



Occupational health and safety risks in the cannabis sector

New research and regulatory action highlight increasing awareness of the health hazards of occupational cannabis dust allergy and asthma.

Prepared by

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Bill Martin heads clinical informatics and co-leads the medical director practice for Mediprise. He is a published researcher, national presenter, and expert in occupational allergies and asthma. As an Occupational and Environmental Medicine physician he specializes in workplace health, medicolegal requirements, environmental hazards, and compliance. Leveraging his direct experience with regulators, he helps businesses formulate best practices, ensuring they meet all regulatory standards.



About us

Corporate medical directors play an essential role in today's increasingly regulated and health-conscious work environment. They must possess comprehensive expertise in environmental toxicology, public health, occupational health, medical surveillance, wellness, and regulatory compliance. However, most organizations don't need to employ a full-time expert in this capacity. Mediprise offers specialized and cost-effective fractional medical directorship services, which perform the same functions as those of a full-time director, but at a fraction of the cost.

With over 35 years of combined global experience as medical directors across various industries, Mediprise excels in corporate medicine and transforming workplace health. Our medical directorship's value lies in prioritizing availability and expertise over selling time. As your medical director, we seamlessly integrate with your team, providing 24/7 access to practical advice, strategic insights, and medical services. We invest time in understanding your corporate mission, services, and unique health risks. Our goal is to help articulate and deliver on your vision of business success and total worker health.

Purpose of this report

The rapid expansion of the medical and recreational cannabis industry has unfolded a plethora of economic and employment opportunities, with more than 430,000 individuals presently employed within the cannabis sector in the United States. However, despite this remarkable growth, our understanding of the potential occupational health hazards associated with cannabis production remains limited. The recent tragic death of a cannabis worker from occupational allergies and asthma has underscored the crucial need to understand the health risks associated with cannabis production; comprehensive health and safety programs need to be developed. Subsequent OSHA and NIOSH investigations have identified ground cannabis dust as a health hazard, and companies that do not follow OSHA's hazard-abatement recommendations now face regulatory action. This report endeavors to provide an incisive analysis of the emerging health hazards within the cannabis industry, alongside actionable recommendations to empower business, health, and safety leaders in their maintenance of safe and productive working environments.

EXECUTIVE SUMMARY

Summary

With the advancements of cannabis legalization and accessibility, the industry has blossomed into a vibrant economic hub, drawing in investors, entrepreneurs, and job seekers in droves. However, this meteoric growth has concurrently cast a spotlight on worker health and regulatory compliance. Given the historic legal constraints and the industry's sudden expansion, research into the occupational health hazards of cannabis has failed to keep pace with the exponential growth of its commercialization. Until recently, our knowledge of occupational health risks in the cannabis sector was derived primarily from the hemp and indoor horticulture industry. Yet, recent research and a series of Health Hazard Evaluations (HHE) by the National Institute for Occupational Safety and Health (NIOSH) have unveiled emerging health hazards in the cannabis industry, particularly occupational allergies and asthma.

The tragic incident in 2022, in which a cannabis worker died due to occupational asthma, underscored these potential hazards. The subsequent Occupational Safety and Health Administration (OSHA) investigation resulted in a unique citation on the risks of ground cannabis dust (GCD) and the employer's noncompliance with the Hazard Communication Standard. While OSHA deemed the fatality work related, the employer wasn't cited under the general duty clause, which requires a hazard to be "recognized," meaning it is a well-known hazard within an industry. Instead, a Hazard Alert Letter (HAL) was issued, suggesting feasible ways to protect employees from occupational cannabis exposure.

This HAL, along with widespread media coverage and HHEs, positions GCD as a potentially "recognized" hazard, exposing employers to regulatory action under the General Duty Clause. Recommendations within the HAL provide the industry with a blueprint for expected workplace health and safety standards. Key recommendations include: (1) medical surveillance, (2) HHE, (3) training, (4) respiratory protection, and (5) exposure prevention. While organizations should consider adopting these health and safety measures to avoid potential regulatory repercussions, implementing them may be beyond the knowledge base of many Environmental, Health, and Safety (EHS) departments, necessitating the expertise of an Occupational and Environmental Medicine physician.

The cost of a full-time specialist may seem prohibitive, but Mediprise offers an efficient solution with our fractional medical director services. As your medical advisor we meet all of your medical needs at a fraction of the cost of a full-time specialist, catering to the occupational medicine needs of cannabis producers. In addition to our expert guidance and leadership, we provide the clinical services recommended by OSHA such as medical surveillance, respirator clearance, fitness for duty evaluations, and much more. Each arrangement is tailored to the individual needs of the organization, no matter the size or scope. Learn how Mediprise can help you establish optimal industry practices in medical surveillance, respirator protection, and regulatory compliance. Reach out today and secure your workers' health and company's future.



