

# NFPA 1, Chapter 38 Marijuana Growing, Processing, or Extraction Facilities Overview

April 17, 2018

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IT'S A BIG WORLD. LET'S PROTECT IT TOGETHER.™

# Agenda

- NFPA & The Standards Development Process
- *NFPA 1 Fire Code*
  - *Chapter 38 Marijuana Growing, Processing, or Extraction Facilities*
- NFPA Supporting Codes
- NFPA Resources
- Questions



# NFPA & The Standards Development Process



## NATIONAL FIRE PROTECTION ASSOCIATION

The leading information and knowledge resource on fire, electrical and related hazards

Global non-profit devoted to eliminating death, injury, property and economic loss due to fire, electrical and related hazards. Our information and knowledge comes in many forms:

- Support for the development, adoption and enforcement of our codes and standards
- Research and data analysis
- Technical training and certification
- Public education
- Outreach and advocacy

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Founded in 1896  
6,000 volunteers  
300 employees  
development committees

More than 60,000 members  
300 codes and standards  
275+ technical code-and-standard-



Offices in the United Arab Emirates, Canada, Mexico, France & China  
[www.nfpa.org](http://www.nfpa.org)

# American National Standards Institute (ANSI) Standards Developers

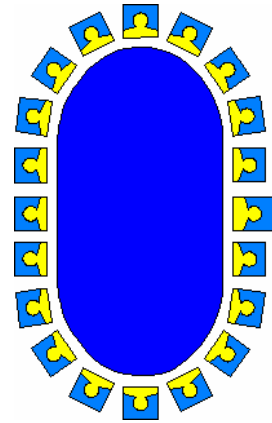


## **NATIONAL FIRE PROTECTION ASSOCIATION**

The leading information and knowledge resource on fire, electrical and related hazards

# NFPA Guiding Principles

- Due process
- Openness
- Lack of dominance
- Seek society's balance between:
  - Acceptable risk
  - Commitment of resources



# The Participants

- 1) The public
- 2) ~60,000 Members
- 3) Board of Directors
  - Approximately 25 members
  - Elected by Membership
- 4) Standards Council
- 5) Technical Committees
- 6) NFPA Staff



