

# NPPTL PSS Activities and NIOSH Plans for a Public Safety PPE Action Plan

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# Plans for a Public Safety Sector PPE Action Plan

- Conduct a review of current activities
  - Continue for the next two years
- Action plan with a 5-year scope
  - implemented >1 year from now



**Ongoing NPPTL Research**

# Public Safety Sector PPE Research Goals

- Prevent exposures to known or suspected carcinogens (goal 1.9)
- Reduce risk factors to cardiovascular disease (goal 1.10)
- Prevent transmission of infectious disease (goal 3.6)
- Prevent dermal exposure to illicit drugs (goal 3.7)
- Prevent fixed airways diseases (goal 5.11)



# FF Turnout Gear

- **Evidence to Inform Standards that Ensure Turnout Gear Remains Protective Throughout Its Lifecycle** (Matthew Duling)
- **Evaluation of Firefighter Textiles for PFAS** (Crystal Forester)
- **Cleaning Verification Procedures to Establish Best Decontamination Practices for Firefighter PPE** (Jay Tarley & Crystal Forester)
- **Contamination Assessment of Wildland Firefighter Gear** (Crystal Forester)
- **Turnout gear performance after repeated launderings** (Kenny Fent)





# Respiratory Protection

- **Evaluation SCBA design and weight on firefighter stamina, comfort, and postural stability (Jeffrey Powell)**
- **Evaluation of SCBA design and weight on firefighter musculoskeletal loadings: a data-driven modeling study (Susan Xu)**
- **Psycho-physiological burden of inspiratory resistance in wildland firefighting (Tyler Quinn)**





# Gloves

- **3D Modeling & Thermal Protection of Firefighter's Glove by Phase Change Material** (Susan Xu)
- **Evaluate glove design and size on workers stamina, comfort, and dexterity** (Susan Xu)





## Law Enforcement PPE

- Law Enforcement Officer  
Anthropometry for Safe Vehicle  
Operation and Personal Protection  
(Hongwei Hsiao)



# Surveillance

- **EMS and Firefighter Operations, Exposure Characteristics, and PPE Usage (Emily Haas)**



# Other Related Surveillance Activities

- **Surveillance of Non-Fatal Injuries Among On-Duty LEOs** (Hope Tiesman)
- **Assessment of Occupational Injuries Among FFs Using a Follow-Back Survey** (Suzanne Marsh)
- **Wildland Firefighting Safety and Health** (Kathleen Navarro)

1. Did you need any personal protective equipment that was NOT available?  
☒ Yes  
☐ No  
☐ DON'T KNOW
2. Please describe the personal protective equipment that you needed.  
Personal safety harness
3. Were there any problems with any of the personal protective equipment that you were wearing that may have contributed to your [IE]?  
☐ Yes  
☒ No  
☐ DON'T KNOW



# **NIOSH Plans for a Public Safety PPE Action Plan**

# CBRN Research Activities

- Evaluated new/emerging CBRN hazards to ensure NIOSH's testing conditions represent relevant hazards
  - NIOSH's "CBRN APR Protection List" can be expanded from **139** to **286 hazards**
  - No changes needed to NIOSH's CBRN test representative agents (TRAs) or Chemical Families
  - Currently 1) testing CBRN canisters against chemicals identified for further study and 2) updating NIOSH CBRN APR Protection List in public-facing documents (e.g., webpage, NIOSH Respiratory Protection Handbook)

NIOSH Chemical Family (TRA)	2001 CBRN APR Protection List	Updated NIOSH CBRN APR Protection List
<b>Organic Vapor</b> (cyclohexane)	61	112
<b>Acid Gas</b> (hydrogen cyanide, hydrogen sulfide, phosgene, cyanogen chloride)	32	46
<b>Base Gas</b> (ammonia)	4	4
<b>Hydride</b> (phosgene)	4	4
<b>Nitrogen Oxide</b> (nitrogen dioxide)	5	6
<b>Formaldehyde</b> (formaldehyde)	1	1
<b>Particulate, Chemical</b> (dioctyl phthalate)	3	56
<b>Particulate, Radiological/Nuclear</b> (dioctyl phthalate)	16	44
<b>Particulate, Biological</b> (dioctyl phthalate)	13	13
<b>Total</b>	<b>139</b>	<b>286</b>