Key Takeaways

The explosive industry growth has brought new economic opportunities and regulatory attention.



1

Rapid industry growth has outpaced best practices in cannabis occupational health and safety.



2

Recent research and HHEs have highlighted emerging occupational hazards, particularly occupational allergy and asthma.



3

The OSHA HAL and recent tragedy have put the industry on notice and outlined necessary measures.



4

As a potentially “recognized” hazard, employers who fail to implement controls are at risk of regulatory action.



5

Mediprise can help organizations of all sizes deliver on those recommendations, promoting workplace health and ensuring compliance.

REPORT

Inside the Report

1. Exploration of emerging health hazards in the cannabis industry.
2. Insight into the intentions of regulators, such as OSHA.
3. Strategies for better protection of workers' health.
4. Ways in which Mediprise can help.

The Changing Times

The cannabis industry has continued to flourish with advancements in legalization and accessibility, creating a dynamic workforce environment and presenting significant economic and business opportunities. The growth has driven new product development, research, expanding business service needs, and employment. As of 2022, the cannabis industry employed an estimated 428,059 workers, creating jobs at an average rate of 280 a day, reflecting a year-over-year growth that has consistently outpaced many other sectors of the economy (See Figure 1).¹ With the rise in hiring, it is not surprising **that over a third (34.4%) of employees have less than a year of experience** in the cannabis industry (See Figure 2).² Such an inexperienced workforce means additional training in, and protection from, unfamiliar hazards. **Despite this need, a recent study by Colorado State University found that 46% of cannabis workers reported they had received little to no safety training (Walters 2018).** This knowledge gap was further underscored by OSHA's citation of a cannabis producer under the Hazard Communication Standard (29 CFR 1910.1200).³ This workforce spans a diverse range of roles, from cultivation and processing to retail and administration, each with its unique set of occupational health hazards that require careful management.

The cannabis industry's contribution to the U.S. economy has been substantial, with sales expected to reach \$29 billion by the end of 2023.⁴ This growth can be attributed to the expanded legalization of both medical and recreational cannabis use across numerous states, along with the evolving public perception of cannabis products (See Figure 3). Despite the regulatory hurdles, businesses that can navigate these complexities stand to benefit from a rapidly growing customer base, increased product demand, and broadening acceptance of cannabis in the medical and wellness sectors. Furthermore, companies that are able to establish workplace health and safety best practices may enjoy a competitive advantage in recruitment, productivity, and compliance.

¹ Barcott B, Whitney B. The US cannabis industry now supports 428,059 jobs. Leafly. September 15, 2022. <https://www.leafly.com/news/industry/cannabis-jobs-report>.

² Flowhub. Cannabis industry statistics for 2023. Flowhub. 2023. <https://flowhub.com/cannabis-industry-statistics>.

³ Koblin LM, Metz-Topodas M. A New Normal for Cannabis Industry Safety Requirements as OSHA Enters the Industry. Saul Ewing LLP. January 16, 2023. <https://www.saul.com/insights/blog/new-normal-cannabis-industry-safety-requirements-osha-enters-industry>.

⁴ Vangst. The 2023 Jobs Report. Vangst. 2023. <https://vangst.com/reports/2023-jobs-report>.



