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Occupational Health and Safety in the Cannabis Industry

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For centuries, the cannabis plant, typically *Cannabis sativa* and *Cannabis indica*, has been cultivated, processed, and utilized for religious, industrial, and therapeutic purposes (Mead, 2019). Hemp is a variety of *C. sativa* that contains minimal quantities of the psychoactive component tetrahydrocannabinol, and is grown specifically for the industrial uses of its derived products (Small and Marcus, 2003). The psychoactive effects of cannabis were seen as antisocial or undesirable in many cultures, and in 1961 the Single Convention on Narcotic Drugs was enacted that prohibited the manufacture distribution and sale of cannabis (Mead, 2019).

Laws relating to production, possession, and use of cannabis have recently become more permissive in a number of countries (Mead, 2019; Hall and Lynskey, 2020; Queirolo, 2020). In the USA, cannabis remains illegal under federal law, however there are currently 33 states and 4 permanently inhabited US territories, and the District of Columbia that have passed initiatives to legalize the medical and/or recreational use of cannabis (NCSL, 2018). Commercial production of cannabis has expanded rapidly in concert with the more permissive regulatory environment. In the USA alone, cannabis-related companies now employ an estimated 100 000–150 000 full- and part-time workers (McVey, 2016). The industry is growing exponentially, and global sales exceeded \$15 billion US in 2019 (Jergler, 2020).

Because of its history as an illegal drug, there has been limited scientific study of occupational health hazards within the cannabis industry. Many of the exposures in cannabis production are likely to be similar to those experienced in other agricultural or manufacturing operations. However, some exposures are unique to this industry, and there is accumulating evidence that these some of these exposures may be associated with adverse health effects in workers exposed to cannabis (Majmudar et al., 2006; Herzinger et al., 2011; Martyny et al., 2013). As the cannabis workforce increases, there is a growing need to identify the hazards present in this industry, evaluate the associations between these potential hazards and the health of cannabis workers, and to develop appropriate control strategies to mitigate those exposures.

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Conflict of interest

The author declares no conflict of interest.

In this special issue of the *Annals of Work Exposures and Health*, we present a diverse collection of papers that examine a variety of occupational exposures and health concerns related to workers in the cannabis and hemp industries. Some of the potential hazardous exposures identified in these industries include particulate matter, organic dusts, bioaerosols, pollen/allergens, volatile organic compounds, pesticides, and ergonomic hazards. Increased injury rates, and dermal and respiratory health effects were reported amongst cannabis workers—although the apparent high prevalence of cannabis use amongst some sectors of the cannabis workforce may make it difficult to disentangle the role of occupational versus recreational exposures in respiratory health outcomes. In addition to these ‘traditional’ hazards, workers described health concerns that were a result of social, economic, and political forces facing the transitioning cannabis industry and resulting from an inconsistency between state and federal law.

The increased use of cannabis in the workplace and in public spaces may present additional hazards for workers in non-cannabis industries. The article by Weigand *et al.* in this issue outlines potential concerns regarding workers exposure to second hand cannabis smoke. The potential for workers to be impaired due to medical or recreational use of cannabis is also a health and safety concern, however there is currently no adequate test for cannabis impairment, and testing of urine for psychologically inactive cannabinoid metabolites as has heretofore been common practice (Kulig, 2017) may no longer be acceptable. In some jurisdictions employers are not permitted to prohibit marijuana use by their employees outside of work hours, nor to deny employment due to the presence of marijuana in a screening test (State of Nevada, 2020).

The papers included in this special issue highlight the breadth of potentially hazardous exposures that may be present in cannabis and hemp production, and provide evidence for a variety of occupational health impacts associated with these exposures. As these industries continue to rapidly expand, there is a clear and present need to (i) evaluate these exposures and their associations with health outcomes, (ii) where appropriate, to develop and implement controls to manage those exposures, and (iii) to provide health and safety training tailored specifically to these industries, in order to ensure a safe and healthy work environment.

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