# Technical Committees

## Classification of Committee Members



Insurance



Consumer



Enforcing  
Authority



Labor



Installer/  
Maintainer



Manufacturer



Applied Research/  
Testing Laboratory



User



Special  
Expert

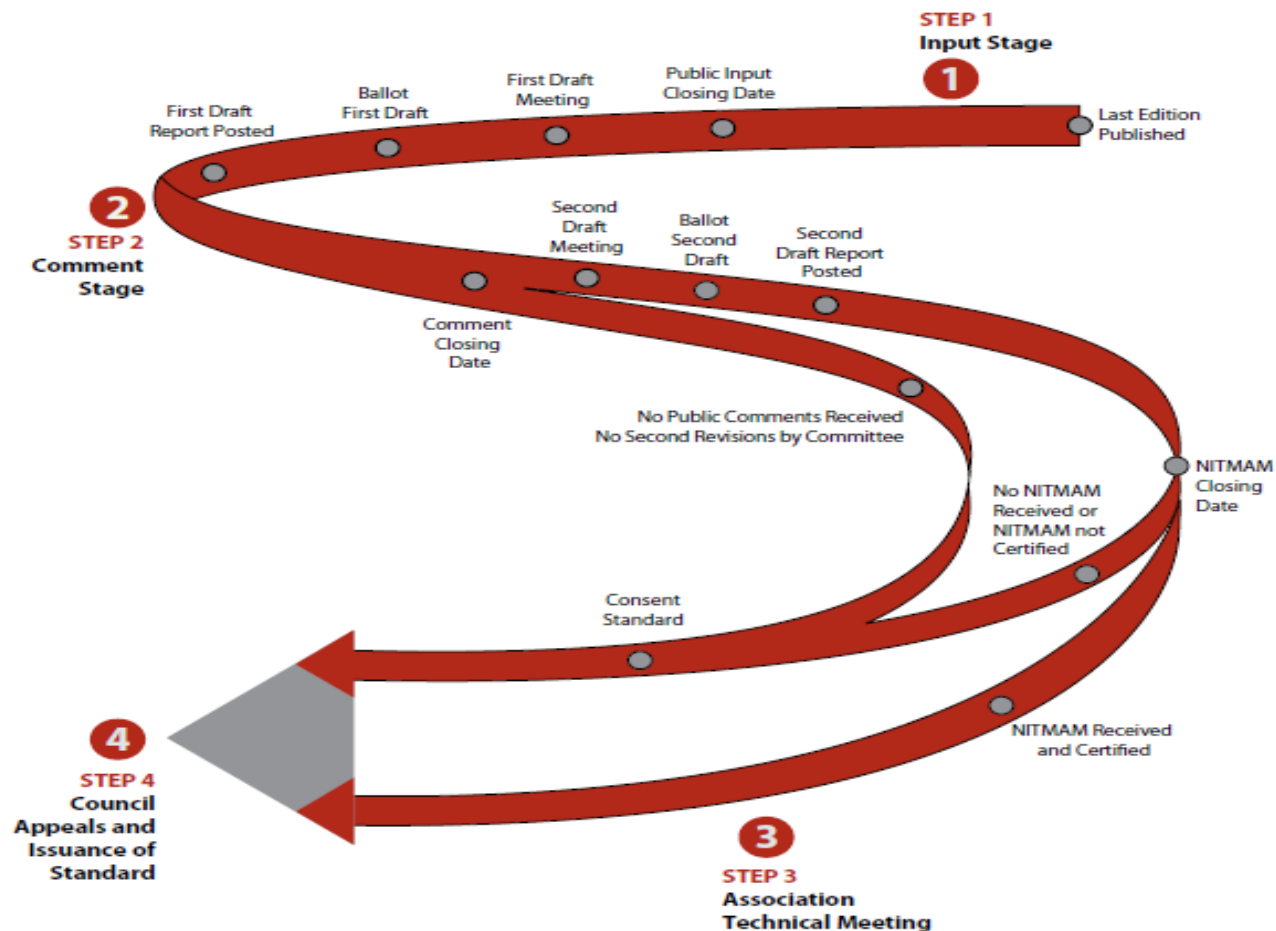
- Balanced “Consensus bodies” TCs
- Typical max size of 30
- ~ 6,000+ Volunteers
- ~ 278 Technical Committees
- ~ 300 Codes & Standards

### 1/3 Balance Rule:

A committee can never have more than 1/3 of its membership from any one interest category



# The Standards Development Process



# In Summary

- Balanced Consensus Body TCs
- Extensive Public Input & Notification
  - (NFPA News, ANSI Standards Action, Federal Register)
- Documents generally revised every 3-5 years
- Process ~ 18-24 months
- Steps:
  - 0) New Project Request
  - 1) Public **Input** (PI) Stage
  - 2) Public **Comment** (PC) Stage
  - 3) Annual NFPA Technical Meeting in June
  - 4) Council Appeals/Issuance of Standard- 3x/year



