

EXIT ROUTES AND EMERGENCY PLANNING



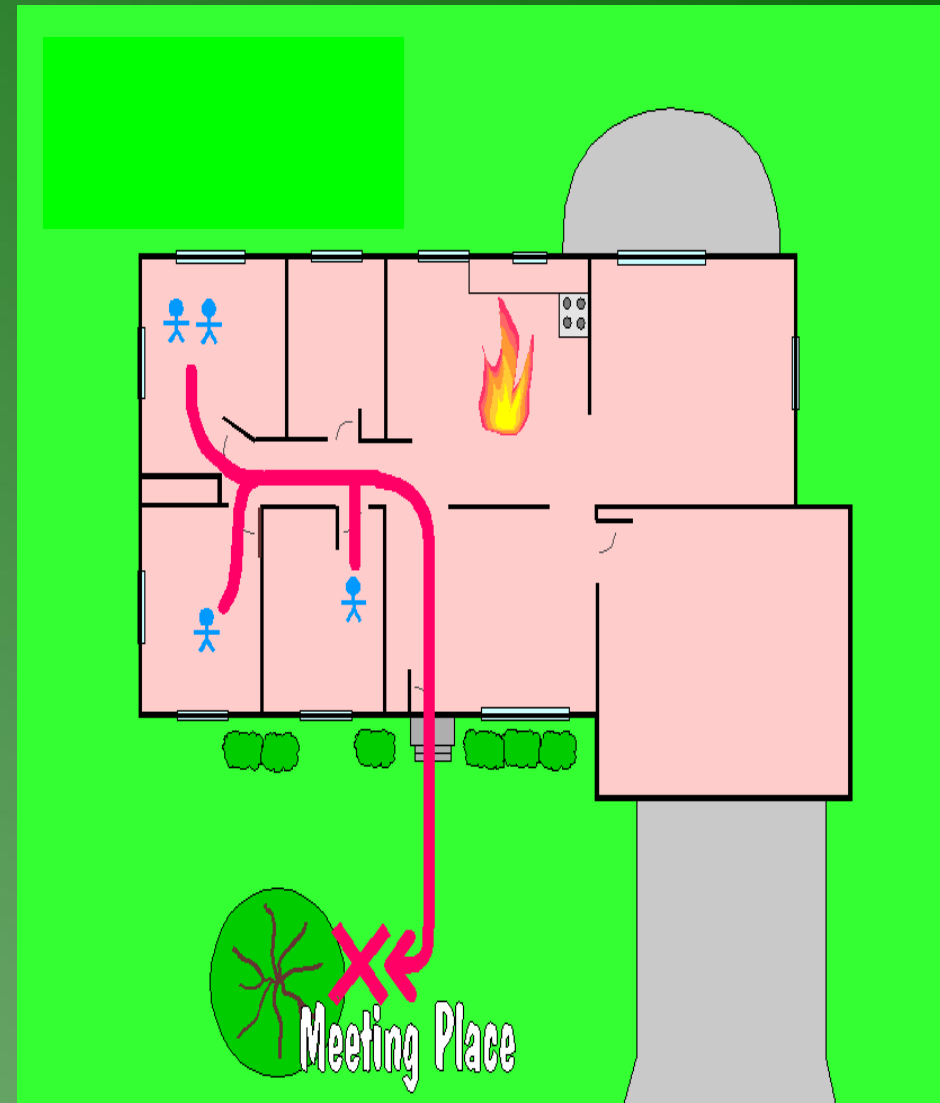
Introduction

- **Fires and explosions kill more than 200** and injure more than 5,000 workers each year
- There is a **long and tragic history** of workplace fires in this country caused by problems with fire exits and extinguishing systems
- OSHA requires employers to provide **proper exits, fire fighting equipment, and employee training** to prevent fire deaths and injuries in the workplace



