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Dr. John Howard, MD, MPH, JD, LLM, MBA
Director
National Institute for Occupational Safety and Health

Re: Docket No. CDC–2026–0133 (NIOSH–356)
NIOSH Request for Information — Priorities for the Center for Firefighter Safety, Health, and Well-Being

Dear Dr. Howard and colleagues:

The American Industrial Hygiene Association (AIHA) appreciates the opportunity to comment on NIOSH's request for information regarding priorities for firefighter safety, health, and well-being.

AIHA represents the profession that develops and applies the science of occupational and environmental hygiene to protect worker health. We have long partnered with NIOSH on respiratory protection, surveillance and registry efforts, and disaster preparedness and recovery activities, and we continue to support NIOSH's work to identify and prevent emerging firefighter hazards. As you are aware, AIHA has been active in advocacy and program support for NIOSH and its core programs, such as the National Firefighter Registry (NFR), the Health Hazard Evaluation (HHE) program, and the Respirator Approval/Personal Protective Technology work -- areas we identify below as central to NIOSH's firefighter portfolio.

Below, we respond to NIOSH's specific queries and offer concrete, practicable recommendations that draw on AIHA's technical work, particularly our Respiratory Protection Technical Framework, our Disaster Response Resource Center, and our ongoing advocacy and working relationships with NIOSH and practitioner communities.

1. **How can NIOSH best leverage these priority topics to help improve firefighter safety, health, and well-being and address potential challenges?**

   - Center NIOSH's efforts on exposure-to-outcome surveillance and prevention. Robust, longitudinal surveillance, anchored by the NFR and supplemented by exposure measurement, enables detection of emerging hazards and the downstream development of prevention guidance. NIOSH should continue investing in the NFR's enrollment, linkage to cancer and occupational health data, and methods to collect standardized exposure and work history data from both career and volunteer firefighters (including wildland-urban interface (WUI) and seasonal wildland crews).
   - Make respiratory protection and PPE science a programmatic hub. NIOSH's Respirator Approval Program and testing capacity are essential for ensuring firefighter protection in diverse operational contexts - structural, wildland, and WUI. NIOSH should leverage its laboratory, testing, and standards expertise to evaluate respirators, SCBAs, wildland mask designs, and turnout ensembles under realistic exposure and interoperability scenarios (including heat/physiological burden, compatibility with turnout gear, and decontamination practices). AIHA's Respiratory Protection Technical Framework provides an evidence-based approach for program

administration, fit testing, medical evaluation, and competency development that NIOSH can adopt and scale for fire service audiences.

- Prioritize practical exposure science for WUI and wildland contexts. As WUI and large wildland incidents increase, NIOSH should expand research on the composition of wildfire smoke and complex mixtures encountered in WUI fires (including combustion of modern building materials and PFAS-containing foams), acute and chronic health effects, and effective controls for outdoor and mixed indoor/outdoor tasks. This includes method development (sampling and analytical NMAM-type methods) for complex combustion matrices and biomarkers of exposure and effect. AIHA's disaster preparedness work highlights the critical need for guidance on wildfire smoke to protect outdoor workers and responders.
- Strengthen translational services: HHEs, investigations, and formative guidance. Expand the HHE and the Firefighter Fatality Investigation and Prevention Program (FFFIPP) resources so NIOSH can rapidly investigate emerging hazards and translate findings into plain-language guidance, tools, and training for departments, particularly small, rural, and volunteer fire departments that lack in-house industrial hygiene expertise. Rapid, authoritative guidance on decontamination (on-scene and station), PPE care and storage, and return-to-duty protocols would produce immediate worker protection benefits.
- Address occupational heat, psychosocial risks, and workforce resilience together with exposure hazards. Firefighting is a physically and psychologically demanding occupation. NIOSH should integrate heat stress mitigation, mental health and PTSD support, and fatigue/shiftwork research into its firefighter portfolio because these factors materially affect safety and the physiological tolerance of PPE and respirators. AIHA's disaster and thermal stress work (including its recently released heat stress app) underscores the need for such integrated approaches.