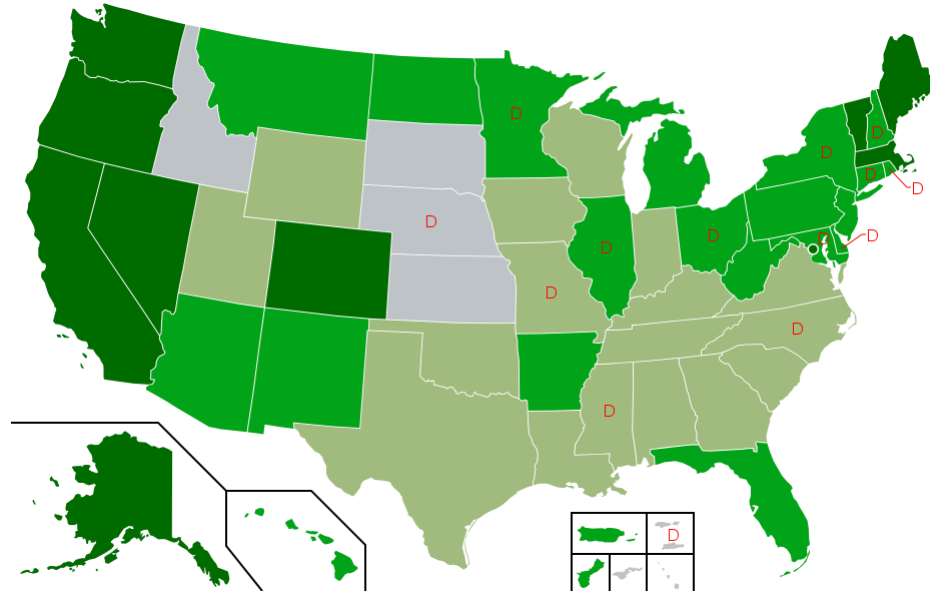
# NFPA 1, Chapter 38

## Marijuana Growing, Processing, or Extraction Facilities



NFPA Journal September/October 2016

# Legalization...Public Safety



Legal Legal for medical use Legal for medical use, limited THC content Prohibited for any use D Decriminalized

Reference: [https://en.wikipedia.org/wiki/Legality\\_of\\_cannabis\\_by\\_U.S.\\_jurisdiction](https://en.wikipedia.org/wiki/Legality_of_cannabis_by_U.S._jurisdiction)

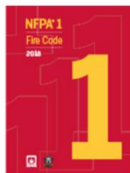
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## NFPA 1

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## Fire Code

NFPA 1, Fire Code, advances fire and life safety for the public and first responders as well as property protection by providing a comprehensive, integrated approach to fire code regulation and hazard management. It addresses all the bases with extracts from and references to more than 130 NFPA® codes and standards including such industry benchmarks as NFPA 101, NFPA 54, NFPA 58, NFPA 30, NFPA 13, NFPA 25, and NFPA 72.

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# NFPA 1 Fire Code

- Scope: NFPA 1, Fire Code, advances fire and life safety for the public and first responders as well as property protection by providing a comprehensive, integrated approach to fire code regulation and hazard management. It addresses all the bases with extracts from and references to more than **130 NFPA® codes and standards...**
- 2021 Edition Schedule
  - **Public Input (PI) Closing Date: June 27, 2018**
  - First Draft Report Posting Date: March 27, 2019
  - Public Comment (PC) Closing Date: June 5, 2019



# NFPA 1, Chapter 38

## Marijuana Growing, Processing, or Extraction Facilities



# Hazards

## General

- Siting...zoning, permitting
- Egress
- Lights
- Plastic  
dividers/combustible  
interior finishes
- Fumigation
- Security

## Processing/Extraction

- Electrical- Equipment &  
Classification
- HVAC Equipment
- Industrial Gases- CO2
- Liquefied Petroleum Gases  
(LPG)- propane, butane
- Flammable Liquids- ethanol,  
methanol, hexane, heptane





# NFPA 1, Chapter 38

## Marijuana Growing, Processing, or Extraction Facilities

### 38.1 Application

- Shall apply to the growing and processing of marijuana within new and existing building
- Not applicable to retail sale of marijuana where growing and processing does not occur
- Occupancy- *Chapter 6 Classification of Occupancy*

### 38.2 Permits

- Comply with *Section 1.12 Permits & Approvals*

### 38.3 Fire Protection Systems

- *Chapter 13 Fire Protection Systems [NFPA 13, 20, 25, 72, 101 etc.]*

### 38.4 Means of Egress

- *Chapter 14 Means of Egress [NFPA 101 Life Safety Code]*

# NFPA 1, Chapter 38 Marijuana Growing, Processing, or Extraction Facilities

## 38.5 Growing or Production of Marijuana

- 38.5.1 Ventilation for Light Fixtures
- 38.5.2 Odor Control
  - Ozone generators... *Chapter 54 Ozone Gas-Generating Equipment*
- 38.5.3 Interior Finish, Contents, and Furnishings
  - *Section 12.5 Interior Finish [NFPA101, 10.2]*
  - *Section 2.6 Contents and Furnishings [NFPA 101, 10.3]*
  - No use of plastic to create wall divider is allowed
- 38.5.4 Fumigation
- 38.5.5 Pesticide application