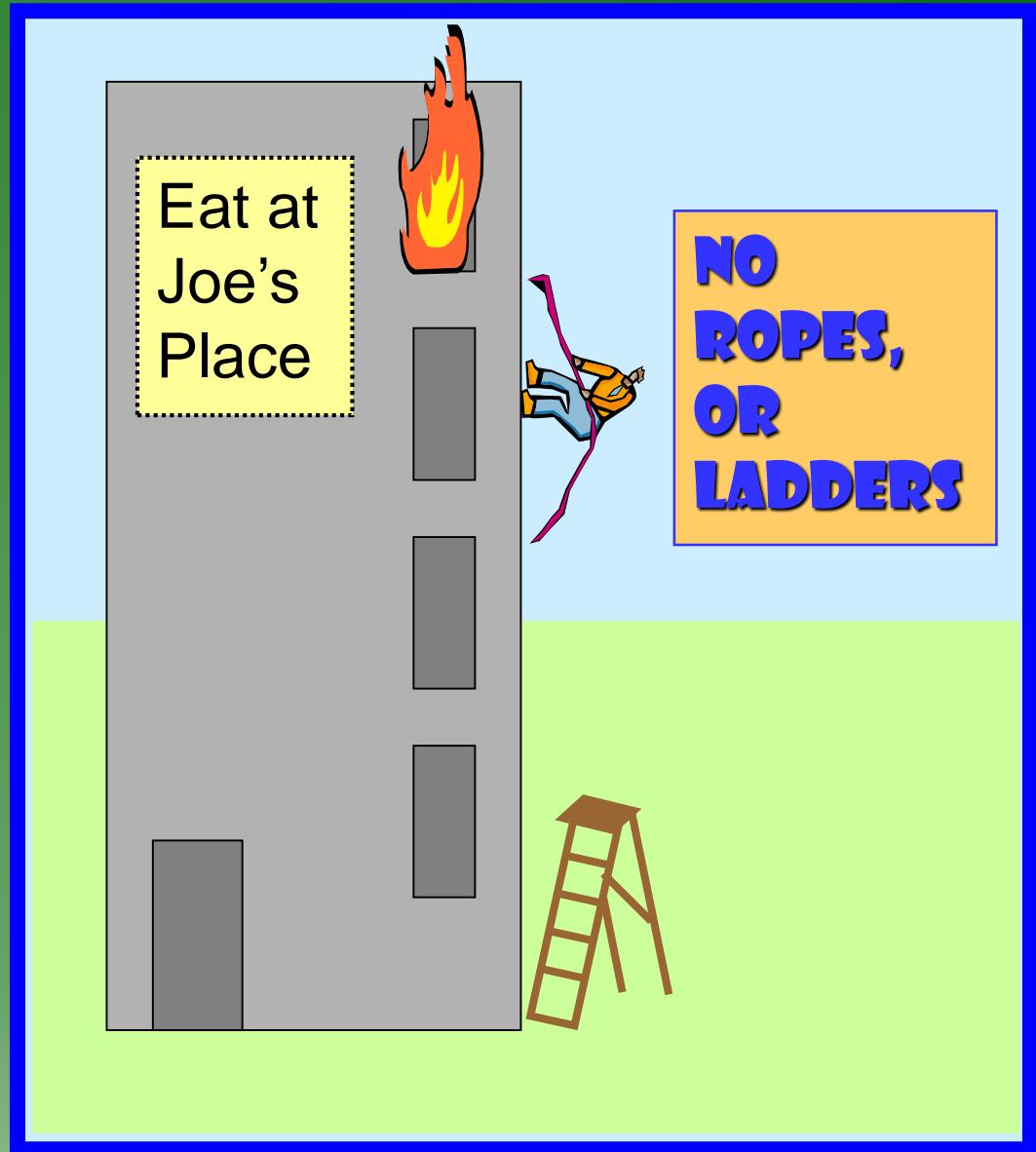
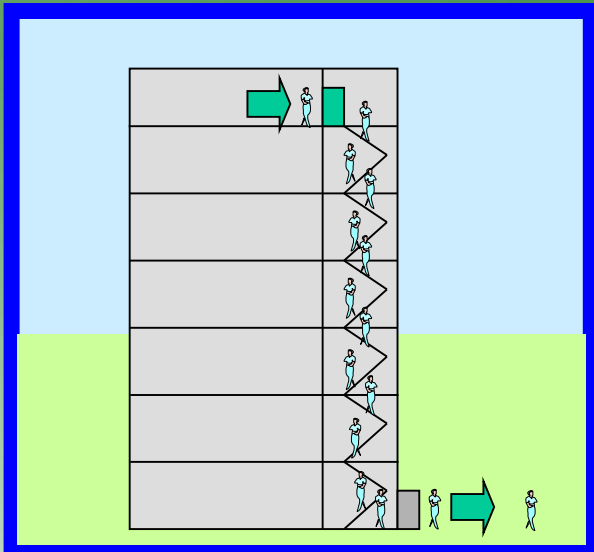
Exit Route

