective dates and compared them with Section 3409. In proposed Section 3409, the inspection, care and maintenance of SCBA did not have a grace period.
- Barbara Brenner asked when the standards would be effective.
- The Chair replied the goal is to have a proposal ready for consideration by July 1, 2017.
- Barbara Brenner replied that in some respects, the departments will have been notified.
- The Chair stated that it may be about 2 years from now before the proposal is adopted.
- Jim Evans (Veridian) and Ken Lombardi (San Francisco Fire Department) suggested removing the language regarding effective dates, with the exception of Chapter 10 Retirement and subsection (b), retirement of helmets that do not meet NFPA 1971 (2007) edition.
- The Chair asked if that is enough time to implement and provide washing machines. A member responded that fire departments can use regular top load washing machines.
- John Crivello (City of Farmville) stated that the committee should not mandate a law without providing the time to go through a budgetary cycle. There are departments

asking for implementation of NFPA 1851, but there are departments that are not in compliance.

- The Chair agreed to call other members who were not present and consult with them on the timeline.

§3403. Head, Eye and Face Protection.

The Chair sought the input of the committee regarding in-service helmets. She stated that the proposed Section 3402.3 requires that helmets be retired 10 years from the manufacture date. However the current proposed effective date to require the retirement of helmets older than 10 years is 5 years from the effective date of the section. During that time period, there are helmets of various ages that are in service. Adding to this complication is the fact that there are non-NFPA compliant helmets that are in-service. The Chair asked for input in establishing the baseline age of in-service helmets prior to the effective date of the requirement to retire helmets that are over 10 years old.

Discussion and Comments on Helmets:

- Angel Sanchez (Phenix Technologies) stated that non NFPA certified helmets meet the NFPA standard, in terms of the shell. It is the same shell, but without all the other components (goggles, earflaps, etc) that are required by NFPA 1971.
- The Chair asked the Division what the effect would be if subsection (b) minimum requirements for helmets were struck out.
- The Division replied that it would mean that helmets that are non NFPA compliant would have to be removed from service 10 years from the date of manufacture per proposed Section 3402.3(b) after the subsection goes into effect (see proposed Section 3402.3(c)).
- The Chair noted that helmets made in accordance with existing Section 3403(b)(1), and in accordance to the NFPA 1972 (1985) should no longer be in service. Helmets made in accordance with the US Department of Commerce 1977 standard should also be no longer be in service. These helmets are too old to be in service.

The Chair also stated that as helmets are retired, provisions of newly proposed Section 3402.1 would require that purchases of new helmets meet the current edition of NFPA 1971.

- Steve Weinstein (Honeywell) commented that proposed regulatory language should make it clear that Section 3403 is for in-service equipment to prevent confusion.
- Angel Sanchez commented that there are a tremendous number of helmets that are not in compliance with the NFPA (not sold with the required components, therefore not labeled as meeting NFPA).

- The Chair commented that the current standard requires that helmets meet the NFPA 1972 (1985). Shaun Russell (Phenix Technologies) stated that the helmets their company has sold meets the specifications of the NFPA 1972 (1985) standard, but are not certified as meeting NFPA 1972 (1985), because you cannot NFPA certify helmets made to the older edition. The helmets are marketed as meeting the Title 8 standards.
- Angel Sanchez clarified that the helmet shell meets and exceeds NFPA 1972 (1985). He stated that the helmet shell meets the NFPA 1971 standard, but without the components and because it does not have all the components the helmet is non-compliant with the NFPA, therefore cannot be certified.
- The Chair asked for further clarification and asked if the shell component meets the NFPA 1971(2013) edition.
- Angel responded yes, with the exception of earflaps and eye goggles. Under NFPA 1971, helmets shall consist of at least all of the following assembled components: (1) shell, (2) energy absorbing system, (3) retention system, (4) fluorescent and retroreflective trim, (5) ear covers, (6) face shield or goggles, or both.
- Kirk Owen (Veridian) emphasized that the NFPA 1971 is a protective ensemble standard. Earflaps and hoods are considered as interface to protect the ear and neck areas.
- The Chair asked if this is a problem unique to Phenix or do other manufacturers do the same thing. Members stated that this is the situation in California because of the outdated standards.
- Kirk Owen suggested choosing a date of manufacture and using it as the criteria for retirement. This will get older helmets out of the system.

