



Commonwealth of Massachusetts Executive Office of Labor and Workforce Development Department of Labor Standards

Executive Order #511

Life Safety (Surviving a Building Fire) Summary of Standards and Recommendations

This summary of standards was prepared by the Massachusetts Department of Labor Standards (“DLS”) for informational purposes and does not constitute an official interpretation by OSHA or any other agencies/entities listed as a source of standards or guidance in this document, nor an exhaustive recitation of the requirements therein. Rather, the summary is provided for the health and safety committees to assess current health and safety management of this hazard against the nationally-recognized standard. As the information provided in this document is only a summary, please consult the full standard(s) as well as any other needed sources of technical assistance for developing or improving your life safety program.

It is important to note that state workers are not covered by OSHA standards; the information generated by the health and safety committees will serve to guide the Massachusetts Employee Safety and Health Advisory Committee in identifying effective and practical strategies and policies for improving the health and safety of state workers.

Primary Technical Standard or Guideline:

National Fire Protection Association (NFPA) 101 – Life Safety Code*

The essential goal of this standard is to improve the survivability of building occupants during a fire. This is accomplished by ensuring that occupants are alerted to the fire, that clear exit routes are available, and that the fire is sufficiently suppressed through sprinklers or other means to allow the time needed for occupants to get out of the building.

This standard also covers emergency crowd movement and non-emergency crowd control, but these issues are not the focus of the work being conducted by the health and safety committees, and are not covered in the “answers” given below.

Note: There is some overlap between requirements for Life Safety and Emergency Action Planning and Life Safety. Emergency Action planning is intended to look at the full range of potential workplace emergencies, while Life Safety focuses on building fires. Exit routes and Fire Prevention Plans are covered in this document. A Fire Prevention Plan may be included as part of your overall Emergency Action Plan.

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Therefore, it may be useful to conduct your gap analysis for emergency action planning and life safety at the same time.

** This is the primary national or state standard/guideline for this hazard. Your agency may be following an internal standard of practice or a standard from another source for this hazard. For the gap analysis, if you are following a standard other than the primary worker protection standard listed above, please indicate which standard, if any, is being followed by your agency. If this is an internal standard of practice, please report the basis upon which the determination was made to adopt the standard.*

Additional Key Standards:

OSHA 29 CFR 1910 Subpart L, Fire Protection

OSHA 29 CFR 1910 Subpart E, Exit Routes, Emergency Action Plans, and Fire Prevention Plans

Note: This standard indicates that if you are in compliance with NFPA 101, Life Safety Code, you have met the requirements for design, construction, maintenance, safeguards, and operational features for exit routes.

Highlights of the NFPA 101 Standard:

The fundamental requirements of the NFPA 101 Life Safety Code are as follows:

- **Multiple Safeguards:** reliance for safety to life does not depend on any single safeguard.
- **Appropriateness of Safeguards:** details of the needed safeguards vary greatly depending on the details of each building structure (size, layout, building type, use, occupancy, special needs of occupants, location, etc.), and selected safeguards must be appropriate as such for each specific building. Safeguards include things such as portable fire extinguishers and sprinkler systems.
- **Means of egress:**
 - Number of Means of Egress - A minimum of two means of egress is required.
 - Unobstructed Egress – Unobstructed egress must be available from all parts of the building.
 - Awareness of Egress System - Every exit shall be clearly visible or the route to reach every exit shall be conspicuously indicated. Each means of egress, in its entirety, shall be arranged or marked so that the way to a place of safety is indicated in a clear manner. Note: in addition to clearly

marking exits, doorways which could be mistaken for exits and instead lead people into a dead end should be marked “Not an Exit.”

- Lighting – When artificial illumination is needed in a building or structure, egress facilities shall be included in the lighting design. Note: Emergency lighting during a power failure is an important consideration to ensure that occupants can still locate and safely utilize egress routes.
- **Occupant Notification:** fire alarms alert occupants to initiate emergency procedures, such as evacuation.
- **Situation Awareness:** Fire/smoke detection, communication systems, status panels, etc. shall be effective in enhancing situation awareness, which is necessary to determine if emergency response is required, and the nature and timing of such response.
- **Vertical Openings:** Stairwells, elevator shafts, and other vertical openings between floors shall be suitably enclosed or protected to provide safety to occupants during egress and to prevent the spread of fire, smoke, and fumes through these openings.
- **System Design/Installation:** Any fire protection system, equipment, safeguards, etc. shall be designed, installed, and approved in accordance with applicable NFPA standards.
- **Maintenance:** Any life safety system elements required by this code shall be thereafter maintained.

Note: Many of the above NFPA 101 Life Safety Code elements cover building life safety system design and installation issues as well as required safeguards, and are beyond the scope of the health and safety committees. The detailed “answers” given below will not include these aspects of the standard, and instead will focus on employee awareness and actions during a fire emergency. The appropriate life safety system, building design issues, and required safeguards are generally included under a policy of adherence to requirements of the “authority having jurisdiction” over life safety code for your building, which will most typically be your local fire officials. These system design, installation and safeguards issues will have been addressed through the original certificate of occupancy, and any changes through periodic fire prevention inspections.

