



# SAFETY ISSUES FOR CANNABIS-RELATED FACILITIES



The number of states passing laws to permit the use of cannabis, or marijuana, for medicinal and recreational purposes continues to increase, and this has many jurisdictions trying to navigate uncharted territory. The first step in understanding what safety risks are present in a cannabis-related facility is knowing what type of facility is being proposed or inspected. Often, cannabis-related facilities will focus on one aspect of the industry: growing, processing, or selling. Each of these types of facilities presents unique hazards and related safety issues.

**DID YOU KNOW?** The term cannabis includes all forms of the plant, including marijuana and hemp.

## CANNABIS FACILITIES AND NFPA 1

Not all hazards present in cannabis facilities are unique to the industry, so it is important to remember that the fire code, building code, and other applicable regulations might already have provisions for dealing with some of the hazards present. However, there are hazards unique to growing and processing facilities. These hazards are addressed in Chapter 38 of the 2018 edition of NFPA 1, *Fire Code*. This chapter contains requirements for fire inspectors to help ensure the safety of building occupants, the safety of firefighters, and the protection of property where cannabis is grown or processed.

## OCCUPANCY CLASSIFICATION

The hazards in an occupancy vary based on the types of activities being conducted, the types of materials being

used, and the quantities of the materials being used. The most fundamental question when it comes to cannabis facilities is: what is the occupancy classification?

The occupancy classification of the facility should be based on the occupancy definitions found in Chapter 6 of NFPA 1 and the applicable building code. Depending on the facility and its use, some likely occupancy classifications for cannabis-related facilities may be:

- Growing and processing facilities (including extraction rooms): Classified as industrial or storage.
- Selling facilities: Classified as mercantile
- Consumption facilities: May be classified as assembly or business depending on the occupant load

Just like other types of buildings, there could be more than one occupancy present. If that is the case, the building would need to be protected as a multiple occupancy building as outlined in Chapter 6 of NFPA 1. Similar to other types of facilities, the hazard of contents would also need to be evaluated. If the facility was found to have high hazard contents, which are contents that are likely to burn with extreme rapidity or are likely to explode, then the high hazard contents provisions would need to be applied. (See Chapters 60-75 of NFPA 1 as applicable.)

**DID YOU KNOW?** Cannabis growing, processing, and selling facilities are not distinct occupancy classifications.



## SAFETY ISSUES FOR CANNABIS-RELATED FACILITIES (CONTINUED)

### GROWING FACILITIES

Growing facilities are typically large warehouse type buildings subdivided into rooms. The grow rooms are closely monitored to provide exactly the right conditions for the plants. Usually, plants are moved throughout the building as they reach different stages and require different conditions for optimal growth.

While there are a number of things to consider when inspecting these types of facilities, two important questions to ask are the following:

1. What types of containers and trays are the plants growing in?
2. What types of fertilizers and fumigants are being stored and used?

The growing plants are typically not very combustible. They are kept under such moist conditions that flaming combustion would likely be difficult to achieve. However, the other materials present can and will impact fire growth. The types of containers and trays that the plants are growing in, as well as the growing medium, could impact things like the sprinkler system design. Fertilizer and fumigants could be hazardous materials, oxidizers, or hazardous to humans. Any of those types of materials could require additional requirements to be followed, such as those for high hazard contents.

Some common inspection issues are summarized in the table below along with topics to consider and where to find them in NFPA 1. Numbers in parenthesis are chapter numbers.

GROWING HAZARDS	SAFETY ISSUES	TOPICS TO CONSIDER
<b>Egress</b>	<ul style="list-style-type: none"> <li>❑ A crowded area of plants moved often according to their grow cycles can become a maze for first responders and workers trying to exit</li> <li>❑ Lack of clear egress paths and clearly marked exit doors</li> </ul>	Means of Egress (14); Occupancy Fire Safety (20); Marijuana Growing, Processing, or Extraction Facilities (38)
<b>Lights</b>	<ul style="list-style-type: none"> <li>❑ Extensive use of hot lighting systems often run for 24 hours a day and can be sources of ignition</li> <li>❑ Lighting systems hung using materials that could cause the lights to fall</li> </ul>	Building Services (11); Occupancy Fire Safety (20); Marijuana Growing, Processing, or Extraction Facilities (38)
<b>Combustible Interior Finishes</b>	<ul style="list-style-type: none"> <li>❑ Areas separated by tarps or other flammable materials that could create fire hazards and egress issues</li> <li>❑ Wall and ceiling finishes can increase fire spread and smoke development</li> </ul>	Features of Fire Protection (12); Occupancy Fire Safety (20); Marijuana Growing, Processing, or Extraction Facilities (38)
<b>High Electrical Loads</b>	<ul style="list-style-type: none"> <li>❑ High quantities of lighting, air conditioning, fans, and other systems that use a significant amount of electrical energy</li> <li>❑ Overloaded circuits and wiring that can spark fires</li> </ul>	Building Services (11); Occupancy Fire Safety (20); Marijuana Growing, Processing, or Extraction Facilities (38)
<b>Fumigation and Fertilization</b>	<ul style="list-style-type: none"> <li>❑ Hazardous materials for fumigation or fertilization materials could present health and fire risks to employees and first responders</li> <li>❑ Systems installed to deliver fumigation and fertilization could increase the risk to the facility due to failures and leaks</li> </ul>	Marijuana Growing, Processing, or Extraction Facilities (38); Hazardous Materials if used (60-75)
<b>Illegal Locks/Barriers</b>	<ul style="list-style-type: none"> <li>❑ Noncompliant doors and locking mechanisms can hinder egress in a fire or other emergency</li> </ul>	Means of Egress (14); Occupancy Fire Safety (20); Marijuana Growing, Processing, or Extraction Facilities (38)
<b>CO<sub>2</sub> Enrichment</b>	<ul style="list-style-type: none"> <li>❑ Failures or leaks of CO<sub>2</sub> enrichment systems can pose health and safety risks to employees and first responders</li> </ul>	Marijuana Growing, Processing, or Extraction Facilities (38); Compressed Gases and Cryogenic Fluids (63)



