



Occupational Lung Disease Bulletin for Healthcare Providers

Massachusetts Department of Public Health

Fall 2023

Death of Cannabis Production Worker Highlights the Under-Recognition of Work-Related Asthma: Healthcare Providers are Key Partners in Prevention

Case Story

A 27-year-old White, non-Hispanic female with no history of asthma started work at an indoor cannabis* cultivation and processing facility in May 2021 – seven months later, she suffered a fatal work-related asthma attack.

Upon starting employment, she counted final packaged cannabis products in storage vaults throughout the facility. Within 4 months, she reportedly experienced work-related cough, dyspnea, and rhinitis that worsened throughout the workday. In late July, her employer required SARS-CoV-2 testing due to respiratory and gastrointestinal symptoms. She was seen by urgent care and tested negative for SARS-CoV-2 but returned a week later with ongoing symptoms. Bilateral diffuse wheezes were noted. Chest X-ray was normal. No information about her job (e.g., occupation, employer, industry) was noted in the urgent care records.

Her respiratory symptoms became worse when she moved to a job in flower production, where dried cannabis was ground, and pre-rolls (i.e., cannabis cigarettes) were made. In November, after five weeks in flower production, she became acutely dyspneic at work and was transported by ambulance to an emergency department (ED). Her symptoms resolved with an albuterol nebulizer en route. She tested negative for SARS-CoV-2 and had a normal chest X-ray. Scattered faint bilateral wheezes were present. She told the ED provider she was concerned that she was allergic to something at work. The provider noted that she might be developing asthma, although no other information about her work or potential exposures was discussed. She was discharged with an albuterol inhaler, a five-day course of prednisone and cetirizine. She was instructed to follow up with her primary care provider and to return with worsening symptoms. No primary care provider was noted in the medical record. According to her mother, she continued using the prescribed inhaler almost exclusively at work and had noted that it was almost empty just prior to her fatal event.

On January 4, 2022, she became acutely dyspneic at work and ultimately stopped breathing and lost consciousness. She was transported to a hospital, where she remained on life support until she died three days later. It was concluded that a severe asthma attack resulted in respiratory failure, cardiac arrest and ultimately death. For more information, [read the full report](#).

Reminder: Report work-related respiratory diseases to the MDPH Occupational Health Surveillance Program.
See bottom of page 3 for directions on how to report.

How is the case relevant to you and your patients?

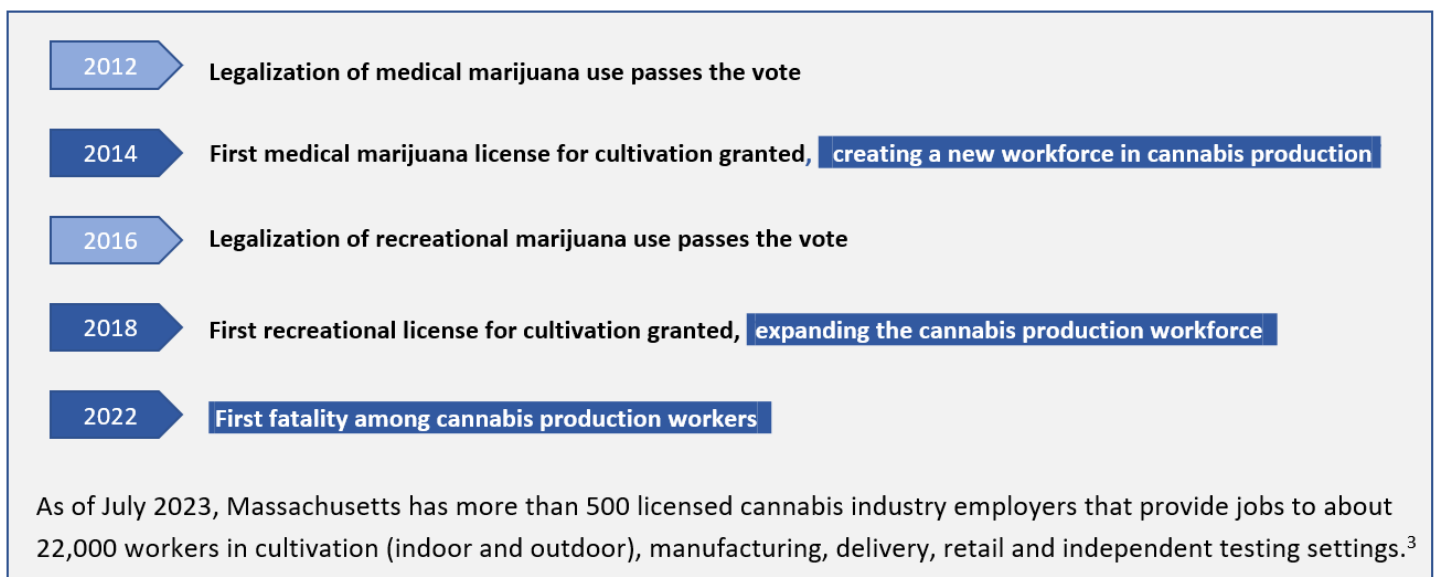
Work-related asthma is common but often underrecognized.