# Processing & Extraction

- Medical: Tetrahydrocannabinolic Acid (THCA) aka Cannabinoid
- Recreational: Tetrahydrocannabinol (THC)
  - THCA -> TCA via decarboxylation
  - Examples: Hash Oil, Tinctures, Shatter, Wax
- Extraction Methods
  - Bubble Hash Extraction
  - CO<sub>2</sub> Extraction
  - Solvent-less Extraction (e.g. dry ice)
  - Solvent Extraction... Closed loop vs. Open loop (aka open blasting)
  - Butane Hash Oil Extraction (BHO)

# NFPA 1, Chapter 38 Marijuana Growing, Processing, or Extraction Facilities

## **38.6 Processing or Extraction**

- 38.6.1 General
- 38.6.2 Liquefied Petroleum Gas (LPG) Extraction
- 38.6.3 Flammable and Combustible Liquid Extraction
- 38.6.4 Carbon Dioxide Extraction



# NFPA 1

## 38.6.1 General

- 38.6.1.1 Extraction Room
  - Meet Building Code & NFPA 1
  - Noncombustible construction (except CO<sub>2</sub> & non-hazardous)
  - Dedicated...no storage allowed
  - Restricted siting
  - Means of Egress
- 38.6.1.2 Staffing
- 38.6.1.3 Operator Training
- 38.6.1.4 Signage

# NFPA 1

## 38.6.1.5 Systems, Equipment, and Processes

- General Compliance
  - *NFPA 1 Fire Code & 60.5.1.6 Systems, Equipment, and Processes [400, 6.1.6]*
  - *NFPA 90A Standard for the Installation of Air-Conditioning and Ventilating Systems*
  - Includes vessels, chambers, containers, cylinders, tanks, piping tubing, valves, fittings & pumps
  - Use listed or approved equipment
- Equipment
  - Explosive condition exists, equipment, heating equipment is prohibited
  - Refrigerators & other cooling equipment- NFPA 70 NEC, Article 501
  - LPG tanks comply with *Section 69.2.1 Containers [58, 5.2]*

# NFPA 1

## 38.6.1.5 Systems, Equipment, and Processes

- Documentation for Equipment with No Listing
  - Requires designer or record and design documentation and/or peer review
- Change of Extraction Medium
  - requires AHJ approval
- Equipment Field Verification

# NFPA 1

## 38.6.2 Liquefied Petroleum Gas (LPG) Extraction

- Compliance with 38.6.1 & 38.6.2
- Exhaust Systems
  - *NFPA 91 Standard for Exhaust Systems for Air Conveying of Vapors, Gases, Mists, and Particulate Solids* or mechanical code
- Electrical
  - *NFPA 70 NEC*
  - Lighting & equipment interlocked with exhaust system
  - E-power: lighting, ventilation system, solvent gas detection
- Gas Detection  $\leq 25\%$  LEL/LFL
- Protection
  - Automatic Suppression: *NFPA 12, 13, 17 & 2001*
- Piping
  - *NFPA 58 LP Gas Code*



# NFPA 1

## 38.6.3 Flammable and Combustible Liquid Extraction

- Compliance with 38.6.1 & 38.6.3
- Exhaust Systems
  - *NFPA 45, NFPA 91 Standard for Exhaust Systems for Air Conveying of Vapors, Gases, Mists, and Particulate Solids* or mechanical code
- Electrical
  - NFPA 70 NEC
  - Lighting & equipment interlocked with exhaust system
- Storage, Use & Handling
  - NFPA 1 & Chapter 66 Flammable & Combustible Liquids [NFPA 30]
- Heating of flammable/combustible liquids over open flame is prohibited