Eye Protection.

Subsection (c)(1) is the regulatory text stating the employer's duty to provide eye protection. The proposal removed many of the specifications because they were based on the old NFPA standards. The Chair stated that the current proposal requires that the eye protection should be NFPA 1971(2013) compliant.

- Richard Weise (SAFER) commented that eye protection should meet the 2007 edition to be consistent with the helmet.
- Angel Sanchez (Phenix Technologies) stated that eye protection should pass the heat standard and be marked as Z87+ for impact resistance.
- The Chair is going to check what ANSI edition is in the NFPA 1981 (2007) edition. *There was no reference to an ANSI standard.*

*NFPA 1971 (2007). 7.4.16 Faceshield/goggle components shall be tested for flame resistance to impact as specified in **Section 8.17, Faceshield/Goggle Component Lens Impact Resistance Test, Test One and Two** and shall not have any faceshield/goggle component contact an “eye” of the head for, and shall not have any parts or fragments ejected from the component that could contact the eye of the headform.*

*7.4.17 Faceshield/goggle components shall be tested for flame resistance as specified in **Section 8.3, Flame Resistance Test 2, Procedure B**, and shall not show any visible afterflame 5 seconds after removal from test flame.*

- The Chair asked for comments regarding subsections (c)(3), (c)(4), and (c)(5) and there were no comments.

§3404. Ear and Neck Protection and Protective Hood Interface. [Relocated from Section 3405]

Discussion and Comments:

- Angel Sanchez (Phenix Technologies) commented that subsections (a)(3) flexible neck cape or winter liner worn with helmet, (a)(4) flared neck shield attached to the brim of the helmet, and (a)(6) high collar and throat straps, are not standard components, therefore should be struck out.
- John Crivello (City of Farmsville, Volunteer Fire Fighters) agreed that high collar and throat strap are no longer in production, therefore should be struck out.
- Mike Miller (Division) commented that hoods, and earflaps, and helmet configuration should stay. Snood should be deleted.
- The Chair proposed deleting Subsection (a)(1) helmet configuration because helmets are covered in Section 3403. In service equipment will be required to meet NFPA 1971 (2007) edition.

§3405. Ear and Neck Protection. [Relocated to Section 3404] Body Protection. [Relocated from Section 3406]

Discussion and Comments:

- Mike Miller (Division) suggested amending subsection (a) to require that body protection be provided and used.
- The Chair stated that in-service protective garments should be amended to the NFPA 1971 (2007) edition for consistency.

- The Chair proposed the deletion of subsection (c) regarding protective clothing other than turnout clothing. All protective garments would be required to meet the NFPA 1971 standard.
- A member commented that the first sentence of proposed subsection (c) should be deleted because protective garments include turn outs.
- Kevin White (California Professional Fire Fighters) asked for a definition of body protection.
- Michael Miller replied that the definition of body protection could be found under the General Industry Safety Orders.

§3406. Hand and Wrist Protection.

- Editorial comment to amend language from “provided for” to “provided to”
- The Chair commented that during the prior meeting, there was consensus to amend subsection (c) to reference the 2013 edition, because gloves wear out and are replaced more frequently than other gear. For consistency, the chair suggested that the proposal be amended to reference the 2007 edition.

§3407. Foot Protection. [Relocated from 3408]

- No comments regarding the proposal.

§3408. Personal Alert Safety System.

Requirements for PASS were relocated from section 3401. During the last meeting, there was consensus to upgrade in-service PASS to the NFPA 1981(2007) edition. PASSs made to prior editions of the NFPA failed due to high temperatures and water intrusion.

- No comments regarding the proposal, except to clarify that the section applies to in-service equipment.

§3409. Respiratory Protection.