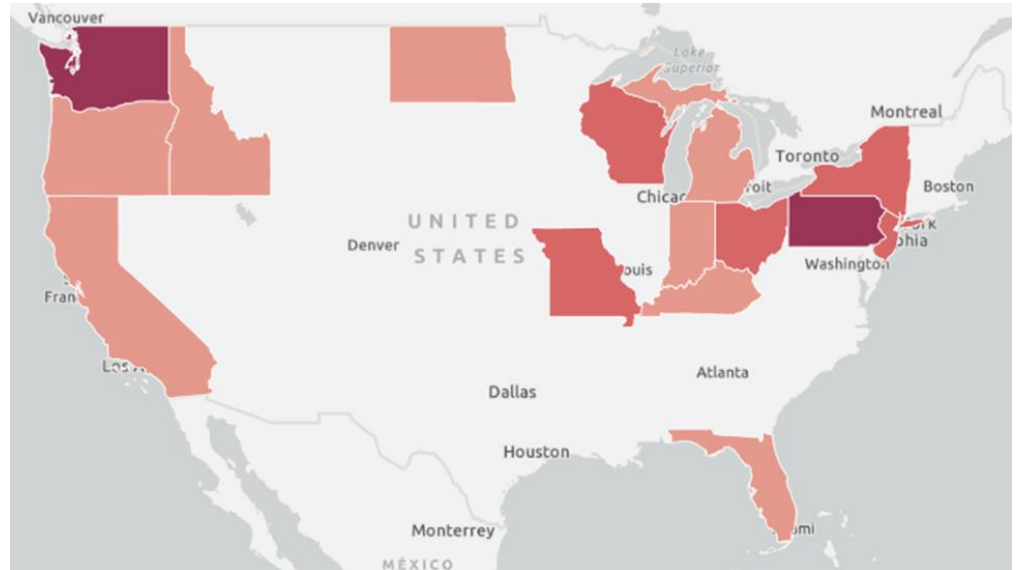
# Illicit Drug Research Activities

- Conducted illicit drug hazard assessment to identify new/emerging illicit drugs, precursors, and analogs to inform PPE recommendations
- Evaluating permeation of opioids through gloves and protective clothing (e.g., uniforms, coveralls, gowns) under ambient, hot, or cold storage conditions, and after being stretched
- Evaluating glove puncture and transfer capabilities for fentanyl



# NIOSH FRN to Expand the Use of Elastomerics

- 43 first responder organizations initially responded with interest, requesting approximately 9,000 EHMRs
  - 37 of these organizations were fire departments, EMS paramedic groups, or combination (Fire and EMS) departments (8,161 EHMRs)
  - 6 organizations were law enforcement agencies (621 EHMRs)



First responder organizations from **15 states** responded with interest

# Regulatory and Consensus Standards

- NFPA 1987 - Standard on Combination Unit Respirator Systems for Tactical and Technical Operations
- NFPA 1801 - Standard on Personal Alert Safety Systems (PASS) (NFPA 1982); Standard on Thermal Imagers for the Fire Service
- NFPA 1802 - Standard on Electronic Safety Equipment for Emergency Services (NFPA 1800)
- NFPA 1852 - Standard on Respirators for Wildland Fire- Fighting Operations (NFPA 1984); Standard on Selection, Care, and Maintenance of Open-Circuit Self-Contained Breathing Apparatus (SCBA)
- NFPA 1981 - Standard on Open- Circuit Self-Contained Breathing Apparatus (SCBA) for Emergency Services
- NFPA 1982 - Standard on Personal Alert Safety Systems (PASS)
- NFPA 1984 - Standard on Respirators for Wildland Fire- Fighting Operations
- NFPA 1986 - Standard on Respiratory Protection Equipment for Tactical and Technical Operations
- NFPA 1987 - Standard on Combination Unit Respirator Systems for Tactical and Technical Operations
- NFPA 1989 - Standard on Breathing Air Quality for Emergency Services Respiratory Protection



# Quality Partnerships Enhance Worker Safety and Health

Visit NIOSH's Public Safety Program:  
<https://www.cdc.gov/niosh/programs/pubsaf/default.html>



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