# NFPA 1

## 38.6.4 Carbon Dioxide Extraction

- Compliance with 38.6.1 & 38.6.4
- Secure cylinder(s)
- Gas Detection
  - Install an approved, listed CO<sub>2</sub> detector in extraction room
  - CO<sub>2</sub> = 5,000 ppm (OSHA TWA 8-hour)
- Exhaust CO<sub>2</sub> to exterior of building (e.g. relief device)

Reference: Chapter 63 *Compressed Gases and Cryogenic Fluids*  
[NFPA 55]

# NFPA 1

## 38.6.7 Transfilling

### 38.7 Transfilling

- Addresses working container connected to extraction equipment.
- Comply with:
  - Section 69.3.5 Container Separation Distances [58, 6.4]
  - Section 69.4.2 Operational Safety [58, 7.2]
  - *NFPA 58 LP-Gas Code*

A photograph of a row of firefighter lockers. Each locker is a red metal cabinet with a white interior. On the top shelf of each locker is a black and yellow fire helmet. A tan fire jacket with reflective yellow stripes hangs from a silver bar in the middle of each locker. Below the jacket, a blue or white bag is hanging from the bottom shelf. The lockers are set against a white wall. The entire image is framed by a red border.

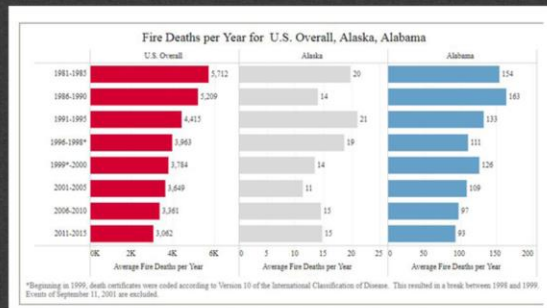
# NFPA Supporting Documents



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### U.S. Fire Death Rates by State

Use our interactive tool to compare fire death data for up to three states.

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### Fire Prevention Week

The 2017 campaign emphasizes the potentially life-saving importance of having a home escape plan.

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# NFPA Codes & Standards

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NFPA publishes more than 300 consensus codes and standards intended to minimize the possibility and effects of fire and other risks. NFPA codes and standards, administered by more than 250 Technical Committees comprising approximately 8,000 volunteers, are adopted and used throughout the world.

- [Learn about the standards development process.](#)
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Code/Standard #	Name
NFPA 1	Fire Code
NFPA 2	Hydrogen Technologies Code
NFPA 3	Standard for Commissioning of Fire Protection and Life Safety Systems
NFPA 4	Standard for Integrated Fire Protection and Life Safety System Testing
NFPA 10	Standard for Portable Fire Extinguishers





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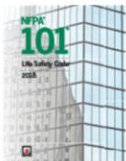
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## Life Safety Code®

The Life Safety Code is the most widely used source for strategies to protect people based on building construction, protection, and occupancy features that minimize the effects of fire and related hazards. Unique in the field, it is the only document that covers life safety in both new and existing structures

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# Standard for the Installation of Air-Conditioning and Ventilating Systems

NFPA 90A covers construction, installation, operation, and maintenance of air conditioning and ventilating systems, including filters, ducts, and related equipment, to protect life and property from fire, smoke, and gases resulting from fire or conditions having manifestations similar to fire.

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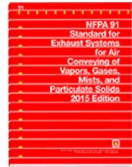
  
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# Standard for Exhaust Systems for Air Conveying of Vapors, Gases, Mists, and Particulate Solids

This standard provides technical requirements for exhaust systems that will protect lives and property from fires and explosions and minimize damage in the event that such fires and explosions occur.

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## National Electrical Code®

Adopted in all 50 states, the NEC is the benchmark for safe electrical design, installation, and inspection to protect people and property from electrical hazards.