The proposal:

- Incorporates NFPA 1852, Standard on Selection, Care, and Maintenance of Open-Circuit Self-Contained Breathing Apparatus (SCBA), 2013 Edition by reference.
- Requires the upgrade of the face pieces if upgrade kits are available.

Discussion and Comments:

- Doug Ferro (CalFire) inquired about the effective date for in-service SCBAs. The Chair responded that NFPA 1852 contains a rolling requirement, requiring than in-service SCBA compliance with current NFPA 1981 edition, or any of the 3 previous editions. By referencing 1852, it takes care of the requirement for in-service use and the requirement to retire.
- Ken Lombardi (San Francisco Fire Department) asked why the Care and Maintenance of Protective Ensembles (NFPA 1852) has a phase in date and the SCBA does not. This lead to side discussions regarding removing subsection (c) of Section 3402.3 regarding effective dates of certain provisions of the NFPA 1851.
- The Chair replied that SCBAs theoretically have a life span of 20 years built into the NFPA 1852 standard, because of the rolling requirement.
- Steve Weinstein (Honeywell) stated that the requirements in NFPA 1852 are existing requirements that departments should already be complying with. Section 4.4.1 states the editions the SCBA that are allowed to be in service (1997, 2002, 2007, 2013). This requirement takes care of retirement issue.
- Ken Lombardi questioned why the requirements for selection, care, and maintenance of SCBA is effective immediately, whereas the proposed §3402.3 has effective dates (grace periods). Mr. Lombardi is of the opinion that certain Chapters of NFPA 1851 should be effective immediately as well.
- The Chair responded that Section 5144 contains existing requirements that apply to all respirators, including SCBAs, therefore the requirements are not completely new.
- Steve Weinstein stated that for respirators, there is a third party (NIOSH) mandating specific requirement. The manual is part of the component of the SCBA, part of the NIOSH certification.

Air Cylinders:

- Steve Weinstein (Honeywell) proposed language regarding cylinders to clarify that an approved SCBA should be matched with an approved cylinder (same manufacturer). The only exception to that requirement is during emergency (mutual or auto aid) situations and cylinders from the same manufacturer are not available immediately on the scene.
- Michael Miller (Division) commented that the term “emergency” has its complications. What is an emergency situation for laymen are routine for fire department.

Facepieces:

- The Chair asked what is a feasible time period to require the upgrade of facepieces? The committee responded 2-3 budget cycles about 3 years.
- Steve Weinstein (Honeywell) stated that the primary reason for the upgrade is the new radiant heat performance requirement. NIOSH investigated accidents and concluded that lens failure was a contributing factor to fatalities.

Overhaul:

- Barbara Brenner (City of Sacramento) suggested not making changes on the proposal. The proposed definition of overhaul clarifies the requirement.

Wildland Fire Fighting

Introduction.

The Chair shared statistics from Cal Fire's website regarding the number of fires and the acreage that were burnt:

- 2015: 6,335 fires burning 307,598 acres
- 2014: 4,299 fires burning 191,307 acres

Fire Fighter Fatalities 2015:

- US Forest Service member died of carbon monoxide poisoning (Frog Fire, Modoc National Forest).
- Fire Fighter killed battling Sierra Fire near Lake Tahoe when a tree fell on him.

§3402.2 Personal Protective Equipment Purchase Quality Standards for Wildland Fire Fighting.

- Contains the purchase quality standards for purchasing new equipment.

Subsection (b) Fire Shelters:

- The Chair asked if departments are already purchasing the new generation fire shelters. The committee responded Yes.

§3410. ~~Wildland Fire Fighting Requirements.~~[Relocate to 3410.1] Selection, Inspection, and Maintenance of Protective Ensembles for Wildland Fire Fighting.

The proposed new Section is the wildland equivalent of §3402.3 for structural firefighting. NFPA 1877 is in draft form therefore, it cannot be incorporated by reference. Board staff

developed the proposal to address the selection, care and maintenance, using publications from Homeland Security and the manufacturer's manual. The Chair provided the publications to the committee.

Discussion and Comments:

Subsection (a) Risk Assessment.

