

Committee on Personal Protective Equipment for Workplace Safety and Health Fall 2025 Meeting

November 18-19, 2025

AGENDA

Zoom Information for Remote Participants:

<https://nasem.zoom.us/j/93304247501?pwd=doLlKxv3o3M8eLKuuOXk89fgCQUXDT.1>

Meeting ID: 933 0424 7501

Password: 207130

Call In Number: 1-301-715-8592

November 18, 2025

Objectives:

- 1) Receive updates from the National Personal Protective Technology laboratory (NPPTL) on programmatic activities
- 2) Provide input to guide NPPTL's strategic and practical use of artificial intelligence (AI)
- 3) Explore challenges and opportunities for respiratory protection for wildland firefighters

Open Session

9:00 am
(10 min)

Welcome, Introductions, and Overview of Meeting Plans

Sundaresan Jayaraman, Committee Chair

9:10 am
(20 min)

Session 1: Updates from NPPTL

Maryann D'Alessandro, NPPTL Director

Committee Q&A (10 min)

9:30 am
(3 hrs)

Session 2: An Artificial Intelligence-Enhanced Respirator Approval Program (RAP)

To provide Technical Feedback that NPPTL will use to:

- Identify **additional AI opportunities** within the RAP
- Make **targeted refinements to the AI Development and Implementation Framework** (advancing it to version 1.1)
- Develop **strategies and steps needed to roll this out to NPPTL staff** to build capacity and enhance AI knowledge and understanding

- Determine the **suitability of the RSL Copilot and PPE Concerns Copilot as initial use cases** to pressure test and refine the Framework
- **Improve the RSL and PPE Concerns Copilots across NPPTL's five-stage use case lifecycle**—mapping/scoping, governance, development, evaluation and measurement, and deployment. NPPTL is particularly interested in the following:
 - Key considerations when selecting a large language model (LLM)
 - Retrieval-augmented generation (RAG) approaches that are well-suited for the characteristics of the knowledge source material
 - Prompt engineering strategies that are well-suited for the desired user engagement
 - Strategies for vetting the comprehensiveness of benchmark testing scenarios (suggestions for specific bench tests are also desired)
 - Strategies to identify edge testing scenarios (suggestions for specific edge tests are also desired)
 - Existing standards, templates, or reference materials well-suited for methods documentation

Pre-meeting briefings and read-ahead materials were provided to the invited discussants to familiarize them with NIOSH's Respirator Approval Program (RAP), administered by NPPTL. These sessions offered a high-level overview of the RAP's core functions, key outputs, and intended outcomes. The advance materials helped orient the discussants to the context and objectives of NPPTL's AI Development and Implementation Framework.

9:30 – 10:10 am
(40 min)

An AI Development and Implementation Framework for NIOSH's National Personal Protective Technology Laboratory (NPPTL)

Susan M. Moore, NPPTL Associate Director for Science

Presentation topics:

- Overview of NPPTL's AI Development and Implementation Framework (Framework v1.0 that is intended for key framework executers sent to audience in advance of meeting; Framework-lite v1.0 that is intended for general NPPTL staff also sent to panelists in advance of the meeting)
- Overview of two uses cases—Respirator Selection Logic (RSL) Copilot and the PPE Concerns Mailbox (PPE Concerns) Copilot—that will be used to pressure test the Framework v1.0.

10:10 – 10:25 am
(15 min)

Clarifying Q&A

10:25 am
(100 min)

Moderated Panel Discussion

Invited Discussants

- *Benny Budiman*, Emory University Woodruff Health Sciences Center
- *David Danks*, University of California, San Diego
- *AAron Davis*, Wichita State University Center for Public Health Initiatives
- *Lauren Goodwin*, Mission Ops
- *Mahi Karim*, Twin Mind
- *Tatiana Lin*, Kansas Health Institute
- *Aaron Wilkowitz*, Open AI

10:25 – 11:00 am
(35 min)

Discussion Area 1: Refining and Advancing the NPPTL AI Framework and Assessing the Suitability of Initial Use Cases

Aims: Gather technical and operational feedback to strengthen the AI Framework, considering opportunities to improve its clarity, usability, and applicability to NPPTL's mission and safety-critical work in future updates while emphasizing sound governance, user-centered design, and alignment with standards and documentation best practices. Gather input on the suitability of identified pilot use cases for the purpose of "pressure testing" and refining the draft AI Framework.