- ◇ A continuous and unobstructed path of exit travel from any point within a workplace to a place of safety (including refuge areas)
- ◇ Consists of three parts:
 - **Exit access**
 - **Exit**
 - **Exit discharge**
- ◇ Equivalent to the term Means of Egress in the Life Safety Code and most local building and fire codes



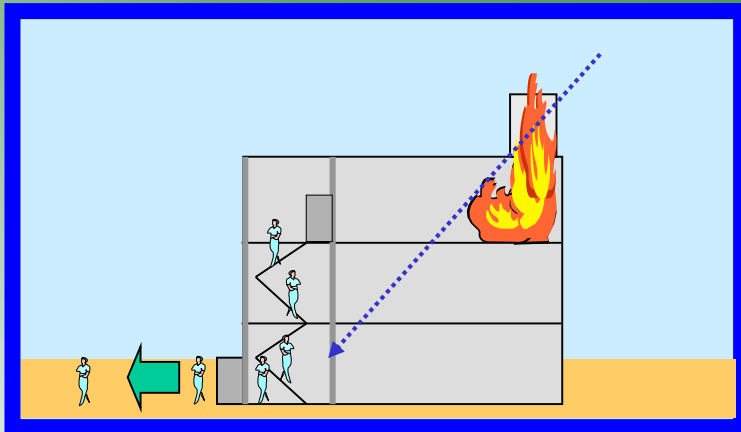
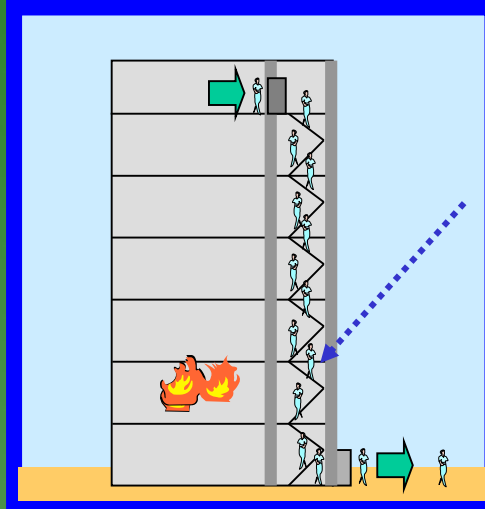
Exit Routes: Basic Requirements