Highlights of the OSHA 29 CFR 1910, Subpart L Fire Protection Standard:

This section of OSHA standards primarily covers portable fire extinguishers and fixed extinguishing systems including standpipe and hose systems, automatic sprinkler

systems, dry chemical, gaseous agent, water spray, and foam. These standards also include fire detection systems and employee alarm systems. This section of OSHA standards essentially repeats (and references) NFPA 101 and other relevant NFPA codes.

The primary element of these OSHA standards that is not included in NFPA 101 is the section covering training requirements for portable fire extinguishers. This is outlined in the training section below.

Highlights of the OSHA 29 CFR 1910, Subpart E Exit Routes, Emergency Action Plans, and Fire Prevention Plans:

Specifications for exit routes in this standard essentially repeat NFPA 101, and the standard states that compliance with NFPA 101 relative to exit routes will be deemed compliance with OSHA.

For **exit routes**, highlights of the standard include:

- there must be at least two exit routes.
- exit routes must be permanent and separated by fire resistant materials,
- exit routes must be big enough to handle all the people using that route and also meet height and width requirements,
- exit routes must lead to the outdoors,
- exit routes must be well-lit and marked,
- exit routes must be kept free of flammable materials,
- exit routes must be kept free from obstructions.

Requirements for emergency action plans are covered in the “Emergency Action Plan” answers document.

This standard outlines the requirements for a fire prevention plan, which can typically be included as part of your emergency action plan. Details are provided in the policy section below.

Policy:

It should be the policy of the building management to adhere to requirements of the authority having jurisdiction over fire safety code for this building.

Written Plans

A written fire prevention plan is required for an employer with more than 10 employees. For employers with 10 or fewer employees, this plan can be communicated orally to employees. This can be included as part of your overall emergency action plan, unless

directed by OSHA standard to prepare a separate fire prevention plan for significant fire hazards (such as OSHA 1910.120 Hazard Waste Operations and Emergency Response). The minimum elements of a fire prevention plan include:

- A list of fire hazards.
- Procedures to control accumulations of flammable and combustible waste materials (including excessive accumulation of combustibles such as paper).
- Procedures for regular maintenance of safeguards installed on heat-producing equipment (if applicable).
- The name or job title of employees responsible for maintaining equipment to prevent or control sources of ignition or fires (including monthly visual portable fire extinguisher checks).
- The name or job title of employees responsible for the control of fuel source hazards (if applicable).

As part of their fire prevention plan, agencies must decide on their policy relative to portable fire extinguishers. This policy can be such that all employees will simply evacuate upon hearing the fire alarm, or that certain employees only will be authorized to use portable fire extinguishers, or that portable fire extinguishers will be available for general employee use. This will trigger different training requirements as outlined below.

Training and Certification/Licensing Requirements:

All employees are clearly instructed on:

- The fire hazards to which they are exposed.
- When to leave the building (e.g., when fire alarm sounds, unless specifically instructed that employees do not need to leave, such as during fire alarm testing).
- The primary and alternative exit routes for each employee's area of the building.
- Their designated meeting location once the employee is safely outside.

Individual employees are clearly instructed on any special duties they have been assigned to perform, for example:

- To call fire emergency response personnel.
- To serve as a "floor marshals," e.g., this person is assigned to check every office and space within a specific designated area to ensure that all employees have left, and to prompt any found employees to leave immediately.

Fire Extinguisher Training:

Training requirements for portable fire extinguishers are dependent on the employer policy:

IF the employer has determined by policy that all employees shall immediately evacuate upon the sounding of the fire alarm, no fire extinguisher training is required.

IF the employer has determined by policy that certain employees only are authorized to use portable fire extinguishers, these employees must receive adequate fire extinguisher training. This training shall familiarize employees with general fire extinguisher use, and the hazards involved with incipient stage firefighting. No employee shall ever be instructed to attempt to fight a fire beyond the incipient stage with a portable fire extinguisher, and employees shall be trained to identify the limits of the incipient stage.

IF the employer has elected by policy to provide portable fire extinguishers for general employee use, all employees must receive adequate fire extinguisher training. No employee shall ever be instructed to attempt to fight a fire beyond the incipient stage with a portable fire extinguisher, and employees shall be trained to identify the limits of the incipient stage.

Of course, if portable fire extinguishers were not required by code at your location and no fire extinguishers are present, there is no reason for this training.

Engineering Controls – Requirements:

It is not the function of the health and safety committees to assess whether or not the appropriate life safety engineering controls (alarms, sprinkler systems, lighting, etc.) are in place in your building. The specific set of required engineering controls or safeguards, such as sprinkler systems or other fixed extinguishing systems, will be mandated by code based on the particular building characteristics, use, occupancy, location, etc. of the building you are occupying. Adherence to these codes will have been determined through required inspections prior to issuance of a certificate of occupancy at the time of building opening, required inspections following significant building renovation, and through periodic fire prevention inspections.