- **Opening Remarks (5 mins per Discussant)**
Benny Budiman, Emory University Woodruff Health Sciences Center
Lauren Goodwin, Mission Ops
Tatiana Lin, Kansas Health Institute
- **Discussion**

11:00 – 11:10 am

BREAK (10 min)

11:10 – 11:40 am
(30 min)

Discussion Area 2: Sociotechnical Strategies for Improving the Copilots

Aim: Identify strategies to enhance both Copilots across NPPTL's six-stage AI lifecycle (mapping/scoping, governance, development, evaluation, and deployment) and provide actionable guidance on human-AI interaction, LLM selection, RAG approaches, prompt engineering, benchmark and edge testing, and documentation practices to strengthen technical rigor and performance.

- **Opening Remarks (5 mins per Discussant)**
Mahi Karim, Twin Mind
Aaron Wilkowitz, Open AI
- **Discussion**

11:40 am – 12:00 pm
(20 min)

Discussion Area 3: Building NPPTL's Internal AI Readiness

Aim: Discuss strategies and steps for introducing AI concepts and tools to NPPTL staff to inform the development of a phased plan for internal AI capacity building (e.g., data management) and enhancing AI knowledge and understanding that includes training, communication, and adoption support tailored to NPPTL's technical and organizational environment.

- **Opening Remarks (5 mins per Discussant)**
David Danks, University of California, San Diego
Aaron Davis, Wichita State University Center for Public Health Initiatives
- **Discussion**

12:00 – 12:30 pm
(30 min)

Identifying Additional AI Opportunities within the RAP

- **Opening Remarks (5 min)**
Susan M. Moore, NPPTL Associate Director for Science

- **Discussion (25 min)**
For what other processes and program areas can AI enhance NPPTL’s mission delivery and support for occupational safety and PPE initiatives, considering potential impact, feasibility, and alignment with NPPTL’s strategic goals?

12:30 pm
(60 min)

LUNCH

1:30 pm

Session 3: Issues Related to Respiratory Protection for Wildland Firefighters

To assist the Department of the Interior (DOI) and the US Forest Service (USFS) in making recommendations to modernize standards for PPE to ensure the long-term health and safety of wildland firefighters, the session objectives are to:

- Describe the respiratory hazards associated with wildland firefighting
- Describe the current regulatory landscape for respiratory protection for wildland firefighters
- Identify the current respiratory protection options and explore emerging technologies
- Identify barriers to adoption of respiratory protection for wildland firefighters

1:30 pm
(5 min)

Overview of the Session and Context
Maryann D’Alessandro, NPPTL Director
Kathleen Dubose, DOI/USFS Wildland Firefighter Health and Wellbeing Program

1:35 pm
(15 min)

Respiratory Hazards Associated with Wildland Fires
Kathleen Dubose, DOI/USFS Wildland Firefighter Health and Wellbeing Program

1:50 pm
(10 min)

Clarifying Q&A

2:00 pm
(20 min)

Wildland Firefighter Respiratory Protection: Policies, Authorities, Respirator Standards and Respiratory Protection Options
Maryann D’Alessandro and Jeff Peterson, NPPTL

2:20 pm
(15 min)

Clarifying Q&A

2:35 pm
(30 min)

Culture within the Wildland Firefighter Community and Perceptions Related to Respiratory Protection
Captain Ryan Souder, County of Los Angeles Fire Department
Travis Parker, US Forest Service
Rachael Jones, University of California, Los Angeles

3:05 pm
(5 min)

Clarifying Q&A

3:10 pm
(75 min)

Panel Discussion: Understanding and Overcoming Barriers to Use of Respirators by Wildland Firefighters

Invited Discussants:

Fire Service Perspectives

- *Kathleen Dubose*, DOI/US Forest Service Wildland Firefighter Health and Wellbeing Program
- *Chief Jeremy Lawson*, CAL FIRE
- *Travis Parker*, US Forest Service
- *Captain Ryan Souder*, County of Los Angeles Fire Department
- *Joseph Ten Eyck*, IAFF Wildfire/Urban-Interface Fire Programs
- *Chief Albert Yanagisawa*, NFPA and County of Los Angeles Fire Department

Regulator Perspective

- *Michael Wilson*, Cal/OSHA

Researcher Perspectives

- *Christopher Coffey*, NPPTL Consultant
- *Rufus Edwards*, University of California, Irvine

Manufacturer Perspectives:

- *Pontus Ahlwy*, Sunstrom
- *Melissa Ray*, Dräger
- *Jessica Treddinick-Higgins and Stacey Blundell*, 3M

Focus Questions for Panel Discussions:

Respirator Standard:

- What would the ideal standard for a wildland firefighter respirator include?
- What actions are needed to move forward with additional guidance for wildland firefighter respirator selection and use to protect wildland firefighters in the absence of a respirator conforming to NFPA 1984?
- Where should the authority to enforce the use of a wildland firefighter respirator standard reside (e.g., federal, state, local level)?