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# NFPA 70 NEC

## Electrical Area Classifications

ARTICLE 500 Hazardous (Classified) Locations, Classes I, II, and III, Divisions 1 and 2

- **ARTICLE 501 Class I Locations -> flammable/combustible liquids**
- ARTICLE 502 Class II Locations
- ARTICLE 503 Class III Locations
- ARTICLE 504 Intrinsically Safe Systems
- ARTICLE 505 Zone 0, 1, and 2 Locations (Alternate)
- ARTICLE 506 Zone 20, 21, and 22 Locations for Combustible Dusts or Ignitable Fibers/Flyings (Alternate)

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## Standard for Electrical Safety in the Workplace®

NFPA 70E requirements for safe work practices to protect personnel by reducing exposure to major electrical hazards. Originally developed at OSHA's request, NFPA 70E helps companies and employees avoid workplace injuries and fatalities due to shock, electrocution, arc flash, and arc blast, and assists in complying with OSHA 1910 Subpart S and OSHA 1926 Subpart K.

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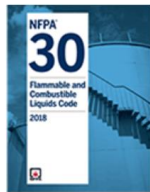
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## Flammable and Combustible Liquids Code

Enforceable under OSHA and many state and local regulations, NFPA 30 provides safeguards to reduce the hazards associated with the storage, handling, and use of flammable and combustible liquids.

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# NFPA 30 Outline

- Chapter 1 Administration
- Chapter 2 References
- Chapter 3 Definitions
- Chapter 4 Definition and Classification of Liquids
- Chapter 5 Reserved
- Chapter 6 Fire and Explosion Protection
- Chapter 7 Electrical Systems
- Chapter 8 Reserved
- Chapter 9 Container Storage General
  - Chapter 10 Container Storage Mercantile
  - Chapter 11 Container Storage Industrial
  - Chapter 12 Container Storage-Storage Occupancies
  - Chapter 13 Container Storage Detached
  - Chapter 14 Hazardous Materials Lockers
  - Chapter 15 Outdoor Storage
  - Chapter 16 Indoor Liquid Storage



# NFPA 30 Outline

- Chapter 17 Processing Facilities
- Chapter 18 Dispensing, Handling, Transfer and Use
- Chapter 19 Specific Operations
- Chapter 20 Reserved
- Chapter 21 Tank Requirements
  - Chapter 22 Aboveground Storage Tanks (ASTs)
  - Chapter 23 Underground Storage Tanks (USTs)
  - Chapter 24 Storage Tank Buildings
  - Chapter 25 Storage Tank Vaults
- Chapter 26 Reserved
- Chapter 27 Piping
- Chapter 28 Bulk Unloading Tank Cars
- Chapter 29 Wharves
- Annexes A Explanatory Material
- Annexes B - I



# NFPA 30 Classification Examples

- Class IA - Diethyl Ether, Ethylene Oxide, some light crude oils
- Class IB - Acetonitrile, Methanol, Ethanol, IPA, Hexane
- Class IC - Xylene, some paints, some solvent-based cements
- Class II - Diesel Fuel, Paint Thinner
- Class IIIA - Home Heating Oil
- Class IIIB - Cooking Oils, Lubricating Oils, Motor Oil

Note: Aqueous alcohol solutions are either: Class 1C, II, IIIA & IIIB



# NFPA 30 Summary

- A broad-based mandatory document that covers general storage and handling of liquids that can burn and operations involving these liquids.
- It covers storage and handling in small containers, in large shipping containers, and in bulk storage tanks, both aboveground storage tanks (ASTs) and underground storage tanks (USTs).
- It covers basic fire safety measures for operating facilities, such as chemical plants, distilleries, refineries, and other process plants.
- It covers small scale handling, such as might occur in a machine shop or manufacturing plant.
- Establishes specific provisions for certain operations, such as heat transfer systems that use combustible liquids as the heat transfer medium, vapor recovery systems, and small solvent recovery equipment.

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## Liquefied Petroleum Gas Code

The industry benchmark for safe LP-Gas storage, handling, transportation, and use, NFPA 58 mitigates risks and ensures safe installations, to prevent failures, leaks, and tampering that could lead to fires and explosions.

