Health and safety
in cannabis processing and extraction

Every cannabis product requires detailed research, planning, and development. Cannabis processing and extraction use equipment that is often found in laboratory settings. Health and safety planning similar to what is used in a lab is also required. Having a health and safety strategy in place from the start can prevent serious and expensive problems.

As an employer, you are responsible for ensuring the health and safety of your workers. This includes being aware of the hazards and risks in your cannabis processing and extraction operation. It also includes choosing effective and reliable controls to eliminate the hazards or reduce the risks. This information sheet will give you an overview of how to meet the requirement to keep your workers safe.

Managing health and safety risks

To manage health and safety risks in your cannabis processing and extraction operation, do the following: Identify hazards, assess risks, apply controls to reduce risks, and assess the effectiveness of controls.

1. Understand the risks

Identify hazards

The first step in prevention is to identify hazards. A hazard is anything that can cause harm, such as a chemical, biological agent, or object.

To identify hazards in your cannabis processing and extraction operation, think about what could harm your workers. Common hazards associated with cannabis processing and extraction include the following:

- Compressed carbon dioxide — may cause asphyxiation, explosion, cold burns
- Cryogens or refrigerants — may cause asphyxiation, cold burns
- Flammable liquid solvents — may cause fire or explosion, poisoning or intoxication
- Plant particulates — may cause respiratory disease, sensitization
- Pressurized systems — may cause explosion, physical injuries
- Compressed propane/butane — may cause fire or explosion, poisoning or intoxication, cold burns
- Heating elements — may cause physical injuries from burns
- Cold materials or surfaces — may cause physical injuries from cold burns
- Moving mechanical parts — may cause physical injuries such as blunt force and penetrating trauma

While some of these hazards are often overlooked or are not well known, they could cause serious harm — both to your workers and your operation. And it's important to note that this list does not include all potential hazards.

Assess risks

Risk is the chance or probability that harm, adverse effects, or damage from a hazard could occur. This also includes the severity of harm. Without adequate controls, risk increases.

Once you have identified the hazards in your operation, the next step is to assess the related risks. Cannabis processing and extraction take place within a complex system that involves many interactions between workers, equipment, and facility design. When assessing risks, consider all parts of the system and how the various components may interact. Some system components to consider include:

- Properties of hazards (e.g., volatility, flashpoint, and quantity of materials)
- Equipment design (e.g., relief devices and bleed bolts for pressure vessels)
- Facility design (e.g., arrangement of work areas)
- Worker interactions (e.g., workers' positions in relation to equipment)

Key concept: The interactions within a system are important. Failing to consider them can result in health and safety gaps. For example, placing equipment with pressure-relief devices in a room that is not designed to direct the released pressure to a safe location will increase the risk of worker exposure to harm. These harms can range from burns and cold burns to poisoning and asphyxiation, depending on the solvent and pressure involved.

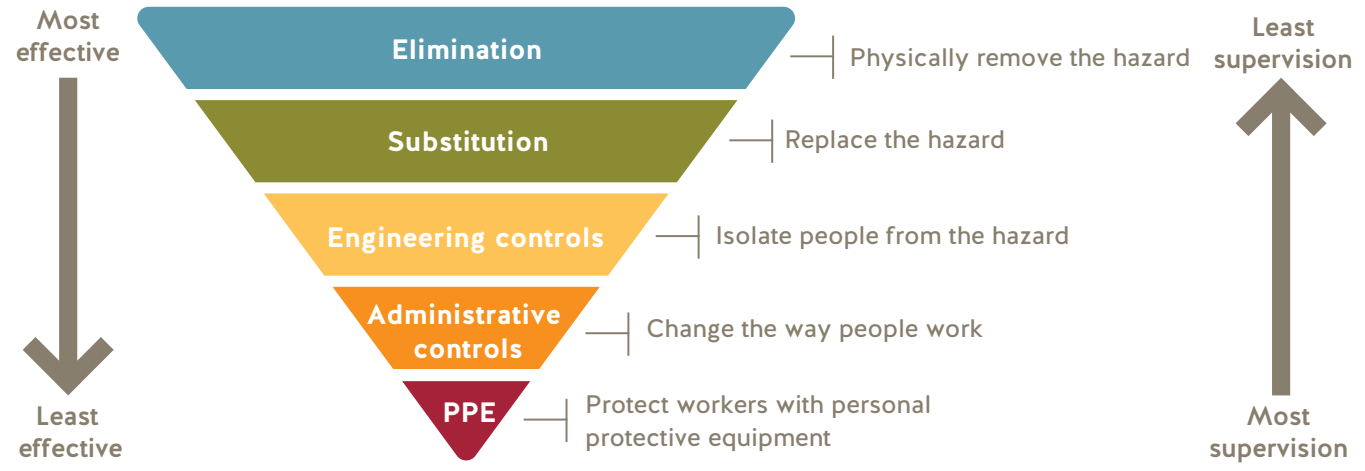
2. Implement measures to control risks

Start with the hazards you've identified that have the highest risks, and use the hierarchy of controls to help you select the most effective controls.