2. What priorities, research areas, and service activities could be expanded?

- Expand the NFR and exposure annotation. Increase recruitment among career, volunteer, and seasonal wildland firefighters; enhance linkage to cancer registries and medical data; and standardize exposure and PPE-use questions to enable exposure-response modeling. Invest in sub-cohort studies with personal exposure monitoring and biomarker collection to move beyond registry-only inference.
- Develop validated methods for complex fire exposures. Fund NMAM-style method development and validation for particulate and VOC mixtures produced in modern structure and WUI fires, and for PFAS measurement in dust, turnout gear, and biological media.
- Broaden PPE and respirator evaluation to operational realism. Extend RAP and NPPTL testing to include combined-stress scenarios (heat strain and exposure), compatibility of respirators with turnout ensembles and SCBA systems, real-world donning/doffing, decontamination impacts on performance, and wear-time studies. Support evaluation of emerging fit-testing technologies and field-deployable fit/fit-assurance tools for volunteer departments.
- Scale HHEs, rapid exposure assessment, and targeted interventions. Provide dedicated funds and streamlined processes for HHEs focused on small/volunteer departments, post-fire clean-up crews, and municipal/public works staff who assist with debris removal. Promote rapid field tools and protocols that departments can use independently for initial exposure screening.
- Invest in intervention and implementation science. Support pragmatic trials and validation of interventions, such as station design changes, on-scene decontamination workflows, PPE storage/cleaning protocols, and administrative controls, to strengthen the evidence base for practical, affordable measures.
- Address equity and workforce diversity. Expand research on how volunteer status, gender, race/ethnicity, and socioeconomic status influence exposures, access to PPE, health outcomes, and registry participation; ensure materials and outreach are culturally and operationally appropriate.

3. **How can NIOSH best partner with fire service organizations and related stakeholder organizations to achieve these priorities?**

- Formalize technical partnerships with professional societies and practitioner networks. NIOSH should expand formal MOUs and advisory arrangements with organizations that deliver technical expertise and training, such as AIHA, IAFF, NFPA, state fire training academies, and university ERCs. These partnerships could explicitly include co-development of training, technical framework-based curricula, and fit-testing/respiratory protection resources tailored for the fire service. AIHA's Respiratory Protection Technical Framework is an immediately useful template for competency and training frameworks.
- Create joint, practical products and shared data platforms. Co-produce implementation guidance (e.g., decontamination, PPE care, on-scene exposure controls), standard operating procedures, and data-sharing agreements that enable secure linkage of firefighter exposure and health data. Consider interoperable data standards that enable local, state, and federal registries to exchange and aggregate information efficiently.
- Build capacity for small/volunteer departments. Use grants and cooperative agreements to fund regional "industrial hygiene support centers" or mobile HHE teams that provide sampling, fit testing, training, and technical assistance to departments without access to occupational hygiene professionals.
- Use structured stakeholder engagement and co-design. Convene regular, funded working groups that include career and volunteer firefighters, labor representatives, standards organizations, public health partners, and affected communities to co-design research questions, recruitment approaches for the NFR, and dissemination strategies that increase uptake.
- Leverage NIOSH's scientific credibility for standards harmonization. Work with NFPA and other standards bodies to align NIOSH findings with consensus standards and OSHA guidance, where relevant, thereby accelerating the translation of research into enforceable practice.
- Support training and workforce development. Partner with AIHA, ERCs, and professional committees to create accessible training modules (online and in-person) for RPPAs, fit testers, and department safety officers, and to translate NIOSH research into operational checklists and competency assessments. AIHA stands ready to assist with curriculum development and to incorporate NIOSH findings into practitioner-oriented technical frameworks and training.

NIOSH's Center for Firefighter Safety, Health, and Well-Being is uniquely positioned to marshal exposure science, surveillance, standards, and translational services that directly protect firefighters and other workers exposed to fire-related hazards. To do so effectively will require sustained staffing and programmatic capacity, particularly for the NFR, RAP/NPPTL testing, HHE/FFFIPP investigations, and laboratory method development, as well as a commitment to practical, partnership-driven science that delivers implementable controls to departments of all sizes.

AIHA has a record of collaboration with NIOSH and the fire service and stands ready to support NIOSH via technical consultation, training development grounded in our Respiratory Protection Technical Framework, participation in joint working groups, and assistance with outreach to volunteer and career firefighter communities.

We appreciate NIOSH's leadership and welcome the opportunity to discuss these recommendations in greater detail or to provide tailored technical input and collaborative proposals. Please direct inquiries to AIHA's Government Relations Department (gr@aiha.org), which can provide subject-matter expertise to support the implementation of respirator and PPE-related work.

Respectfully submitted,

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