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# NFPA 58 Highlights

- Chapter 4, General Requirements
  - General information on fire extinguishers, training, and odorization
- Chapter 5, LP-Gas Equipment and Appliances
  - Construction of various LP-Gas applications including containers, valves, and appliances
- Chapter 6, Installation of LP-Gas Systems
  - Location of LP-Gas applications including piping, valves, and appliances
- Chapter 7, LP-Gas Liquid Transfer
  - How to transfer LP-Gas liquid from container to container
- Chapter 8, Storage of Cylinders Awaiting Use, Resale, or Exchange
  - Storing cylinders including cabinets for selling cylinders



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## Hazardous Materials Code

NFPA 400 consolidates fundamental safeguards for the storage, use, and handling of hazardous materials in all occupancies and facilities. The Code does not apply to storage or use of hazardous materials for individual use on the premises of one- and two-family dwellings.

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- Chapter 1 Administration
- Chapter 2 References
- Chapter 3 Definitions
- Chapter 4 Classification
- Chapter 5 Permissible storage and use (MAQ Tables).
- Chapter 6 Fundamental requirements
- Chapter 7 Emergency
- Chapter 8 Reserved
- Chapter 9 Security
- Chapter 10 Performance based option
- **Chapter 17 Pyrophorics**
- **Chapter 11 Ammonium Nitrate**
- **Chapter 12 Corrosives**
- **Chapter 13 Flammable Solids**
- **Chapter 14 Organic Peroxides**
- **Chapter 15 Oxidizers**
- **Chapter 16 Reserved**
- **Chapter 18 Toxics**
- **Chapter 19 Unstable Reactives**
- **Chapter 20 Water Reactives**
- **Chapter 21 Compressed Gases**
- Annexes A Explanatory Material
- Annexes B - I

# NFPA 400 Summary

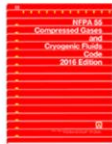
- **Classifies** the hazardous material
- Provides you with the **maximum amount (MAQ)** that should be stored in a **particular occupancy** before requiring special construction requirements.
- Provides **methods** for increasing amounts by using special protections such as sprinklers or special storage requirements. (often doubles for each additional feature)
- Provides storage use and handling requirements for all covered materials.



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## Compressed Gases and Cryogenic Fluids Code

NFPA 55 facilitates protection from physiological, over-pressurization, explosive, and flammability hazards associated with compressed gases and cryogenic fluids.

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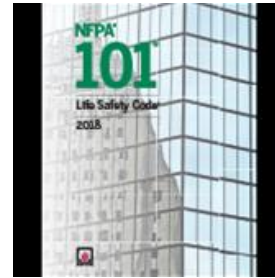
- Chapter 1 Administration
- Chapter 2 References
- Chapter 3 Definitions
- Chapter 4 General Requirements
- Chapter 5 Classification of Hazards
- Chapter 6 Building-Related Controls
- Chapter 7 Compressed Gases
  - Follow Chapters 1-7
  - Medical Gases Systems:  
*NFPA 99 Health Care Facilities Code*
- Chapter 8 Cryogenic Fluids
- Chapter 9 Bulk Oxygen Systems
- Chapter 10 Gas Hydrogen Systems
- Chapter 11 Bulk Liquefied Hydrogen Systems
- Chapter 12 Gas Generation Systems
- Chapter 13 Insulated Liquid Carbon Dioxide Systems
- Chapter 14 Storage, handling, and Use of Ethylene Oxide for Sterilization and Fumigation
- Chapter 15 Acetylene Cylinder Charging Plants
- Chapter 16 Liquid Nitrous Oxide Systems
- Annexes A Explanatory Material
- Annexes B - I





# NFPA Resources

- NFPA Codes & Standards
  - NFPA 30/30A, NFPA 55, NFPA 400, NFPA 70, NFPA 101 ...
- Codes & Standards Appendices
- Fact Sheets (e.g. LP-Gas)
- Handbooks: NFPA 1, 30, 58, 101
  - Supplemental Materials & Examples
- Training: classroom, onsite, and online
- Visit: [www.nfpa.org](http://www.nfpa.org)!



# Questions

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