If you can't physically remove a hazard or replace it with something less hazardous, the most effective approach is to use engineering controls to isolate workers from the hazard. Engineering controls for cannabis processing and extraction systems include the following:

- Bleed bolts: When engineered into pressure vessel design, bleed bolts can warn operators that the equipment is pressurized by emitting a hiss (rather than a complete pressure release) if an operator tries to open it.
- Air monitoring and emergency ventilation systems: If safe levels of airborne chemicals are exceeded, emergency ventilation starts automatically and runs until safe levels are reached.
- Pressure-relief safety devices: In pressurized systems, these devices prevent safe pressure

Hierarchy of controls



levels from being exceeded and vessels from rupturing. However, the facility design must address these devices to avoid the release of harmful contaminants into the facility.

- Explosion/fire containment: Having a special room for flammable equipment or materials can save lives, reduce damage to the facility and equipment, and limit downtime following an incident.

Administrative controls and personal protective equipment are less effective and should be considered only if elimination, substitution, and engineering controls aren't possible.

To ensure that your operation is using the required controls, you should be familiar with the applicable standards and regulations. For example, Canadian standards that apply to cannabis processing and extraction include ANSI/CAN/UL/ULC 1389 and CAN/ULC-S4400.

3. Communicate

Your risk management program will only be effective if everyone in your operation is aware of it and understands it. Document and share your risk management procedures with your workers. Provide training for all of your workers, and include training on the procedures as part of your orientation for new workers.

In addition, speaking regularly with your workers can provide valuable insights about your risk management procedures. Controls are only effective if workers can use them. Learning from workers that a control isn't working as intended can prevent serious harm from a risk that you thought was being controlled.

4. Monitor and update

Ensuring the health and safety of workers is an ongoing process. Once you have put controls in place, you must monitor and test them to be sure they are working as intended.

Regular maintenance, repairs, calibration, and inspections will all help to keep your systems in check. Documenting these activities will not only help you keep track of controls, but also help demonstrate due diligence in this area.

Emergency response plan

Emergencies can occur at any time and without warning. The better prepared you are, the more effectively you will be able to act in an emergency, limiting confusion and harm. General emergency planning typically includes workplace injuries and events such as fires, floods, and earthquakes.

In addition, you should be prepared for emergencies related to the equipment and hazardous chemicals used in cannabis processing and extraction. It's also important to be aware of how specific equipment and chemicals could worsen the situation during an emergency.

To prepare an emergency response plan, put together a team of workers and others who understand the equipment, chemicals, and processes used in your operation. With your team, develop a list of potential emergency situations, such as:

- Fire
- Earthquake (if relevant in your area)
- Power outage
- Equipment, process, or system failure — including chemical leaks, excessive pressure in equipment or systems, and uncontrolled spills of flammable material

For each emergency situation you identify, determine a response that will limit potential damage and injuries. Emergency procedures should consider the following:

- Under what circumstances will the workplace be evacuated?
- Who or what will determine that evacuation is required?
- How will workers and others be notified of the need to evacuate?
- Where will workers evacuate to?
- If the intended muster point no longer provides a safe refuge, what or where is the alternative?

- Who will determine whether all workers are accounted for, and how will they do that?
- Do you have appropriate emergency supplies for different situations?
- Do your workers have the appropriate training, equipment, and protection to respond to the situation?
- If you will need to rely on emergency personnel, will they have appropriate expertise and provisions? Or should you contract with a hazardous materials response provider in advance of an emergency?
- How will emergency responders know what equipment, systems, and materials are on site?

Once you have developed an emergency response plan addressing the potential emergency situations you have identified, you must train all workers to put the plan into action. You must also conduct regular drills, based on different scenarios (e.g., equipment failure or chemical spill), to prepare workers and determine whether the emergency response plan is adequate.

Health and safety program

As an employer, you must have an **occupational health and safety program** designed to address specific hazards in the workplace and to prevent injuries and occupational diseases.

In addition to other requirements in the Occupational Health and Safety Regulation, health and safety programs for cannabis processing and extraction will likely include the following:

- Exposure control plans to prevent and limit exposure to hazardous materials
- A **lockout** program to ensure that equipment remains de-energized before and during maintenance
- **Safeguarding** measures to protect workers from contact with moving parts or other hazards when working around machinery and equipment
- Details on the Workplace Hazardous Materials Information System (**WHMIS**) so workers can protect themselves from exposure to chemical and biological hazards
- A **hearing conservation program** to reduce or eliminate the risk of occupational noise-induced hearing loss
- **Musculoskeletal injury prevention** measures to reduce the risk of strains, sprains, and other soft tissue injuries
- A **personal protective equipment** program to ensure that workers are fully protected
- An **emergency preparedness** plan

OHS Regulation requirements

Parts of the Regulation that are especially applicable to cannabis processing and extraction are as follows:

- **Part 3, Rights and Responsibilities**
- **Part 4, General Conditions**
- **Part 5, Chemical Agents and Biological Agents**
- **Part 6, Substance Specific Requirements**
- **Part 7, Noise, Vibration, Radiation and Temperature**
- **Part 8, Personal Protective Clothing and Equipment**
- **Part 10, De-energization and Lockout**
- **Part 19, Electrical Safety**
- **Part 30, Laboratories**

For more information

For more information on how to meet your health and safety requirements, go to:

- **worksafebc.com/cannabis-cultivation-processing** for information about workplace safety in the cannabis industry
- **worksafebc.com/health-safety-programs** for information about creating a health and safety program
- **worksafebc.com/forms-resources** for forms, publications, videos, and other resources
- **worksafebc.com/searchable-regulation** for a searchable version of the Regulation and its related guidelines