*Annals of Work Exposures and Health*, 2017, Vol. 61, No. 1, 1–2
doi: 10.1093/annweh/wxw012
Editorial





# Editorial

## The Annals, v2.0

With this issue, I am excited to introduce the '*Annals of Work Exposures and Health*'. After publishing 60 volumes of the *Annals of Occupational Hygiene*, and through a lengthy process of consultation, surveys, and analysis, the editors determined that the future would be best served by a change in the role of the journal and that this could be best accomplished through a name change and a widening of its scope.

As discussed in the article by Peckham *et al.* (2017), in this issue of the journal, the world of work, the hazards present, and the challenges to achieving worker health have changed dramatically over the past several decades. In the developed world, ignorance and disregard for the toxicity of many chemicals has been replaced by a sophisticated database of research and health protective guidelines for many of the most common chemicals. Large quantities of industrial materials, processed in open containers and batch processes, have been largely replaced with less toxic materials, smaller quantities, and enclosed, continuous operations. At the same time, the prevalence of exposures to electromagnetic fields, shift work, sedentary jobs, and other biomechanical risks may be increasing. Large vertically integrated industrial facilities have been supplanted with small specialized job shops and sophisticated supply chain and logistics systems, often shifting work and exposures to developing economies. Career employment with a single company, union contract protections, and integrated benefits have been replaced with multiple sequential or concomitant jobs, contract employment, and even 'gigs', with few long-term benefits or job security.

Though technical means of assessing and controlling traditional occupational hazards are well known and widely accepted, refining exposure assessment and controlling and measuring emerging workplace hazards are also rapidly advancing. Continuing research on miniaturization, real-time analysis, and reducing the costs of monitoring are active areas of research. Emerging technologies, such as 'omics, spatial analyses, and informatics, may have an increasing role to play in occupational exposure assessment, as suggested by the 'exposome' concept. Development and testing of predictive models play an increasingly important role in the management of work hazards. Engineered systems for production with limited worker contact using the upper tiers of the hierarchy of controls—elimination, substitution, and enclosure—have become the predominant means of control, using the tools of 'prevention through design', 'green chemistry', 'sustainable production', and 'product life-cycle analysis'.

Unfortunately, these significant advances in occupational hygiene do not mean that the workplace is now a healthful environment or integrated into a healthy life for most workers. Thus, as a field we are still faced with the challenge of creating a healthy working life. First, in developing economies with limited or non-existent public health frameworks, many hazardous exposures continue unabated; thus, translating our knowledge and incentives to other areas of the world remains a high priority. Second, just because we know how to control hazards, does not mean it will be done effectively in all workplaces. This translation from research to practice requires identifying and testing the organizational, management, and behavioral barriers and incentives to risk reduction. Third, changes in work organization, including contracting, supply chains, staffing agencies, and other forms of precarious employment require new approaches to understanding and controlling work-related risks. Fourth, although many of the traditional chemical, physical, and biological hazards are reasonably well understood, effects of low-level, mixed contaminants, electromagnetic fields, and psychosocial exposures at work are less well understood. In addition, increasing attention is needed to the multifactorial contributors to stress-related conditions and mental health outcomes. In all areas, we need to continue honing our methodologies for exposure assessment and control and accurately assessing the human health consequences of

these work exposures. The Annals is well positioned to address these profound changes and needs. But to express our goals clearly, we need to revisit the meanings of 'work,' 'exposure', and 'health'.

The traditional definition of **work** is productive activity done on behalf of a wage-paying employer, during regular work hours in a defined location. This standard employment concept is increasingly replaced with a variety of alternative work arrangements. Who is the employer of a hotel janitor or a telecommunications tower mechanic? In both cases, they are unlikely to be employed by the company under whose sign they work. Where is the workplace of a programmer writing code in a shared workspace for a start-up software company? Who is responsible for health and safety protections (or other benefits) for an 'app-based' taxi driver who owns his own car? All of these examples challenge our traditional definition of work and its distinction from home or community.

**Exposures** are characteristics of a worker's immediate environment, available for absorption and leading to a 'dose'. The exposures we are concerned with are those that affect health and have traditionally been chemical or physical contaminants depositing in target tissues and perturbing biology. The wisdom of focusing on exposure, in tandem with dose and effect, is that the environment is amenable to intervention and control before being internalized or causing an unwanted effect. However, the concept of environmental contaminants affecting health is completely analogous to other sorts of workplace conditions including the physical environment (affecting musculoskeletal or injury risk), the psychosocial environment (affecting stress and mental health-related outcomes), and perhaps even the policy and socio-economic environment affecting occupational and social equity disparities. An expansive view of our 'environment' necessitates a revision of what we mean by exposure, how it is measured, and what types of control approaches can be effective in preventing ill effects.

The word **health** in occupational hygiene has traditionally been the prevention of specific work-related diseases—for instance, silicosis, asbestos-induced lung cancer, toxic neuropathy, isocyanate-induced asthma, etc. But this definition of health as the absence of disease has long been antiquated, with the World Health Organization and others defining health as a 'state of complete physical, mental and social well-being and not merely the absence of disease or infirmity'. Further, working conditions interact with general social conditions to create or reinforce the increasingly evident inequities in the social distribution of health. With the progress made on effective control of many traditional diseases related to toxic exposures, it is high time for the science and practice of occupational hygiene to adopt this more expansive public health view of our goal—to create a workplace that supports this broader vision of 'worker health'.

With our field rapidly changing, we need a journal that attracts and publishes leading scientific investigations, which will support this more expansive view of the concepts of work, exposures, and health. Thus, the expanded scope of the journal now includes the quantification of a full range of exposure conditions in the workplace and their relationship to health outcomes (AWEH, 2016). We are especially interested in how such exposures affect vulnerable populations and workers in alternative work settings, and the technical, management, and policy approaches to reducing these risks. As always, we continue to be interested in the underlying mechanisms and methodologies used to address these concerns. Toward this end, I present the Annals, v2.0, the *Annals of Work Exposures and Health*.

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## Acknowledgements

The author appreciates the contributions and wide-ranging support of many colleagues who have participated in long discussions, forums, and surveys concerning the future of the field and of the journal. In particular, the author is thankful to Marissa Baker for helping in all phases of the project and for insightful comments on this editorial. Financial support was provided by the British Occupational Hygiene Society for the project leading to this inaugural issue of the *Annals of Work Exposures and Health*.

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