- Exit routes must be permanent
 - **1910.36(a)(1)**



Exit Routes: Basic Requirements

- ◇ An exit must be separated by fire resistant materials.
 - **1910.36(a)(2)**



**One - hour
fire
resistance
- rating:
three or fewer
stories**

**Exit enclosure
Two - hour
fire
resistance –
rating for four or
more stories.**

Exit Routes: Basic Requirements

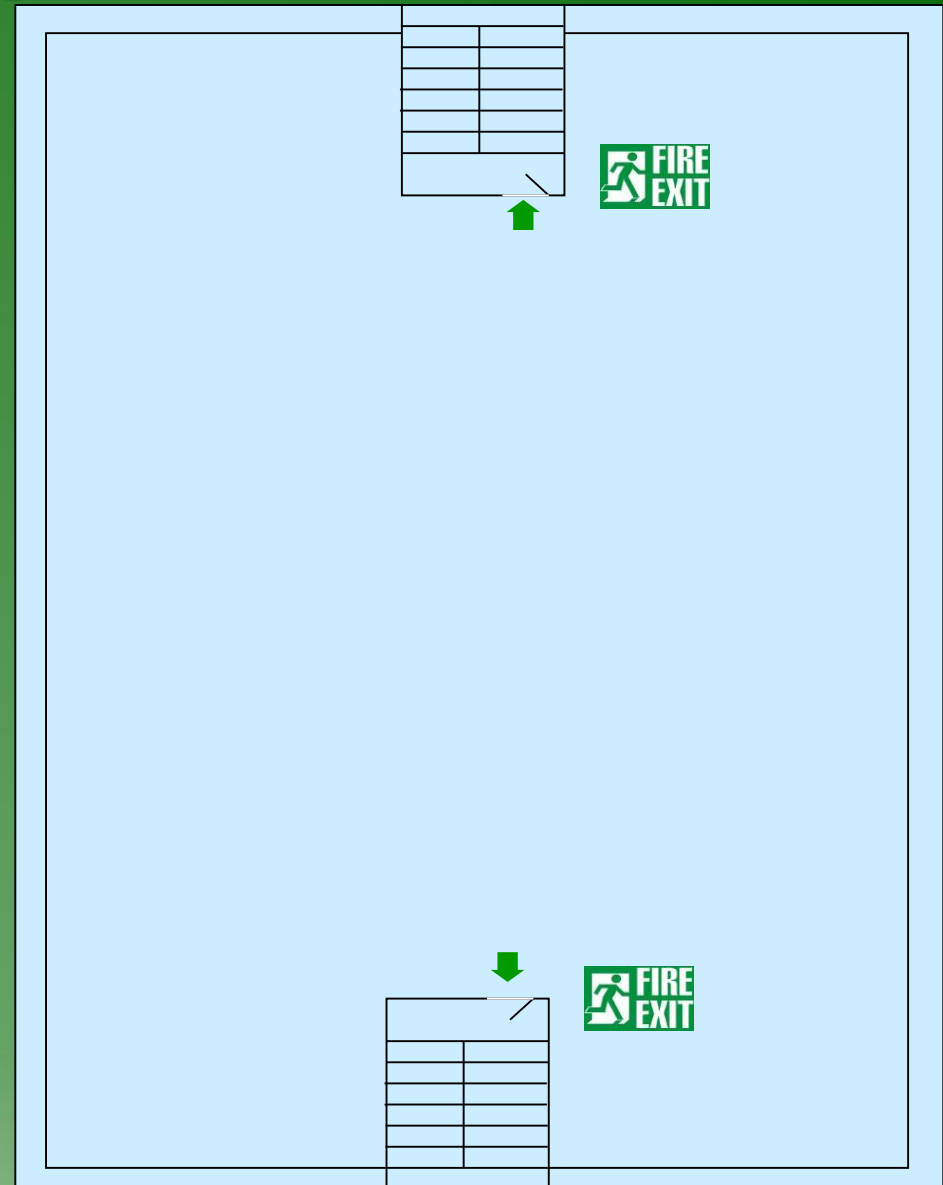
- ◇ Openings into an exit must be limited to those necessary to allow access to the exit or to the exit discharge
- ◇ An opening into an exit must be protected by an approved self-closing fire door that remains closed or automatically closes in an emergency

Protected
exit stair
tower



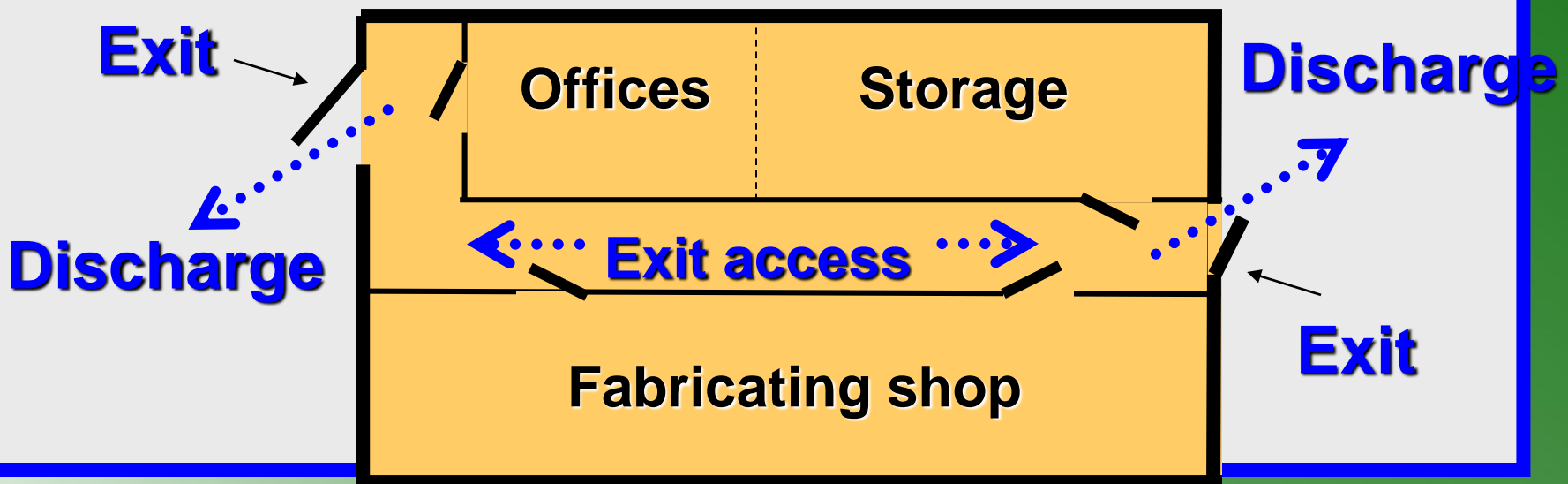
The number of exit routes must be adequate.

