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COMMENTARY

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Effective coordination, collaboration, communication, and partnering are needed to close the gaps for occupational PFAS exposure

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Over the past few decades, there has been a growing concern over the health effects associated with per- and polyfluoroalkyl substances (PFAS) exposure especially among worker populations. High levels of PFAS exposure have been linked to various health outcomes including cancer and increased cholesterol levels.[1] Existing research on occupational PFAS exposure is limited to only a few industries. Given this, the focus of the *American Journal of Industrial Medicine's* special issue on occupational PFAS exposures is to review current knowledge of occupational exposures to PFAS; identify newer, emerging, or unstudied sources of exposure; assess gaps in present understanding of their occupational use and hazards; and outline the needs for future research and worker protection. This special issue will help advance the scientific community's understanding of PFAS and aid current and future research projects. However, there are additional critical drivers to the success of reducing occupational exposures to PFAS which need to be addressed. These critical drivers are effective coordination, collaboration, communication, and partnerships.

Research challenges such as exposure assessment, toxicology, and predictive modeling are complex, multidimensional issues that require coordinated exchanges of information; collaborative teams from numerous institutions that are multidisciplinary and even interdisciplinary; communication avenues for new incoming and outgoing information that are open and trusted; and partnerships across organizations representing the affected worker population. It is crucial that organizations with the ability to coordinate and foster collaboration and partnerships engage with the scientific community to address this challenging occupational exposure efficiently and effectively.

The National Occupational Research Agenda (NORA), a nationwide partnership program aimed at stimulating innovative research and improving workplace practices, is one example of how an organization can utilize its broad network to address occupational exposures and hazards. The program is comprised of ten different industry sectors (including public safety and manufacturing) and seven health and safety cross-sectors, with a council to represent each. NORA Councils work with diverse groups of researchers from academia, government, the private sector, and organizations representing affected workers to facilitate webinars and other activities that promote communication, collaboration, and partnership. In May 2021, the NORA Public Safety Sector Council hosted a half-day web-based meeting with invited speakers from academia and government to discuss the "state of the science" for occupational PFAS exposure

and to initiate conversations aimed at fostering collaboration across participants.

The webinar provided a shared space for participants to present their research and engage in facilitated discussions on topics such as dermal exposures, epigenetic markers, the potential liberation of PFAS from personal protective equipment, and the impact of changing from long- to short-chain chemical structures. Through their participation, researchers were able to identify potential collaborators and solidify thoughts on next steps for their work. Government representatives explored how to best leverage their complementary research and public health programs while industry and labor representatives reinforced to other participants that this area was a critical priority. By inviting collaborative teams from multiple institutions and disciplines to showcase their research, the webinar exemplified the strong linkages between occupational and environmental health and demonstrated how the work of these individual disciplines is made stronger through collaboration.

The NORA Councils and other organizations impacted by occupational PFAS exposure or with domain knowledge need to continue to coordinate events that facilitate meaningful dialog and information sharing along with collaboration and development of partnerships. Furthermore, these organizations must work toward developing a *National Strategy to Safeguard Workers against PFAS Exposures*. A national strategy should consider the collective capabilities of this nation's resources to include (1) institutions conducting surveillance, basic/etiological, intervention, and translational research, (2) product developers such as personal protective equipment and measurement technology manufacturers, (3) policymakers, and (4) associations and unions with frontline access to workers. With consideration of all capabilities, the strategy should chart a pathway forward for how, and at what milestones, the organizations with the authority over these capabilities may directly engage to advance the state of knowledge and practice related to occupational PFAS exposures.

Organizations and the scientific community owe it to this nation's workers to function as a cohesive and complementary collection of experts when tackling the complex, multifaceted challenges of occupational PFAS exposure.

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No data was generated, created, or described in this article. No human subjects were involved in the generation of this article. The author's institutions performed reviews for alignment with organizational policies and positions.

DISCLAIMER

The findings and conclusions in this letter are those of the authors and do not necessarily represent the official position of the National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention.

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