



January 10, 2025

John Howard, MD, JD
Director
National Institutes for Occupational Safety and Health
1600 Clifton Road Room 4505, MS E-20
Atlanta, GA 30329

Re: Comment on Centers for Disease Control and Prevention's (CDC) National Institute for Occupational Safety and Health (NIOSH) Draft Hazard Review: Wildland Fire Smoke Exposure Among Farmworkers and Other Outdoor Workers, Docket # - CDC-2024-0065-0001

Dear Director Howard:

On behalf of the undersigned public health, medical and nursing organizations, we appreciate the opportunity to comment on NIOSH's draft "Hazard Review: Wildland Fire Smoke Exposure Among Farmworkers and Other Outdoor Workers (Hazard Review)." Wildland fire smoke poses an increasingly frequent and severe threat to everyone's health, especially the health of outdoor workers who are on the frontlines of climate-related disasters. Robust federal guidance and protections are needed to safeguard outdoor workers from the impacts of wildland fire smoke. We appreciate NIOSH's swift effort to create this valuable resource to protect the health and well-being of outdoor workers. We offer the following comments on both structure and substance to strengthen the Hazard Review.

Comments on Structure

- 1. Modify the "Plain Language Summary" to include key exposure control recommendations.** The Plain Language Summary on page xi includes important information on the composition of wildland fire smoke, the health effects of exposure and the hierarchy of controls. However, the section titled "Recommendations and conclusions" could be more useful if it summarized the information in Section 5.2 "Control Recommendations Based Upon Exposure." A summary could include information on the Air Quality Index (AQI) breakpoints and the following key recommendations:

- **Preparation**, including a workplace safety and health program.
 - **Training** before the AQI becomes unhealthy for workers.
 - **Engineering Controls** to mitigate exposures, including enclosed structures with filtered air.
 - **Administrative Controls** when engineering controls are not feasible, including relocating or rescheduling work, reducing physical activity, more frequent breaks, and moving duties indoors.
 - **Personal Protective Equipment**, such as N95 respirators, when engineering and administrative controls do not sufficiently reduce exposures.
2. **Make the “Recommendations for Employers, Workers, and Healthcare Professionals” the first chapter of the Hazard Review.** While an overview of NIOSH’s recommendations is included in the Executive Summary, the complete list of recommendations is buried in Chapter 5. To make the recommendations more accessible, we recommend dedicating Chapter 1 to the recommendations. This would mirror the structure of NIOSH’s “Criteria for a Recommended Standard: Occupational Exposure to Heat and Hot Environments.”¹ A revised Chapter 1 could include Table 5-1, which is a helpful summary of NIOSH’s recommendations for employers.

Substantive Comments

3. **Make clear that employers should communicate hazards and provide training materials in a language, or languages, and at a literacy level each employee understands.** For hazards and training materials to be communicated effectively, employers must ensure that all employees are able to understand, taking into account varying education levels, literacy, and language skills. This should be reiterated in Section 5.2.1 “Basis for the NIOSH Recommendations” and Section 5.2.2 “NIOSH Recommendations for Employers, Workers, and Healthcare Professionals” of the Hazard Review. In addition, trainings should provide employees an opportunity for questions and answers about the materials.
4. **Recommend workplace trainings include training on workers’ rights.** The only mention of workers’ rights in the Hazard Review is on page 255, which recommends workers “know the rules and regulations to safely perform your job and who to contact with any concerns.” This places the burden of knowledge on the worker. However, it should be the employer’s responsibility to include information about workplace rights in training materials. It is important workers are made aware of their rights, especially considering lack of employer compliance with respiratory protection programs is a known barrier to effective use of respiratory protective devices.² The Hazard Review should specify in Section 5.1.2.2 that trainings should also include information for how sensitive groups can protect their health, including people with respiratory or cardiovascular disease, pregnant people, children under 18 years old and older adults.
5. **Encourage employers to implement exposure controls for sensitive groups at an AQI of 80 or above.** We appreciate that NIOSH recommends employers implement exposure controls for sensitive groups at an AQI of 101 or above (considered unhealthy for sensitive groups) and for all groups at an AQI of 151 or above (considered unhealthy for everyone). The current AQI breakpoints reflect the annual national ambient air quality

standard for PM_{2.5} of 9 µg/m³ and the 24-hour standard of 35 µg/m³. However, the Lung Association and other health organizations have called for the U.S. Environmental Protection Agency to strengthen the annual standard to 8 µg/m³ and the 24-hour standard to 25 µg/m³ based on what the latest science shows is necessary to protect health. Lowering the threshold for employers to implement exposure controls for sensitive groups to an AQI of 80 (equivalent to a PM_{2.5} concentration of 25.2 µg/m³) could better protect workers' health.