- ◇ Remotely located to provide options for evacuation
- ◇ Normally two or more depending on
 - the size of the building,
 - its occupancy, or
 - the arrangement of the workplace
 - 1910.36(b)



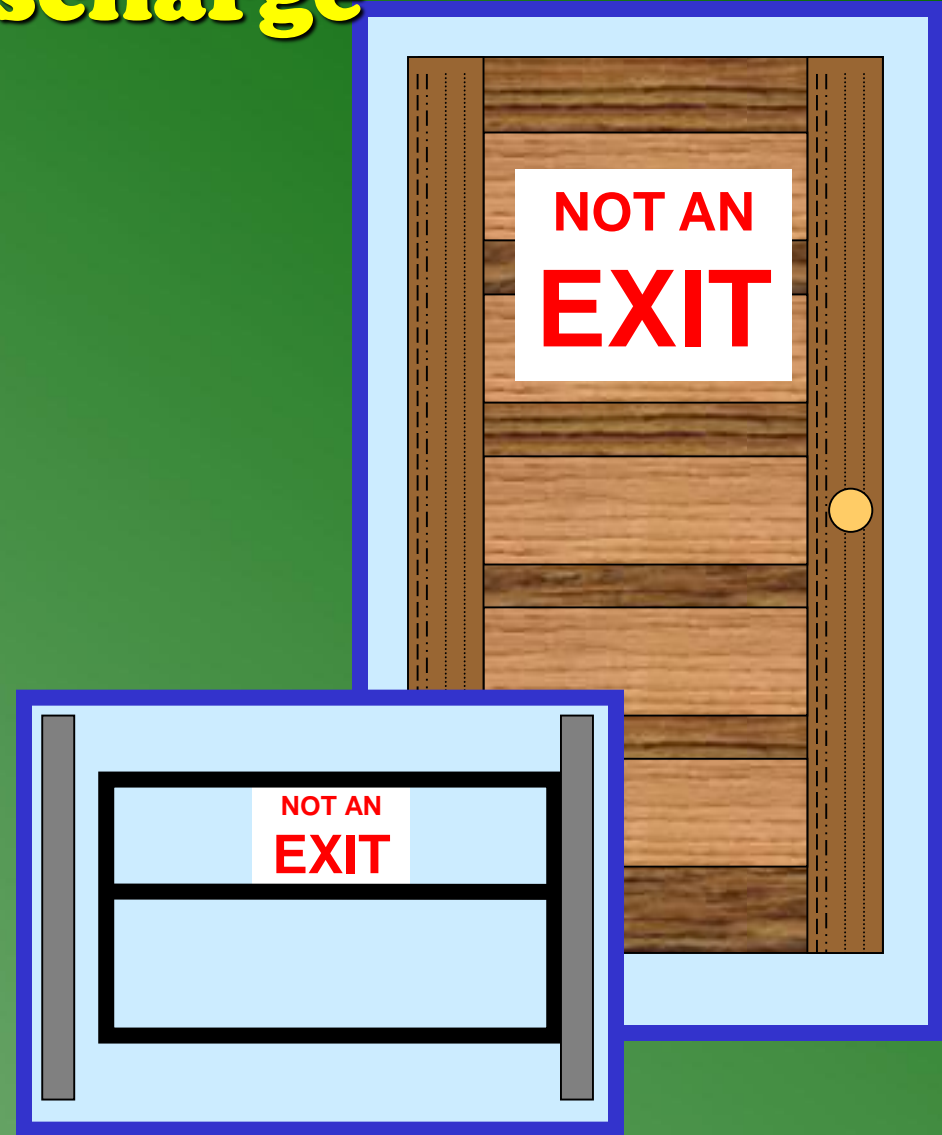
Exit discharge

- ◇ . . . must lead directly outside or to a street, walkway, refuge area, public way, or open space with access to the outside . . . (This area) must be large enough . . .