- Vicky Wells (San Francisco, Department of Public Health) asked the Chair to explain the difference between subsection (a)(1) "Type of duties performed while wearing wildland PPE and subsection" (a)(2) "Identification and characterization of hazards of the duties while wearing wildland PPE".
- The Chair replied that the requirements of subsection (a)(1) and (a)(2) can be fulfilled by performing a JSA (Job Safety Analysis), which is to select the job or task to be performed while wearing the PPE and identify hazards or potential hazards associated with that task.
- Doug Ferro (CalFire) stated that the results of the risk assessment determine the criteria, operations, form and function of your garment.
- Nancy Koerperich (CalFire) recommended that subsection (a)(5) type of density of vegetation be deleted. She stated that CalFire wildland fire fighters wear the same gear throughout the State. Wildland fire fighters may be assigned anywhere in the State as needed. In addition, the statewide mass mutual aid system complicates that even further. Fire fighters from San Diego may respond to fires in Northern California.
- Chris Anaya (Fire fighter) commented that prison industries still make wildland garments, non NFPA approved.

Subsection (b) Selection.

- Homeland Security "Wildland Firefighter Personal Protective Equipment (PPE) Selection Guide" recommends a system type approach for selecting PPE. See Appendix A for a sample "operational requirement" document.
- Nancy Koerperich (CalFire) commented that Thermal Protective Performance (TPP) should be added as one of the criterial for the selection of PPE.

Subsection (c) Inspection.

- Kirk Owen (Veridian) suggested adding a requirement for an annual inspection by another person other than the user, similar to the requirements of NFPA 1851.
- Nancy Koerperich (CalFire) supports annual inspection-by somebody else other than the user.

- Thomas Cope (City of Fresno) suggested adding proper fit as one of the criteria for inspection.

Subsection (d) Cleaning Procedures.

- Doug Ferro (CalFire) suggested amending the proposal to use cleaning procedures in accordance with manufacturer's recommendation.
- The Chair asked if anyone irons their PPE. Committee responded that no one irons their PPE.

Subsection (e) Training.

- Nancy Koerperich (CalFire) commented that there are different rules with regards to fire shelter. Deploying the fire shelter renders the shelter useless. She stated that the requirement to deploy the fire shelter at least annually does not belong to subsection (e).

Subsection (f) Retirement.

- Nancy Koerperich (CalFire) suggested leaving it 10 years from the date of manufacture. The municipalities do not fight that many wildfires. Cal Fire retires the PPE in less than 10 years.
- Ken Lombardi (San Francisco Fire Department) commented that Cal Fire gear is probably going to wear out before the 10 years.

Subsection (g) Recordkeeping.

- No comments

§3410.1 Personal Protective Equipment for Wildland Firefighting.

- The Chair wanted to understand the term "emergency pick up labor": who are they, and what type of fires do they respond to? Should they have different requirements?
- Doug Ferro (CalFire) stated that there are agreements with the National Guard and Forest Service to provide emergency personnel on the larger campaign fires.
- Mike Miller (Division) asked for further clarification regarding emergency pick up labor by asking, when CalFire hires contractors to perform work, these are not people that are sweeping up the streets are they?
- Doug Ferro replied that there are mutual aid agreements through the Office of Emergency Services (OES), local agreements, and master agreements.

- Michael Miller asked if emergency pick up labor is a formalized group of employees, (federal, military, National Guard or state)? Do they perform fire fighting activities, such as cutting lines and other similar tasks?
- Doug Ferro replied yes.
- Michael Miller commented that there shouldn't be a difference in the PPE requirements for emergency pick up labor and fire fighters.
- Doug Ferro stated that the PPE emergency pick up labor wear is usually equivalent.
- The Chair explained that the reason she wanted clarification regarding emergency pick up labor is the existing standard uses this term and it is important for the discussion on subsequent sections.
- Michael Miller suggested eliminating emergency pick up labor completely.
- The Chair asked if paid and volunteer fire fighter have different duties.
- A committee member stated that Volunteer or Paid Call Firefighter type strike teams, whether state or federal would be paid.