## SAFETY ISSUES FOR CANNABIS-RELATED FACILITIES (CONTINUED)

### PROCESSING FACILITIES

Processing facilities are all the other types of facilities that transform the plant into products for consumption. One common type of processing facility is an extraction room. During the extraction process, chemicals are removed from the plant for use in other



cannabis-based products. The extraction process is commonly completed by using a solvent, such as LPGas or carbon dioxide, to strip the oils holding these chemicals from plant clippings.

While there are a number of things to consider when inspecting these types of facilities, the following are two important questions to ask:

1. What hazardous materials are used in the facility?
2. How much of the hazardous material do they have within control areas?

Hazardous materials are used throughout the production of cannabis, mainly during the extraction process. Other chapters in NFPA 1 provide requirements for hazardous materials, including limitations on the maximum allowable quantities (MAQs), protection of areas that use excessive quantities of hazardous materials, separation of areas using hazardous materials, and safe practices for those materials in use. It is important to identify the types and quantities of the hazardous materials present to properly apply the other chapters of NFPA 1.

Some common inspection issues are summarized in the table below, along with topics to consider and where to find them in NFPA 1. Numbers in parenthesis are chapter numbers.

EXTRACTION PROCESS HAZARDS	SAFETY ISSUES	TOPICS TO CONSIDER
LPGas Extraction	<ul style="list-style-type: none"> <li>❑ Bulk handling and mixing of gases</li> <li>❑ Offgassing from products can occur and could be hazardous</li> <li>❑ Improperly designed, installed, or maintained equipment can create leaks or explosions</li> </ul>	Marijuana Growing, Processing, or Extraction Facilities (38); Liquefied Petroleum Gases and Liquefied Natural Gases (69)
CO <sub>2</sub> Extraction	<ul style="list-style-type: none"> <li>❑ Failures or leaks of CO<sub>2</sub> systems can pose health and safety risks to employees and first responders</li> </ul>	Marijuana Growing, Processing, or Extraction Facilities (38); Compressed Gases and Cryogenic Fluids (63)
Extraction Equipment	<ul style="list-style-type: none"> <li>❑ Inconsistent or incomplete peer review for approved, non-listed extraction equipment</li> <li>❑ Inconsistent or inadequate personnel training</li> <li>❑ Inconsistent use of codes for equipment review</li> <li>❑ Lack of accredited certification programs for equipment operators</li> <li>❑ Undocumented or unapproved equipment modifications or maintenance</li> </ul>	Marijuana Growing, Processing, or Extraction Facilities (38)



## SAFETY ISSUES FOR CANNABIS-RELATED FACILITIES (CONTINUED)



### EXISTING FACILITIES

For existing facilities, it is important to keep in mind that this is an ever-changing industry. Although these types of facilities might be on a set inspection schedule, additional inspections could be required. Some examples of times when additional inspections could be needed are when any of the following changes occur at a facility:

- Modifications to the grow area, rooms and storage areas, extraction equipment, process rooms, or processing equipment within a facility
- Changes in occupancy
- Changes in material used in a new or existing grower or processor facility

➔ **DID YOU KNOW?** UL 1389 is a new standard for listing extraction equipment.

There are inherent dangers in cannabis-related facilities and the more that is understood in how these facilities operate, the safer the facility, its workers, and responders will be. Outlined above are the very basics, but there is always more to consider especially for

an industry that is changing so rapidly. Other considerations include proper permitting, proper sprinkler system design, and how to inspect and regulate new extraction processes. Regardless of what role you have in this (building owner, inspector, first responder, etc.), there is a common goal: to maintain the highest level of safety in these types of facilities. Ensuring that facilities comply with the appropriate standards is one way of doing that.

### Additional Reference Information

- NFPA 1, *Fire Code*, 2018 edition
- *Fire Code Handbook*, 2018 edition
- NFPA 70, *National Electrical Code*, 2020 edition
- UL 1389, *Standard for Plant Oil Extraction Equipment for Installation and Use in Ordinary (Unclassified) Locations and Hazardous (Classified) Locations*, 2019 edition

### LEARN MORE

Visit [nfpa.org/cannabis](https://www.nfpa.org/cannabis) for the latest information.

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