Exit discharge

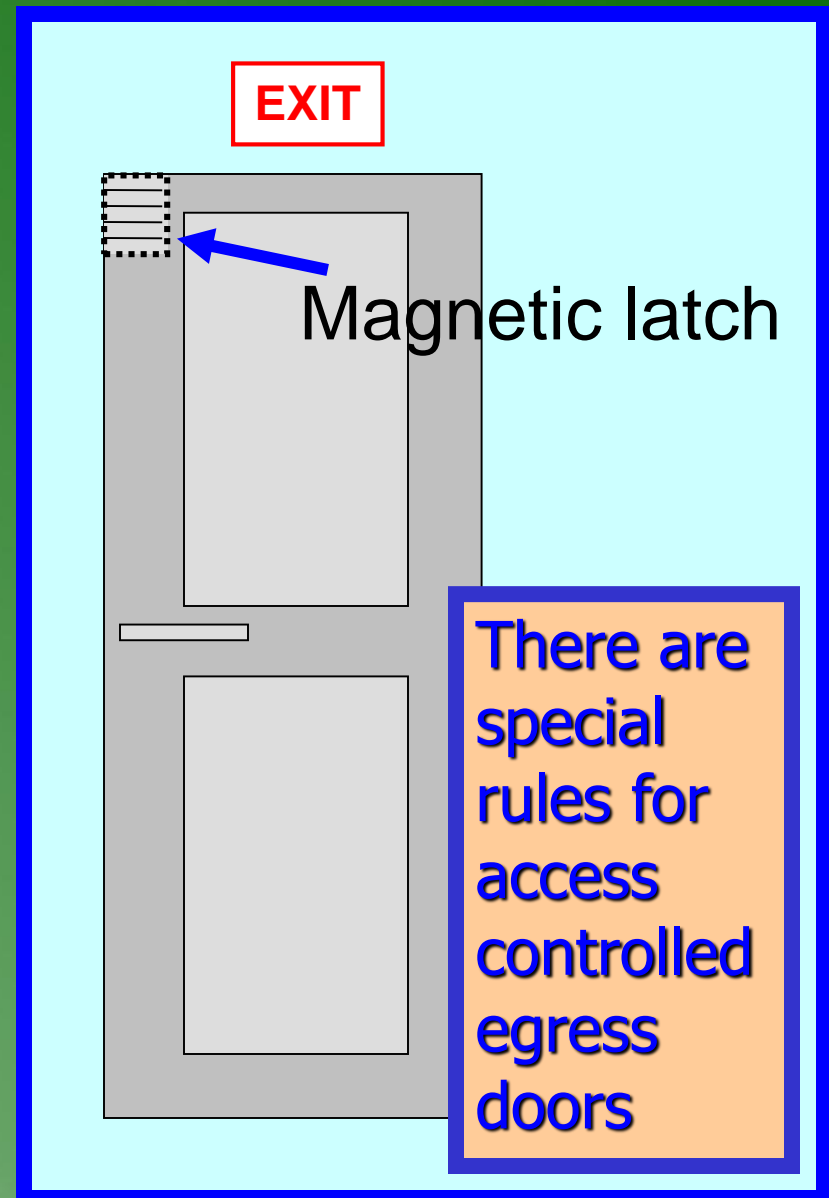
- Exit stairs that continue beyond the level on which the exit discharge is located must be interrupted at that level by doors, partitions, or other effective means that clearly indicate the direction of travel leading to the exit discharge.