§3410.1 Personal Protective Equipment for Wildland Fire fighting.

Subsection (a) Head Protection.

- The Chair proposed to remove the reference to “inmate fire fighter”, because all fire fighters are required to wear head protection. There was an earlier discussion that surmised that fire fighters include inmate fire fighters and it was not necessary to have explicit reference to inmate fire fighters.
- The Chair asked if emergency pick-up labor were considered fire fighters? Doug Ferro (CalFire) responded yes. The Chair proposed the deletion of “emergency pick up labor” subsection (a)(2). All fire fighters should be under the same requirements. The chair stated that the term “emergency pick-up labor” as defined in Title 8 no longer applies because the type of emergency pick-up labor used for fighting fires are considered fire fighters and if they are not fire fighters, they are outside the scope of the Article 10.1 and fall into GISO.

Type of Helmets

- Chris Anaya (Fire fighter) commented that for urban interface fires, which are transitional areas between wildland fires and structural fires, those fire fighters should wear structural PPE, but as you get further away, light weight wildland helmets are more appropriate.

- The Chair asked the committee if industrial helmets should be permitted.
- A member stated that the National Guard wear wildland helmets that meet NFPA 1977.
- Another member stated that contract laborers wear construction type helmets. They play a supportive role, as water tenders, but not fighting the fire. For example, PG& E and SCE employees are contract workers.
- The Chair stated that contract workers who are were not fire fighters would be outside the scope of Article 10.1, therefore Industrial helmets should be eliminated.
- The Chair asked what type of helmets do All Terrain Vehicles (ATVs) fire line crew wear.
- A member responded those ATV fire line crews are typically federal employees, working in field land and rehabilitation. They wear DOT motorcycle helmets.
- Another member commented that dozer operators also wear DOT type of helmets.

Subsection (a)(4) Accessories.

- Chair proposed subsection (a)(4) be deleted. NFPA 1977, a document proposed to be incorporated by reference contains information regarding accessories and retention strap.

Subsection (a)(5) Heat Resistance.

- Chair proposed that the existing weight requirements should be deleted because it is covered under NFPA 1977 and NFPA 1971.

Subsection(a)(6) regarding labeling.

- Mike Miller (Division) commented that the labeling requirement should remain.

Subsection (b) Eye Protection.

Proposal requires this section to meet the NFPA 1977 (2011) edition, that would be about 5 year old goggles. A comment was made that eye protection should meet or exceed the requirements of NFPA 1977(2011) edition.

- Michael Miller (Division) commented that CalFire has a variance for mesh goggled used by chainsaw operators. The brand is Bug Eye. This type of goggle prevents the lenses from fogging up. There are no reported accidents from CalFire regarding the use of mesh goggles.

- Shaun Russell (Phenix Technologies) stated that fire fighters wear sunglasses that are ANSI approved.
- The Chair asked if sunglasses have the same heat resistance as NFPA 1977. A member of the committee responded sunglasses do not have the same heat resistance as NFPA 1977, but fire fighters do not need to wear goggles the entire time.
- Michael Miller will be submitting proposed text.
- Doug Ferro (CalFire) There is no goggles that do not fog up. Fire fighters switch from wearing sunglasses to goggles as needed.
- Michael Miller stated that in his experience of investigating electrical arc flash fires, the ANSI rated safety glasses have protected the employee's eyes. You can see the raccoon eyes, area behind the safety glasses. He stated that goggles are appropriate for heavy blowing embers and you are running for your life situations. ANSI approved safety glasses are appropriate for normal operations, where there are tall brushes, the safety glasses prevents the brush from hitting your eyes.
- A member suggested to allow ANSI approved safety glasses in addition to goggles.
- Doug Ferro commented that goggles can fit over sunglasses or eye glasses. You can have 2 layers of protection. He also stated that protective goggles should have a means of attachment.

Subsection (c) Thermal protection of the ears and neck.

- The Chair stated that the proposal requires this section to meet the NFPA 1977 (2011) edition.
- Richard Weise (SAFER) commented that the 2016 edition was released.
- Doug Ferro (CalFire) stated that their fire fighters already comply with the 2011 edition.