As jobs increase, so does the need for hazard training

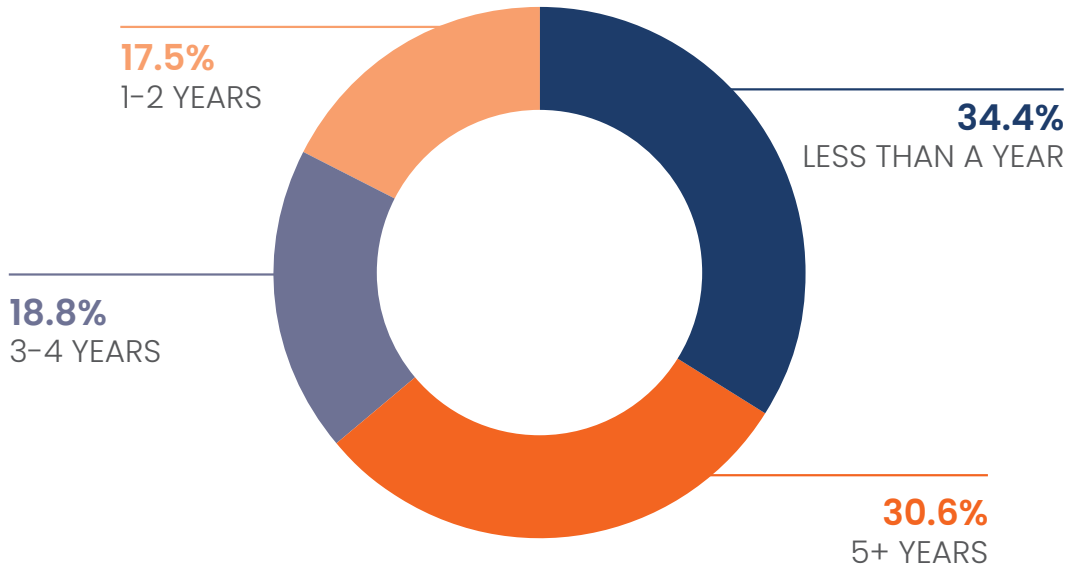


Figure 1. Years of experience in cannabis industry.
Source: Vangst Job Report 2023⁴

Cannabis job growth over past 5 years

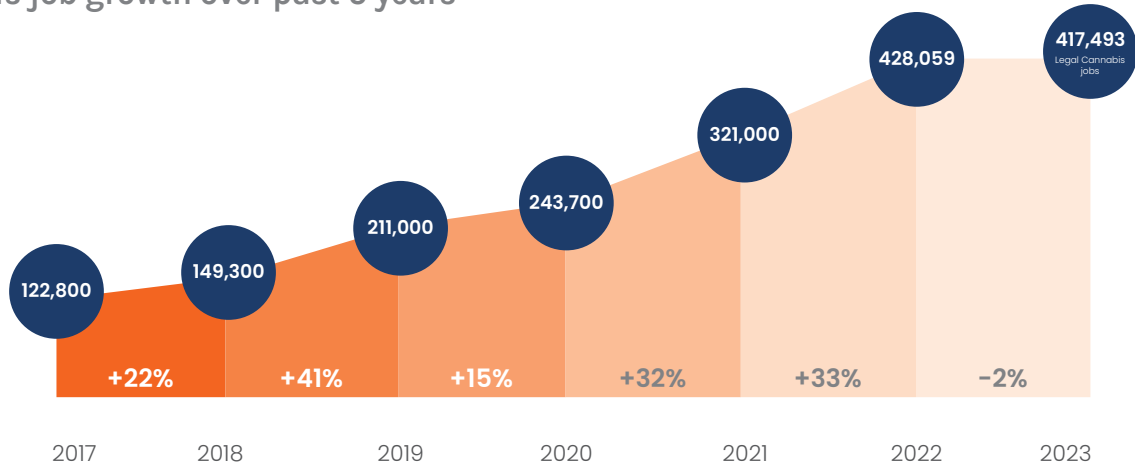


Figure 2. Cannabis job growth over the past five years.
Source: Vangst Job Report 2023⁴