- 6. Consider recommending employers implement a buddy system to monitor for health effects of smoke exposure.** The buddy system is a key strategy used to protect workers during extreme heat events, in conjunction with training on how to recognize early signs and symptoms of heat-related illness. Implementing a similar system during wildland fire smoke events would help protect workers.
- 7. Provide additional guidance on preparedness measures employers should take ahead of smoke events.** The Hazard Review notes that preparation is key to reducing health risks of smoke exposure to outdoor workers and recommends employers have in place a workplace safety and health program. NIOSH should develop template workplace Health and Safety plans, which include a smoke alert program and evacuation plan, to help employers to prepare for smoke events.
- 8. Provide additional guidance on work-rest cycles.** The Hazard Review mentions work-rest cycles should be applied to reduce the overall exposure burden on outdoor workers but does not discuss recommended duration of the cycles. If research is needed to provide more guidance on work-rest cycles during wildland fire smoke events, the Hazard Review should be updated as information becomes available.
- 9. Develop comprehensive guidance on effective measures to protect workers' health during co-exposure to multiple stressors.** Climate change is not only increasing the number of days and severity of exposure to wildland fire smoke. It is also increasing the likelihood of other extreme weather events, including days with extreme heat.³ Heat and wildland fire smoke are individually associated with adverse health effects, and research indicates concurrent exposure may have compounding effects.^{4,5,6,7} As more information becomes available, NIOSH should develop guidance on how to protect workers' health from co-exposure to multiple stressors, including smoke, heat and pesticides.
- 10. Create tailored materials to disseminate recommendations, and engage workers, community-based organizations and health professionals to better understand remaining gaps and needs.** NIOSH should disseminate the recommendations in the Hazard Review through briefings and plain language summaries to a wide range of audiences, including OSHA, academic institutions, industry, workers, community-based organizations and the health community. NIOSH should work with worker-focused, community-based organizations to create tailored, accessible materials for workers. Additionally, NIOSH notes that health professionals need to understand the health risks of exposure to wildland fire smoke and should be ready to respond to workers who may ask them for recommendations on how to protect their health. NIOSH should note that

health professionals need more resources to treat patients who are impacted by wildland fire smoke. NIOSH should develop resources for health professionals on the health impacts of wildland fire smoke exposure with recommendations they can convey to patients. Future research into the effectiveness of trainings, engineering controls and administrative controls should engage worker- and community-based organizations through focus groups and other forms of targeted feedback.

11. Consider reframing the Hazard Review as “Criteria for a Recommended Standard: Occupational Exposure to Wildland Fire Smoke.” A federal wildland fire smoke standard is crucial for protecting outdoor workers across the country from the increasing impacts of wildland fire smoke. Currently only three states – California, Washington and Oregon – have a standard in place to protect outdoor workers from smoke, leaving millions of outdoor workers without protections. The Forward of NIOSH’s “Criteria for a Recommended Standard: Occupational Exposure to Heat and Hot Environments” states,

“When the U.S. Congress passed the Occupational Safety and Health Act of 1970 (Public Law 91-596)...Congress charged NIOSH with recommending occupational safety and health standards and describing exposure levels that are safe for various periods of employment, including but not limited to the exposures at which no worker will suffer diminished health, functional capacity, or life expectancy because of his or her work experience. Criteria documents contain a critical review of the scientific and technical information about the prevalence of hazards, the existence of safety and health risks, and the adequacy of control methods.”⁸

The Hazard Review contains the components of a criteria document – a critical review of the scientific and technical information about the prevalence of the hazard, the safety and health risks, and the adequacy of control methods. Reframing the Hazard Review as “Criteria for a Recommended Standard” could help pave the way for OSHA to start the rulemaking process on a federal smoke standard for outdoor workers.

Everyone has the right to a healthy and safe work environment. As wildland fire smoke events become more frequent and severe and impact parts of the country unaccustomed to dealing with smoke, the health and well-being of outdoor workers is increasingly at risk. The Hazard Review is a crucial step toward ensuring workers have robust protections in place to protect their health during dangerous smoke events. We commend NIOSH for developing the Hazard Review and urge NIOSH to finalize the document without delay.

Signed,

Allergy & Asthma Network

Alliance of Nurses for Healthy Environments

American Lung Association

Children's Environmental Health Network

Medical Society Consortium on Climate and Health

National Environmental Health Association

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¹ NIOSH (2016). NIOSH criteria for a recommended standard: occupational exposure to heat and hot environments. By Jacklitsch B, Williams WJ, Musolin K, Coca A, Kim J-H, Turner N. Cincinnati, OH: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication 2016-106.

² National Academies of Sciences, Engineering, and Medicine. (2022). Frameworks for Protecting Workers and the Public from Inhalation Hazards. *The National Academies Press*.
<https://doi.org/10.17226/26372>.

³ Kristina Dahl *et al.* (2019). Increased frequency of and population exposure to extreme heat index days in the United States during the 21st century. *Environ. Res. Commun.* 1(7). <https://doi.org/10.1088/2515-7620/ab27cf>

⁴ Ha, S. Abatzoglou, J. T., Adebisi, A., Ghimire, S., Martinez, V., Wang, M., Basu, R. (2024). Impacts of heat and wildfire on preterm birth. *Environ. Res.* <https://doi.org/10.1016/j.envres.2024.119094>

⁵ Chen, C., Schwarz, L., Rosenthal, N., Marlier, M. E., & Benmarhnia, T. (2024). Exploring spatial heterogeneity in synergistic effects of compound climate hazards: Extreme heat and wildfire smoke on cardiorespiratory hospitalizations in California. *Science advances*, 10(5), eadj7264.
<https://doi.org/10.1126/sciadv.adj7264>

⁶ Shaposhnikov, D., Revich, B., Bellander, T., Bedada, G. B., Bottai, M., Kharkova, T., Kvasha, E., Lezina, E., Lind, T., Semutnikova, E., & Pershagen, G. (2014). Mortality related to air pollution with the moscow heat wave and wildfire of 2010. *Epidemiology (Cambridge, Mass.)*, 25(3), 359–364.
<https://doi.org/10.1097/EDE.0000000000000090>

⁷ Anenberg, S. C., Haines, S., Wang, E., Nassikas, N., & Kinney, P. L. (2020). Synergistic health effects of air pollution, temperature, and pollen exposure: a systematic review of epidemiological evidence. *Environmental health : a global access science source*, 19(1), 130.
<https://doi.org/10.1186/s12940-020-00681-z>

⁸ NIOSH (2016). NIOSH criteria for a recommended standard: occupational exposure to heat and hot environments. By Jacklitsch B, Williams WJ, Musolin K, Coca A, Kim J-H, Turner N. Cincinnati, OH: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication 2016-106.