Subsection (d) Body Protection.

- Subsection (d)(3) Chainsaw protectors. Doug Ferro (CalFire) suggested that the proposal should be amended to reference the US Forest Service standard for chainsaw protectors instead of NFPA 1977. He stated that when the Forest Service issues a safety alert, CalFire follows the forest service standard.

Subsection (e) Protective Gloves.

- Reference to "inmate fire fighters" was removed.

Subsection (f) Footwear.

- No comments regarding the proposal to require that foot protection meet the NFPA 1977 (2011) edition.

Subsection (g) Fire shelters.

- Consensus to remove reference to “inmate fire fighters”.
- Consensus to reference the updated Forest Service, new generation fire shelters.

Subsection (h) Respiratory protection.

Prior to discussing the proposal, the Chair asked the committee a few questions:

How do employers monitor exposure during wildland fires? Do fire departments conduct medical monitoring for COHb (carboxy hemoglobin)?

- Chris Anaya (Fire Fighter) stated that it is very difficult to perform air monitoring.
- Doug CalFire (Cal Fire) stated that studies have been done, but monitoring is not done on a regular basis.

How do departments implement administrative controls?

The Chair asked the committee to describe the types of administrative controls that are currently being implemented.

- Doug Ferro (Cal Fire) stated that CalFire uses a “24 for 12” work rest schedule. Fire fighters work 24 hours and rest 12 hours.

Respirators Use Discussion:

- Wildland fire fighters cannot wear SCBA.
- There is a respirator in the market called “Hot shield”. It is not NIOSH approved.
- Other than PAPR, respiratory protection would impair people to operate what?
- Steve Weinstein (Honeywell) stated that NFPA 1984 was developed for wildland firefighting. The NFPA 1984 standard includes several types of respirators. However, without a demand, the industry or manufacturer will not make respirators.
- Chris Anaya (Fire fighter) stated that about 8 years ago, a respirator for wildland was developed to convert CO to CO₂. One of the unique features of this respirator is that

moisture did not affect the performance of the respirator. This is important because smoke contains moisture. The respirator can be used for 24 hours and does not need to be replaced. It has a lower breathing resistance than any filter NIOSH has approved. The carbon bed is thin, but enough to reduce the hazard of the smoke.

- Steve Weinstein stated that the technology is like a catalytic converter, converts CO to CO₂. The US Forest Service chaired the advisory meeting.
- Chris Anaya stated that the downside of the respirator is that you fight the fire longer if you have no irritants to the eye.
- Vicky Wells (San Francisco, Department of Public Health) stated that during the Pacific Rim Fire, Departments made respirators available to their staff. Most of the employees did not want to wear the respirator.
- Vicky Wells also stated that the respirator use for the Pacific Rim Fire was not mandatory.
- Chris Anaya stated that Marines have a combination respirator that is attached to a pressurized cylinder and there is a switch to change it to air purifying mode.
- Michael Miller (Division) supports respiratory protection, but difficult to enforce.
- Steve Weinstein commented that the use of the respirator is a Catch 22. The government will not require respirators that meet NFPA 1984, if it is not available in the market. The manufacturer will not make the product unless they see a demand for it.

Chair continued her presentation regarding respiratory protection

Sections related to respiratory protection.

§5155. Airborne Contaminants

Allowable Exposure Levels.

The requirement to control harmful air contaminants applies to all places of employment in California. Table AC-1 is a list of contaminants with Permissible Exposure Limits (PEL). PELs are based on an 8 hour work week. If you have a longer than 8 hour work week, the best practice is to adjust the PEL to account for the longer work day.

The Chair listed the different allowable levels (PELs, ceiling, STELs) for air-contaminants relevant to wildland fire fighting, such as carbon monoxide, sulfur dioxide, formaldehyde, acrolein, and crystalline silica.

Requirement to Conduct Exposure Monitoring.

- Subsection (e)(1) requires employers to perform air monitoring and subsection (e)(2) requires that control measures be instituted when airborne contaminants exceed allowable levels.