Respirator Selection and Use:

- Given the dynamic wildland firefighter environment, what are the guiding principles behind selecting an appropriate NIOSH Approved respirator?
- Under what conditions should the use of respirators be required, and how are those conditions determined?

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- How can barriers (logistical, regulatory, cultural) to using NIOSH Approved respirators by wildland firefighters be overcome when exposure-reduction tactics are not effective?

4:25 pm
(5 min)

Day 1 Wrap-Up
Sundaresan Jayaraman, Committee Chair

4:30 pm

ADJOURN

November 19, 2025

Open Session

8:30 am
(10 min)

Welcome, Recap from Day 1, and Overview of Day 2 Plans
Sundaresan Jayaraman, Committee Chair

8:40 am

Session 3 Continued: Respiratory Protection for Wildland Firefighters

8:40 am
(85 min)

Emerging Technologies and Recent Developments in Respiratory Protection for Wildland Firefighters

8:40 – 8:55 am

Evaluation of a Novel Wildland Firefighter Respirator and Lessons Learned
Michael Wilson, Cal/OSHA

8:55 – 9:00 am

Clarifying Q&A

9:00 – 9:15 am

An Integrated Particle Sensor and Respirator System to Mitigate Exposures Among Wildland Firefighters
Rufus Edwards, University of California, Irvine

9:15 – 9:20 am

Clarifying Q&A

9:20 – 9:35 am

Usability of Respirators for W/WUI Firefighting: Preliminary Findings
Rachael Jones, University of California, Los Angeles

9:35 – 9:40 am

Clarifying Q&A

9:40 – 10:20 am

Moderated Panel Discussion on Emerging Technologies and Recent Developments from Research

- What strategies can help to overcome major barriers to evaluating respiratory protective devices under real-world conditions? How might research on current and emerging technologies for wildland firefighter respiratory protection help to overcome current barriers to use?
- What is needed to bring innovative respirator designs to market for wildland firefighter use?
- What emerging technologies should be prioritized in the next 1-3 years?

10:20 am
(10 min)

Break

10:30 am
(60 min)

Panel Discussion: Ensuring Respirator Effectiveness in Real-World Wildland Firefighting Conditions

Invited Discussants:

Fire Service Perspectives

- *Kathleen Dubose*, DOI/US Forest Service Wildland Firefighter Health and Wellbeing Program
- *Chief Jeremy Lawson*, CAL FIRE
- *Travis Parker*, US Forest Service
- *Captain Ryan Souder*, County of Los Angeles Fire Department
- *Joseph Ten Eyck*, IAFF Wildfire/Urban-Interface Fire Programs
- *Chief Albert Yanagisawa*, NFPA and County of Los Angeles Fire Department

Regulator Perspective

- *Michael Wilson*, Cal/OSHA

Researcher Perspectives

- *Nicola Cherry*, University of Alberta
- *Christopher Coffey*, NPPTL Consultant
- *Rufus Edwards*, University of California, Irvine

Manufacturer Perspectives:

- *Pontus Ahlwy*, Sunstrom
- *Melissa Ray*, Dräger
- *Jessica Treddinick-Higgins and Dan Morton*, 3M

Focus Questions for Panel Discussions:

- Respirator Cartridges/Canisters:
 - How do we respond to the fact that respirator cartridges (and CBRN canisters) are not tested against smoke—they are tested against individual chemical substances? Does the complex mixture of combustion products that constitutes smoke affect the performance of the cartridge in ways that would limit its ability to protect the user?
 - Given that smoke is a complex mixture, how can guidance be provided to the users for a respirator change out schedule?
- Carbon Monoxide Hazards:
 - How important is monitoring carbon monoxide (CO) if the wildland firefighter does not have a respirator that protects against CO?
 - How will data gathered from CO monitoring be used to make operational decisions about wearing respirators?
- Given the identified hazards and the lack of an occupational exposure limit for smoke, how can wildland firefighters be directed to know when to don respiratory protection?

11:30 am
(60 min)

Panel Discussion: Elements of Respiratory Protection Program Framework for Wildland Firefighters

11:30 – 11:45 am

Framing Remarks

Sundaresan Jayaraman, Committee Chair

11:45 am – 12:30
pm

Discussion

- What strategies can be used to develop a robust and adaptive Respiratory Protection Program (RPP) framework for wildland firefighters that accounts for the many unknowns and deviations from traditional industrial hygiene practices?

12:30 pm
(15 min)

Day 2 Wrap-Up, Next Steps, and Closing Remarks

Sundaresan Jayaraman, Committee Chair
Adam Smith, NPPTL Deputy Director

12:45 pm

ADJOURN