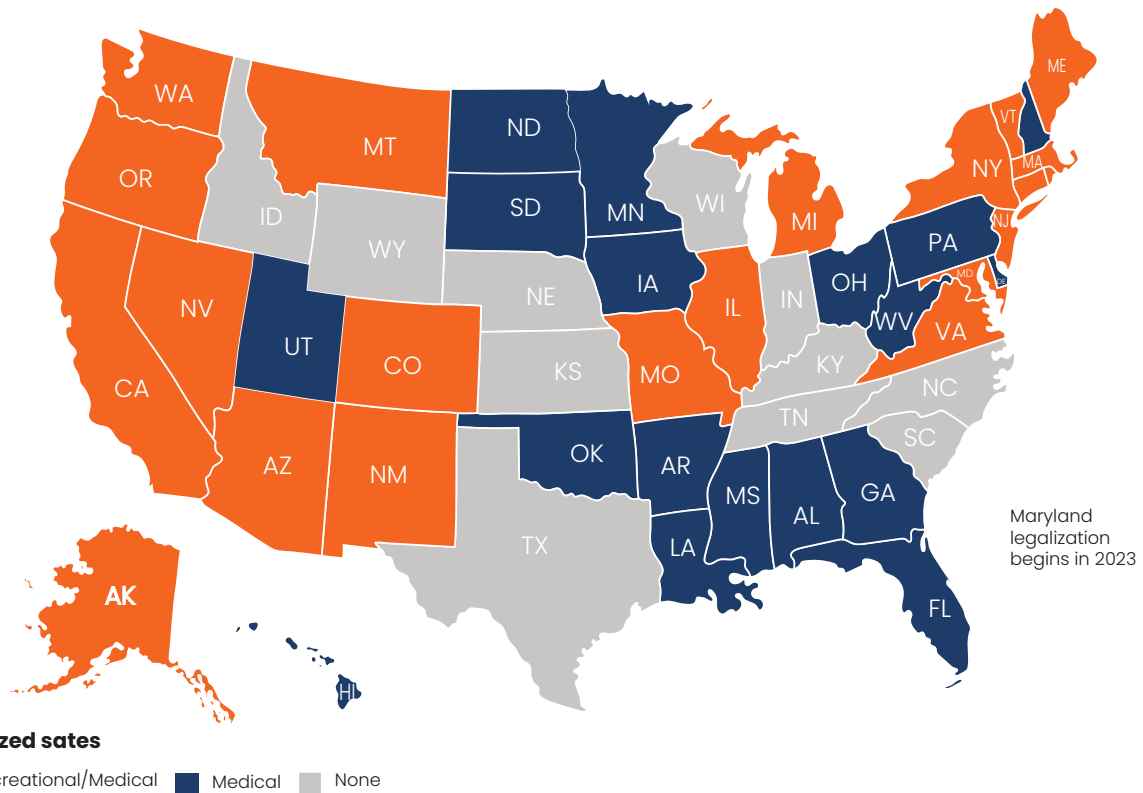


Figure 3. Legalization by state.
 Source: MJBizDaily

Growing Worker Safety Concerns in the Cannabis Industry

However, these promising opportunities do not come without their unique set of challenges, particularly concerning occupational health and safety. Despite cannabis' increasing legality, companies are nonetheless required to follow federal and state laws governing worker health and safety. Federal entities, such as OSHA, enforce several standards applicable to cannabis producers – Hazard Communication Standard, Respiratory Protection Standard, Noise Standard, Machinery and Machine Guarding, and Recordkeeping, among others. Additionally in this emerging industry, each state handles cannabis workplace health and safety issues differently. With no specific cannabis standard in place, OSHA relies heavily on the General Duty Clause for enforcement. This clause mandates

employers to provide a workplace free from recognized hazards that are likely to cause death or serious harm. A citation under the General Duty Clause (5(a)(1)) necessitates four conditions:

1. The employer failed to maintain a hazard-free workplace.
2. The hazard was recognized.
3. The hazard was causing or was likely to cause death or serious harm.
4. There was a feasible and effective method for correcting the hazard.⁵

⁵ OSHA. Elements necessary for a violation of the General Duty Clause. OSHA. December 18, 2003. <https://www.osha.gov/laws-regs/standardinterpretations/2003-12-18-1>.

Ground Cannabis Dust and Occupational Allergy and Asthma

Ground Cannabis Dust (GCD) is a recognized sensitizer and asthmagen, meaning it has the potential to induce allergic symptoms and cause or exacerbate asthma.⁶ Once a worker becomes sensitized (allergic) to GCD, subsequent exposure may trigger typical allergy symptoms such as red, watery eyes, sneezing, a runny nose, and rashes. Occupational asthma, a potential outcome of sustained exposure to airborne GCD in sensitized individuals, may initially present as a cough, but with continued exposure can progress to wheezing, chest tightness, shortness of breath, and even potentially fatal outcomes. Given that occupational asthma can be a chronic, debilitating, and lethal condition, it is critical employers and employees understand the hazards associated with GCD to prevent the onset of occupational asthma.

Fortunately, workers usually first display mild allergic reactions before developing occupational asthma. Effective training and hazard awareness can enable employees to recognize and report these initial symptoms. The use of medical surveillance questionnaires can also play a crucial role in identifying early signs of occupational allergies, enabling timely interventions. Depending on symptom severity, these interventions might include enhancing hazard source control measures (such as improved ventilation), increasing personal protection (such as using respirators), or implementing employee removal strategies (such as job transfers).

While the prevalence of cannabis allergy is not definitively known, recent research has highlighted concerns about its potential ubiquity. A study conducted in 2020 in an indoor cannabis growing facility found that **71% of surveyed workers reported work-aggravated symptoms consistent with occupational allergy**.⁷ Among these employees reporting allergy symptoms, 70% exhibited abnormal lung function in subsequent tests.⁷ A significant

challenge in researching GCD allergy arises from the fact that the majority of cannabis workers (97%) also use cannabis recreationally.⁸ However, recent comparisons between occupational and recreational exposures have revealed that **allergy symptoms are nearly 10 times more common among workers**, with almost a third (31.6%) of workers showing positive results in allergy tests, indicating sensitization.⁸ These high level of sensitization and symptoms are concerning, because research in other occupational asthmagens have shown 4-22% of symptomatic workers will eventually develop asthma.⁹

Occupational asthma is not unique to Ground Cannabis Dust (GCD). There are hundreds of known workplace asthmagens present in many industries, such as agriculture, animal handling, construction, pharmaceuticals, welding, and many more. The disease burden of occupational asthma is significant, accounting for the loss of 8.7 million workdays and \$billions in direct healthcare costs annually.¹⁰ The CDC estimates that nearly one fifth of all asthma deaths are work-related and preventable.¹¹ Occupational allergies and asthma can be mitigated through effective workplace controls and early detection via medical surveillance. It has been demonstrated that other occupational allergies, like laboratory animal allergy, can be effectively prevented through the implementation of comprehensive hazard prevention programs.