Work-related asthma (WRA), which is asthma caused or exacerbated by exposures at work, is underrecognized in part because work-relatedness of symptoms and/or industry and occupation data are not routinely collected as part of the physical exam or documented in the medical record. Approximately 17% of new-onset adult asthma cases are related to workplace exposures.¹ Regardless of cause, it is estimated 22 to 58% of adults with asthma suffer work-related exacerbations.¹ In Massachusetts, an estimated 200,000 adults have WRA.²

Early recognition of WRA can lead to both medical and workplace interventions that improve patient outcomes and mitigate exposure to the source. With respect to the fatality in the case, early recognition of her WRA could have led to interventions that may have saved her life.

How is the cannabis industry relevant to you and your patients?

Cannabis legalization in Massachusetts led to new jobs – and new work-related hazards.



Your patients might work in the cannabis production industry.

The legalized cannabis industry in Massachusetts is relatively new and continues to evolve. As the workforce continues to expand, you may see more patients who work in this sector.

They might be exposed to respiratory hazards at work.

In addition to the tragic fatality discussed above, we are also aware of non-fatal respiratory disease cases among Massachusetts workers in this industry. Cannabis industry workers can be routinely exposed to various occupational respiratory hazards, including cannabis dust, mold, volatile organic compounds (VOCs), pollen, bacterial endotoxins, pesticides, soil components, and cleaning disinfectants⁴⁻⁵, which can cause chronic disease, like asthma, if not addressed. Accurately identifying the cause of your patients' respiratory symptoms is imperative to the management of disease processes.



Cannabis production worker trimming marijuana leaves from dry buds

How can you help your patients?

Ask your patients about the type of work they do and the conditions at their workplace.

Ask your patients with new or worsening respiratory or allergic symptoms what they do for work and how it affects their health. WRA is underdiagnosed. Healthcare providers need to inquire about the work-relatedness of symptoms, even those that are mild since allergic symptoms can be precursors to respiratory disease. Determining the causal exposures will help guide diagnosis, treatment, and long-term management of the disease.



A healthcare provider speaking with a patient

Perform diagnostic testing, as appropriate.

Diagnosis of workplace respiratory disease often requires additional testing such as allergy testing, pulmonary imaging, and/or spirometry.⁶ In general, allergies and sensitivities to substances in the workplace are diagnosed clinically by a temporal and spatial relationship to exposure and symptoms. Appropriate testing is used to confirm a diagnosis. Testing options include serial peak expiratory flow, pulmonary function testing, spirometry with response to a bronchodilator, bronchoprovocation, exhaled nitric oxide and skin prick testing.

Currently, specific diagnostic testing of cannabis allergies is limited due to the novelty of the industry, the various non-cannabis exposures in the production process, and the large number (over 10,000) of cannabis strains with potentially unique allergens.⁷⁻⁹ However, suspected cases should still be [reported](#) (see below).

Recommend workplace changes to avoid further exposure.