If there is reason to believe that appropriate controls are not in place, (for example lack of emergency lighting of exit routes during a power outage), the committee should bring this to the attention of facilities management staff or local fire officials.

The role of the health and safety committees in this area was to assess whether or not existing engineering controls are tested, inspected, and maintained as needed to ensure that they are functional at all times in the event of a fire emergency.

Maintenance, including inspection and testing as needed, is required on any life safety fixed engineering controls. Facilities management will be a good source of information

to see if this is happening. For more complex systems such as sprinklers, it is likely that an outside company is conducting this function. Examples of life safety engineering controls include:

- Fire alarms (sound)
- Lighted exit signs
- Emergency lighting
- Sprinkler systems
- Standpipe/hose set-ups
- Fixed extinguishing systems (most likely used in specialty areas such as computer rooms, cooking facilities, etc.). These may include:
 - Dry chemical
 - Gaseous agent
 - Water spray
 - Foam

Administrative Controls – Requirements:

The following administrative controls are required:

- At least two exit routes meeting the required specifications* have been identified for egress from all areas of the building.
- Exits routes must be marked with signs saying “Exit” in letters no less than 6” high and ¾” wide.
- Doorways along an exit access that could be mistaken for an exit must be marked “Not an Exit.”
- An employee or employees should be assigned to frequently check exit routes, and to ensure that any items improperly stored in an exit route or otherwise blocking these routes should be removed.
 - Exit routes should never be obstructed.
 - No flammable items should ever be stored in exit routes.
 - No items of any kind should ever be stored in stairwells.
- “Floor marshalls” should be assigned to cover all areas the building in which employees work. Upon hearing the fire alarm, floor marshalls are to check every office and location within their assigned area to ensure that all employees have evacuated. Found employees must be directed to evacuate.

- An outdoor meeting place well clear of the building and areas needed by fire emergency vehicles should be designated for your employees. All employees should be directed to meet at that location upon egress of the building. A designated employee should bring attendance sign-in sheets with them upon evacuation of the building. The sign-in sheet will be used at the meeting place to ensure that all employees have safely evacuated the building.
- Fire emergency numbers should be prominently displayed near telephones. This is of particular importance if the emergency number for your location is not “911.”

*Specifications for exit routes include:

- Adequately lighted (employees with normal vision can see along entire route).
- Permanent.
- Separated by fire resistant materials.
- Openings limited to those necessary to allow access.
- Lead directly to the outdoors, or to a street, walkway or public space that leads to the outdoors.
- Large enough to accommodate all of the staff who will use that route. Capacity of the exit route cannot decrease in size as you move in the direction of the exit.
- Ceiling must be at least 7’6” high.
- An exit access must be at least 28” wide.
- Outdoor exit routes must have guardrails protecting unenclosed sides if there is a fall hazard.
- Outdoor exit routes must be covered if there is a potential for snow or ice hazard.

Equipment Controls – Requirements:

It is not the function of the health and safety committees to assess whether or not portable fire extinguishers are required at your facility. A code requirement for portable fire extinguishers is a function of the building and occupancy characteristics at your facility. Adherence to code for portable fire extinguishers will have been addressed through inspections for the original certificate of occupancy and subsequent periodic fire prevention inspections. If there is reason to believe that portable fire extinguishers should be in place but have not been provided, the committee should bring this to the attention of facilities management staff or local fire officials. In addition to fire code requirements, OSHA does require fire extinguishers for a few specific areas such as spray booths and flammable storage rooms.

If portable fire extinguishers are in place at your facility, the requirements for maintenance are listed below. Facilities management will have knowledge of the portable fire extinguisher maintenance program. The monthly inspection is likely performed by in-house staff, the annual maintenance check is likely performed by an outside company. You can check the tags on extinguishers for the annual maintenance inspection, which will have the most recent inspection month/year punched.

- Monthly visual inspection (check pressure gauge, tag, mounting)
- Annual maintenance check.
- Hydrostatic testing. Extinguishers containing any pressurized medium shall be tested, typically either every 5 or every 12 years, depending on the extinguisher type (outlined in OSHA 1910.157 Table L-1). Hydrostatic testing evaluated tank strength and integrity to determine whether or not the tank can still safely contain pressurized media.

Web link to full standard or guideline:

Informational resources identified below can also be found on our website at www.mass.gov/dols/eo511.

The NFPA 101 Life Safety Code is not available for free on-line, it can be purchased at www.nfpa.org.

OSHA Standards:

www.osha.gov, select the “Regulations” tab from the top menu bar. For 1910 standards select the “General Industry” tab. For 1926 standards, select the “Construction” tab. Then, scroll down to find the standard by number.

OSHA 29 CFR 1910 Subpart L, Fire Protection

OSHA 29 CFR 1910 Subpart E, Exit Routes, Emergency Action Plans, and Fire Prevention Plans

OSHA Evacuation Plans and Procedures eTool at www.osha.gov, specific link below:

http://osha.gov/SLTC/etools/evacuation/portable_required.html