Given the absence of a specific OSHA standard for GCD, employers are expected to protect their employees from this hazard under the General Duty Clause. Compliance with the Hazard Communication Standard requires companies to provide training and education to employees regarding this hazard. Furthermore, the Personal Protective Equipment (PPE) Standard mandates the provision of appropriate PPE for protection against GCD.

⁶ AOEC. Exposure Code Lookup. Association of Occupational and Environmental Clinics. Accessed 2023. <http://www.aoecdata.org/ExpCodeLookup.aspx>.

⁷ Sack C, Ghodsian N, Jansen K, Silvey B, Simpson CD. Allergic and Respiratory Symptoms in Employees of Indoor Cannabis Grow Facilities. *Ann Work Expo Health*. 2020;64(7):754-764.

⁸ Kenleigh D. Cannabis allergy in occupationally exposed cannabis workers, recreational users and Non-Users. Scholarly Publishing Services - UW Libraries. 2022. <https://digital.lib.washington.edu/researchworks/handle/1773/48962>.

⁹ Bush RK, Stave GM. Laboratory animal allergy: an update. *ILAR J*. 2003;44(1):28-51. <https://doi.org/10.1093/ilar.44.1.28>.

¹⁰ Nurmagambetov T, Kuwahara R, Garbe P. The Economic Burden of Asthma in the United States, 2008-2013. *Ann Am Thorac Soc*. 2018;15(3):348-356.

¹¹ Patel O, Syamlal G, Wood J, Dodd KE, Mazurek JM. Asthma Mortality Among Persons Aged 15-64 Years, by Industry and Occupation - United States, 1999-2016. *MMWR Morb Mortal Wkly Rep* 2018;67:60-65.

Occupational Allergies Are Preventable



70% of Workers
had symptoms
consistent with allergy



Workers **10x** more
likely to have allergy
symptoms



31% of workers
were sensitized

Tragedy Prompts Regulatory Action

During the 2022 OSHA investigation into a cannabis worker's death due to occupational asthma, the employer was not cited under the General Duty Clause despite the work-related nature of the death, because at the time, GCD occupational asthma was not a recognized hazard. Owing to the industry's swift growth and previously illegal status, understanding of cannabis occupational health hazards has significantly lagged behind commercial operations. Consequently, OSHA instead issued a HAL detailing the occupational allergy and asthma hazards associated with whole and ground cannabis and providing a roadmap for employee protection, including:

1. Medical surveillance and medical examination program
2. HHE performed by NIOSH
3. Job transfer options for allergic employees
4. Training on the hazard occupational allergies and asthma
5. Exposure prevention
6. Emergency response teams and their training
7. The recognition of occupational allergies as work-related diseases and addressing workers' compensation challenges.¹²



**OSHA Issues HAL With
Recommendations to Protect
Employees From GCD Hazards**



**Cannabis Producer and OSHA
Reach Historic Settlement,
Shedding Light of Possible
Path for Litigation Avoidance³**

¹² OSHA. OSHA Hazard Alert Letter. DocumentCloud. 2022. <https://www.documentcloud.org/documents/23120670-hal-trulieve-holyoke-holdings-llc-insp-1572011>.

Concurrent with the HAL, OSHA issued a citation to employers under the Hazard Communication Standard for the following failures:

- Failure to evaluate the hazards of chemicals, particularly GCD (29 CFR 1910.1200(D)(1))
- Failure to have a safety data sheet for each hazardous chemical, GCD (29 CFR 1910.1200(G)(1))
- Failure to provide training on the hazardous chemical, GCD (29 CFR 1910.1200(H)(1))^{13,14}

The unfortunate death and subsequent OSHA investigation received extensive media coverage, drawing widespread attention from employers and employees. This public attention, coupled with ongoing NIOSH HHEs and evolving research into occupational cannabis health hazards, has now positioned GCD as a potential recognized hazard. This recognition exposes employers to regulatory action under the General Duty Clause. Should GCD be considered a recognized hazard, future OSHA investigations could cite under the General Duty Clause. Therefore, employers aiming for compliance should consider adopting the abatement measures outlined in OSHA's HAL.