Carbon Monoxide

The Chair outlined the range symptoms due to overexposure to carbon monoxide (3% to 40% CoHB-carboxyhemoglobin). The 3% to 6% COHb typically corresponds to a 25 ppm exposure.

At 4-17% CoHB, the symptoms of overexposure have a direct effect on the ability to perform work duties and may even endanger co-workers. The symptoms include confusion, diminution of visual perception, manual dexterity, ability to learn, or perform tasks such as driving.

Guide to Monitoring Smoke Exposure of Wildland Fire fighting (Publication distributed by Chair)

- Monitor carbon monoxide using dosimeters.
- ACGIH-TLV and CA PEL of 25 ppm corresponds to about 3.5% carboxyhemoglobin (CoHB) in your blood, with light activity and rest. It states that there is currently no suitable respirator to protect fire fighters from carbon monoxide.
- Provides guidance on how to conduct air monitoring using data logging dosimeters.
- Exercise caution in using equations on page 13 to estimate respiratory irritants using carbon monoxide levels. You have to have a certain amount of data prior to using regression equations.

Purpose of Monitoring.

Subsection (e)(2) requires that the employer institute controls in accordance with Section 5141, if the levels of air contaminants are expected to exceed allowable levels. Employers are required to evaluate what employees are exposed to and institute controls: Engineering, administrative, and personal protective equipment (respirators).

Chair talked briefly about different studies:

Smoke Exposures at Western Fires by Timothy E. Reinhardt and Roger D. Ottmar, USDA, July 2000.

- Table 12 of the study shows that the job task “hold and mop up” shows the highest level of exposures at project fires compared to other job tasks. At 45 ppm, it is almost double the PEL of California (25 ppm).
- Table 13 of the study shows the average smoke exposure by job task at initial attack.

Wildland Fire Fighter Smoke Exposure by George Broyles, USDA, October 2013.

- 4 year study, 7,517 hours of CO measurements on fire fighters and 1,554 hours of carbon monoxide measurements at Incident Command Post and spike camps.
- Compared the levels with OSHA PEL of 50 ppm. California’s PEL is 25 ppm.
- Table 3 of the study, the highest 8-hour observed PELs were: 62ppm for prescribed fires, 108 ppm for wildfire, 45 ppm for prescribed natural fires, and 33 ppm for initial attack. All of which are above California’s PEL of 25 ppm.
- The percentage above PEL needs to be recalculated to reflect California’s PEL.

This type of analysis is useful in developing a strategy for developing control measures.

Discussion and Comments:

- Chris Anaya (Fire fighter) stated the Forest Service fights fires differently than California. Because of population, topography, California fire fighters have to attack fire faster. The results of this study may not apply to California. These are good numbers to look at (referring to the study discussed), but they may not be applicable to California.
- The Chair agrees that the exposures for California fire fighters may be different. There are many factors that can affect the results. For example, the acreage that was burnt may be different; the type of vegetation may be different. The point of the slide was to present a ranking of exposures. California can perform their own monitoring and perform this type of analysis to aid in developing control measures to prevent overexposures.
- Doug Ferro (CalFire) stated that they operate different than the Forest Service. We are a distance away from the flames, where there is less smoke. But when you get into the thicker brush, the fires will generate more smoke. This was revealed by a study done Missoula Technology and Development Center (MTDC), part of the Forest Service.
- Eric Berg (Division) stated that the PELs should be adjusted when fire fighters are working longer than an 8 hour shift. If they are working a 12 hour shift then it has to be 16.6 ppm.

- Vicky Wells (San Francisco, Department of Public Health) stated that as an industrial hygienist, air monitoring is very challenging. Every type of fire will be different. The conditions are different. The air contaminant levels will vary even from day to day.
- Steve Weintin (Honeywell) questioned the necessity of crafting language to address respiratory protection since §5155 is already in place and it is not being enforced.
- Michael Miller (Division) stated that there is no policy against citing §5155. If respiratory protection is available, the Division can look into the issue further. He agrees with the need to fight wildland exposure, but it is challenging from a health and safety point of view. It is difficult to know the action level of exposures. The exposure can be below the action level one minute and then suddenly you can be in danger of being overexposed just by wind shift.
- Vicky Wells stated that there is no available PPE that would work while fighting wildland fires. The proposal does not include training, why the care maintenance is important.