Respiratory symptoms warrant further inquiry about potential exposures to reduce the risk of any illnesses or death. If workplace-related illness is suspected or confirmed, avoidance of workplace exposure is imperative.⁷ Healthcare providers can and should recommend changes in workplace practices, adjustment of job tasks, and/or a change in job/role to their patient's employer to help reduce disease progression,⁹ which may include writing a note to the employer. Determining if the etiology of symptoms is irritant or allergic in nature is essential and will guide interventions.

Report cases to the Massachusetts Department of Public Health, as required by law.

Healthcare providers are mandated to report suspected cases of WRA or other work-related respiratory disease to the Department of Public Health (DPH) ([105 CMR 300.180](#)). By reporting, healthcare providers play an important role in protecting public health. DPH can use reported cases to describe the burden of work-related respiratory diseases, identify emerging respiratory hazards, protect workers, and promote prevention.

Read more about reporting cases at www.mass.gov/how-to/report-an-occupational-disease-or-injury
Additional information on WRA is available at www.mass.gov/work-related-asthma

Have a case to report? Report in one of four ways:

1. **Online:** Click [here](#) or scan this QR code:



Or [download this form](#) and report by:

2. **Phone:** (617) 624-5632

3. **Fax:** (617) 624-5696

4. **Mail:** DPH Occupational Health Surveillance Program
250 Washington Street, 4th floor, Boston, MA 02108

References

1. Epidemiology and Pathophysiology of Work-related Asthma. 2023. The National Institute for Occupational Safety and Health (NIOSH). <https://www.cdc.gov/niosh/topics/asthma/epidemiology-and-pathophysiology.html>. Accessed on 23 June 2023.
2. Occupational Health Surveillance Program. Work-related Asthma. Commonwealth of Massachusetts. Accessed at <https://www.mass.gov/work-related-asthma>. 26 April 2023.
3. Colby A, Laramie O, Pensky H, Sarkis M, Johnson JK. Cannabis Use Trends in Massachusetts, Findings from the International Cannabis Policy Study, 2019 and 2020. Cannabis Control Commission. 2022. <https://masscannabiscontrol.com/wp-content/uploads/2022/09/International-Cannabis-Policy-Study-2019-2020.pdf>
4. Simpson C. Occupational Health and Safety in the Cannabis Industry. *Ann Work Expo Health*. 2020 Aug 6;64(7):677-678. doi: 10.1093/annweh/wxaa068. PMID: 32696046; PMCID: PMC9769117
5. Guide to Worker Safety and Health in the Marijuana Industry. 2017. Colorado Department of Public Health and Environment. https://nasdonline.org/static_content/documents/7427/d002588.pdf. Accessed on: 23 March 2023
6. Decuyper II, Rihs HP, Van Gasse AL, et al. Cannabis allergy: what the clinician needs to know in 2019. *Expert Rev Clin Immunol*. 2019;15(6):599-606. doi:10.1080/1744666X.2019.1600403. PMID: 30946607
7. Jackson B, Cleto E, Jeimy S. An emerging allergen: Cannabis sativa allergy in a climate of recent legalization. *Allergy Asthma Clin Immunol*. 2020 Jun 26;16:53. doi: 10.1186/s13223-020-00447-9. PMID: 32834822; PMCID: PMC7371810
8. Decuyper II, Van Gasse A, Faber MA, et al. Occupational cannabis exposure and allergy risks. *Occup Environ Med*. 2019;76(2):78-82. doi:10.1136/oemed-2018-105302. PMID: 30554157
9. Centers for Disease Control and Prevention. 2023. Information for Healthcare Professionals on Work-related Asthma. Accessed at <https://www.cdc.gov/niosh/topics/asthma/professionals.html>. 26 April 2023.

This bulletin was supported by Cooperative Agreement 5U60OH008490 from CDC-NIOSH. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of CDC-NIOSH. Electronic distribution is made possible by collaboration within the Massachusetts Department of Public Health—Bureau of Health Professions Licensure, Board of Registration in Medicine, Office of Preparedness and Emergency Management and Bureau of Community Health and Prevention.

Occupational Health Surveillance Program, 250 Washington St, 4th Floor, Boston, MA 02108
Tel: (617) 624-5632 | Fax: (617) 624-5696 | www.mass.gov/dph/ohsp