OSHA GCD Recommendations:



Medical
Surveillance



Hazard
Evaluations




Job Transfers



Hazard
Training



Exposure
Prevention



Ground cannabis dust is regarded as a recognized health hazard

¹³ Inspection: 1572011.015 - Trulieve Holyoke Holdings LLC. OSHA. 2022. https://www.osha.gov/ords/imis/establishment.inspection_detail?id=1572011.015.

¹⁴ OSHA. 1910.1200 - Hazard Communication. OSHA. Accessed 2023. <https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.1200>.



OCCUPATIONAL ASTHMA, IS YOUR COMPANY AT RISK?

Medical Surveillance

Medical surveillance, as mandated by OSHA, is a proactive strategy that includes a series of medical examinations designed to monitor potential health effects from exposure to hazardous substances. The objective for the individual worker is early detection and treatment of health issues and enhanced protection from hazards, such as providing respirators or job reassignment. Medical screening can identify diseases before workers typically seek medical care, allowing companies to take early action and prevent the development of more costly chronic or severe health effects. For the organization, medical surveillance aims to identify and control hazards, track disease trends, and assess the effectiveness of workplace control measures.

For hazards that have specific OSHA standards, the action level determines which workers would require surveillance. In the case of hazards without a standard, it often falls to EHS teams and occupational medicine providers to evaluate and develop internal medical surveillance programs. Moreover, for many hazards, companies may choose to exceed OSHA's minimum requirements and establish best practices to further protect their employees.

The surveillance process begins by identifying workers for whom surveillance is appropriate. This could include workers exposed to high air levels of a hazard such as Ground Cannabis Dust (GCD), or those mandated by an OSHA standard, such as pesticides or noise exposure. The components of the examination vary by hazard and any regulatory mandates, but typically all start with a questionnaire. For occupational allergies and asthma, a periodic medical questionnaire is fundamental. It can reliably detect early disease, and if appropriate measures are taken, can prevent the development of occupational asthma.

Medical Surveillance has three key components



Medical Surveillance

As per the HAL, OSHA recommends certain actions for airborne hazards, such as GCD. One framework to follow is the NIOSH hierarchy of controls (See Figure 4). Controls may include enhancing engineering controls to reduce GCD air levels, providing more robust respiratory protection, training on work practices to minimize exposure, and transferring employees to roles without exposure. These are all functions a Mediprise expert occupational medicine physician can provide as your medical director. We can collaborate with EHS teams on hazard evaluations and the development of effective control strategies.

If a worker requires a respirator, we can conduct the necessary medical evaluation, ensuring compliance with OSHA’s standards. As experts in occupational allergies, we can assist in developing training materials that educate workers on hazards and practices to reduce exposure. Furthermore, if a worker has become

sensitized, we can conduct fitness for duty evaluations and provide recommendations on job transfers and restrictions. Occupational allergies and asthma are recognized as disabilities under The Americans with Disabilities Act, entitling workers to reasonable accommodations. As medicolegal experts, we commit to ensuring that your policies and procedures comply with both OSHA and ADA regulations.

While many occupational providers claim to offer medical surveillance services, their motivations might not align due to their fee-for-service models and motivation to upsell extraneous testing services. At Mediprise, medical surveillance is just one of the many services we provide as your medical director. In this capacity, we can develop guidelines, analyze regulatory standards and laws, and ensure compliance for the unique hazards of your workplace.