The Chair reviewed the proposal for Section 3410, which includes training.

- Vicky Wells (San Francisco, Department of Public Health) commented that the training should include the compounding effect of smoking cigarettes.
- Michael Miller (Division) stated that there is an existing training requirement under the IIPP.
- Chris Anaya (Fire Fighter) raised concerns about other contaminants, not just the gases. The silica is well above the PEL.
- Eric Berg commented that the PEL for silica has been lowered.
- Vicky Wells stated the PEL for silica was lowered significantly because it is a carcinogen.
- Chris Anaya stated that there are other exposures to consider other than gases. For example asbestos.
- Doug Ferro (CalFire), stated that for Valley Fire, county health came out and recommended to wet the area for dust control and permit only a limited number of personnel to perform the task.
- Chris Anaya also expressed concerns about valley fever.

- Doug Ferro stated that training should be emphasized and when we have the ability to monitor, we should monitor, and then institute engineering and administrative controls.
- Chris Anaya commented that Richard De Rosa (Prior Area Manager for Cal/OSHA Consultation) recommended the use of organic vapor acid/gas cartridge and the use of personal monitor to alert the fire fighter of TLVs and PELs. The use of respirators shouldn't be mandated, employees should have the discretion to use it, because fire is so dynamic.
- Eric Berg suggested the use of CO monitors (dosimeters). The Chair asked if he recommends providing dosimeters for every fire fighter?
- Chris Anaya suggested one (1) dosimeter per group. He stated that dosimeters are relatively inexpensive.
- Vicky Wells asked what do you do when the alarm goes off? The alarm would go off at a particular level. It does not mean that they are overexposed for an 8 hour shift. Those alarms may go off frequently.

According to the Guide to Monitoring Smoke Exposure of Wildland Fire fighters, the dosimeter can alert fire fighters to the high levels of carbon monoxide. Fire fighters can use this information when making decisions about firefighting strategy and crew safety. The data can also be reviewed for planning, training and management purposes.

The dosimeter can warn users of unhealthy CO levels and provide crew foreman or safety officers with an objective indicator of smoke intensity. Fire managers can use this information to decide objectively when action should occur, such as donning respiratory protection against irritants or evacuating when CO becomes too hazardous.

- Chris Anaya stated that CO monitors can be set at different levels. In addition, he recommended a medical monitoring instrument to measure carboxyhemoglobin (CoHb) in a matter of seconds.

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3176659/>
<http://www.masimo.com/pdf/rad-57/lab5450c.pdf>

- Vicky Wells stated that medical monitoring is different from air monitoring.
- Chris Anaya stated that it goes hand in hand.
- Michael Miller noted that some of the symptoms for elevated carboxy hemoglobin are similar to heat stress. He would support the use of a NFPA approved wildland respirator if one was available.

- Chris Anaya stated that a hot shield does not provide protection. A lot of departments issue full-face respirators. This committee can provide direction as what to use.
- The Chair acknowledged that there was no consensus with regards to respiratory protection for wildland firefighting.
- Doug Ferro stated that as written this section it will not go thru. He recommends monitoring when you can.

Subsection (i).

- The Chair asked for load carrying equipment, which standard CalFire complies with NFPA or Forest Service.
- Doug Ferro (CalFire) replied that CalFire uses NFPA approved load carrying equipment.
- Michael Miller (Division) asked for the definition of load carrying equipment.
- The Chair responded that the specifics are in NFPA 1977.

Closing.

The Chair stated that the committee will receive via e-mail:

1. Minutes of the meeting.
2. Finalized draft proposal.

The committee will be given time to submit their comments. There will be another subcommittee for “Cost” after the proposed text is finalized. The Chair asked members that are interested in participating in the subcommittee to fill out the sign up sheet.

The meeting was adjourned at approximately 1:00 pm.