Hierarchy of Controls

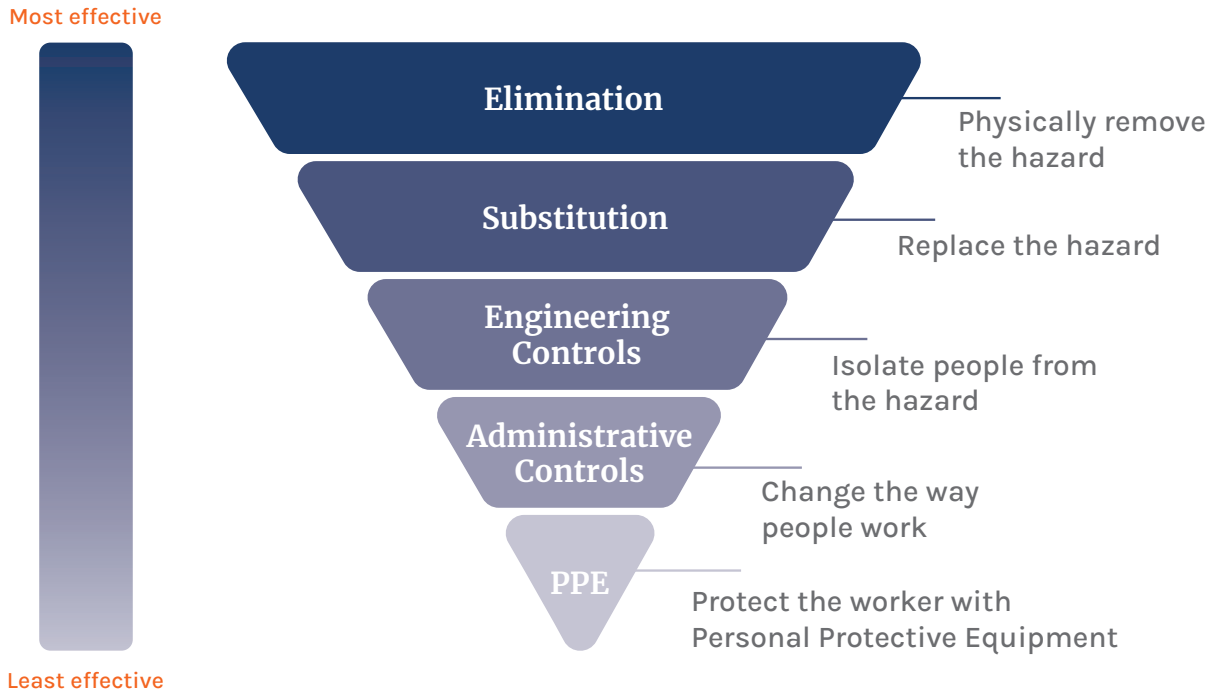


Figure 4. Hierarchy of Controls.
Source: NIOSH

Building a Successful Medical Surveillance Program:



Management
commitment



Employee
participation



Hazard
identification
and control



Employee
training



Program
evaluation and
data review



Medical
examinations

Do I need a Medical Surveillance program?

If any of the following apply, your workers may be required to participate in an occupational medical surveillance program:



Respirator use



Loud noise exposure



First aid responders



Hazard training



Work with regulated pesticides and chemicals



Work with ground cannabis dust



Wanting to develop best practices

PATH TO SUCCESS

Starting a Health & Safety Committee

In line with federal guidance, several states have also published their own recommendations for a cannabis worker health and safety program. For example, the Colorado Department of Public Health and Environment has released a guide on creating such a program. Key elements of a successful plan include management leadership, worker participation, hazard identification and assessment, hazard prevention and control, education and training, as well as program evaluation and improvement.¹⁵ Similarly, Oregon OSHA provides resources that highlight specific hazards, such as cannabis allergens.¹⁶ Their guidance includes recommendations on the use of Personal Protective Equipment (PPE), particularly N95 or P100 respirators, and they emphasize that allergic reactions should be recorded as events on the OSHA 300 log.

The common thread between these program recommendations is the need for a multidisciplinary team approach. Crucial team members typically include industrial hygienists, environmental, health and safety (EHS) professionals, human resources (HR) representatives, company leadership, employee representatives, and occupational and environmental medicine physicians.

However, it is not practical for many companies to hire full-time occupational physicians. As a result, companies often ignore this vital team member or opt to contract with urgent care providers or national “doc-in-the-box” services for their medical needs. Unfortunately, such groups are often staffed by a rotating team of non-board-certified occupational medicine providers that lack the understanding of the unique needs of the company and can’t or don’t respond as rapidly as necessary or desired.



A New Normal for Cannabis Health and Safety Standards as OSHA Makes Their Entrance

¹⁵ CDPHE. Marijuana Occupational Safety and Health. Colorado Department of Public Health & Environment. January 2017. <https://cdphe.colorado.gov/workplace-safety/resources-and-links/marijuana-occupational-safety-and-health>.

¹⁶ Oregon OSHA. Seed to shatter: A Safety and Health Guide for cannabis growers, processors, and retailers. Oregon Occupational Safety and Health. Accessed 2023. <https://osha.oregon.gov/essentials/cannabis>.



Pitfalls in third-party medical surveillance:



Lack of investment in outcomes



Lack of standards necessitates expert physicians



Upcharge motivators for adding unnecessary services



Failure to invest in and learn company culture



Only provide clinical services, no advising

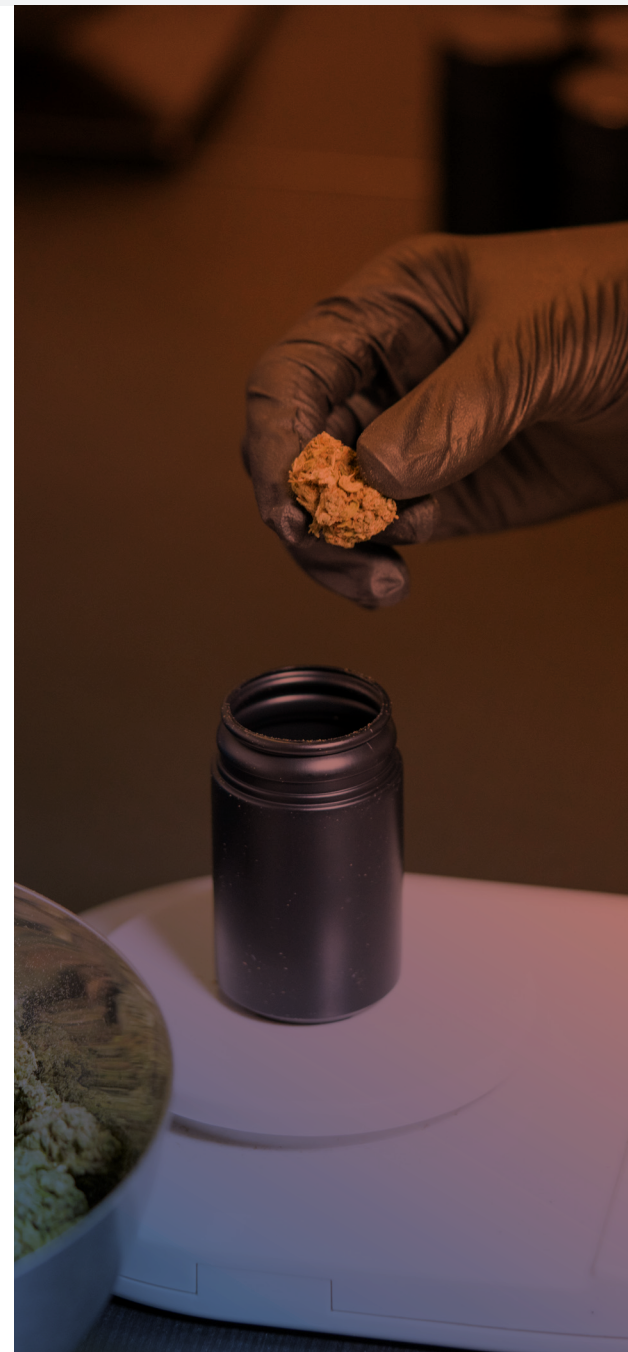
Benefits of a Medical Director, at a fraction of the cost.

About Mediprise

Today's corporate medical director must possess broad expertise in environmental toxicology, public health, occupational health, disability management, wellness, and regulatory compliance. However, for most organizations, the full-time employment of such a qualified expert is not necessary. Mediprise solves this challenge through its fractional medical director services, bringing the expert guidance of an occupational and environmental medicine physician to all organizations irrespective of the size or scope of their needs. Mediprise performs all the same functions as a full-time medical director at a fraction of the cost.

As your medical director, we seamlessly integrate into your organization and provide round-the-clock access to our expertise and clinical services. We work with environmental, health, and safety teams to identify workplace exposures, facilitate injury and disability management, and determine OSHA recordability. We work with HR and legal experts to navigate the regulations of ADA, FMLA, GINA, and drug and alcohol programs. We work with executives and their teams to offer strategic insights as their constant trusted advisor. We work across departments and organizations to offer value and expertise in all matters related to health.

In addition to expert guidance and leadership, we also provide the clinical services necessary for meeting OSHA's recommendations on cannabis hazard control. Medical surveillance challenges? As your medical director we can help design a comprehensive program and implement it. Workers requiring medical clearance for respirators? As your medical director we can electronically review and clear your workers, while following industry best practices. Exposure review and fitness for duty questions? Again, as your medical director we can help conduct evaluations, improving worker health, while ensuring legal and regulatory compliance. Our expert clinical care is just another one of our many services we provide as your medical director.



Mediprise provides a broad spectrum of services:

Services Include

- Fitness for Duty
- Return to Work
- OSHA Recordability
- Travel Medicine
- Drug and Alcohol, FMLA, GINA
- Environmental Toxicology
- Medical Surveillance
- Regulatory Compliance
- Injury and Illness Management
- Public Health
- Medicolegal Issues
- Workplace Exposures
- Wellness
- Short Term Disability
- Workers' Compensation
- Ergonomics
- Medical Crisis Management
- Medical Evacuations
- Quality Improvement
- Auditing
- Clinical Informatics
- Hearing Conservation

Each arrangement is tailored to the needs of the operation



Dedicated to workplace health and safety

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