Exit Doors Must Be Unlocked

- ◇ Must be able to open from the inside at all times without
 - keys,
 - tools, or
 - special knowledge
- ◇ Panic bars are permitted
- ◇ Must be free of any device or alarm that could restrict emergency use if the device or alarm fails

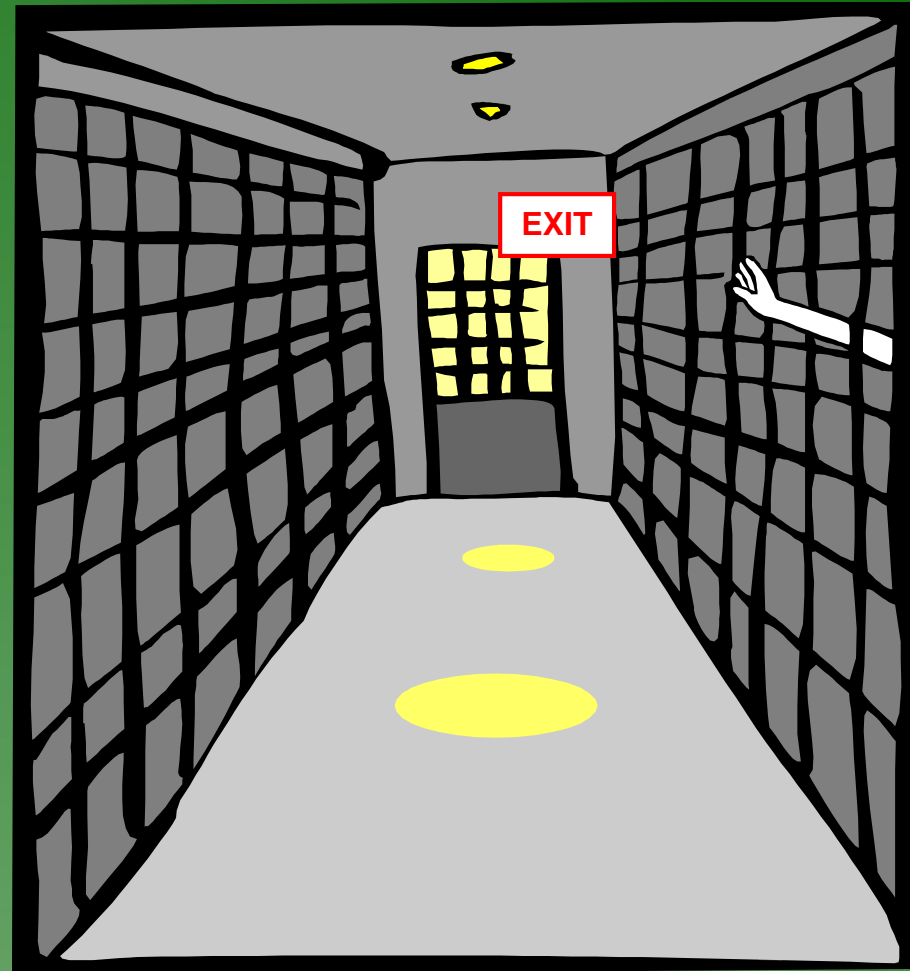
1910.36 (d)(1) and (2)



Exit Doors

- ◇ May be locked from the inside only in
 - **mental,**
 - **penal, or**
 - **correctional facilities where there is constant supervision and the employer has a plan to remove occupants from the facility during an emergency.**

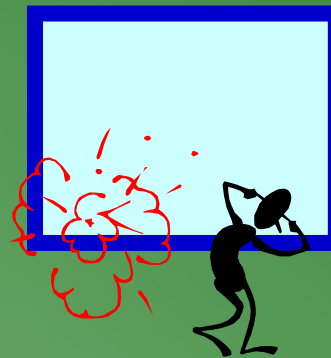
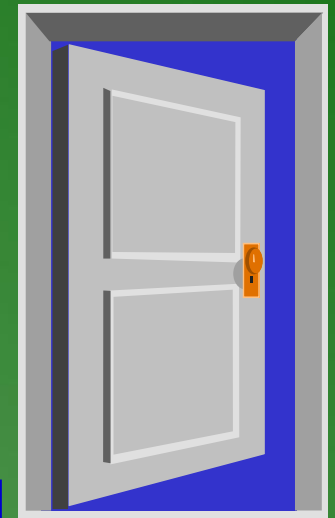
1910.36 (d)(3)



Side-Hinged Exit Door



- ◇ Must be used to connect any room to an exit route
- ◇ A door that connects any room to an exit route must swing out in the direction of exit travel if
 - **the room is designed to be occupied by more than 50 people or**
 - **contains high hazard contents**



1910.36 (e)(1) and (2)

Exit Route Capacity and Dimensions

- ◇ Must support the maximum permitted occupant load for each floor served

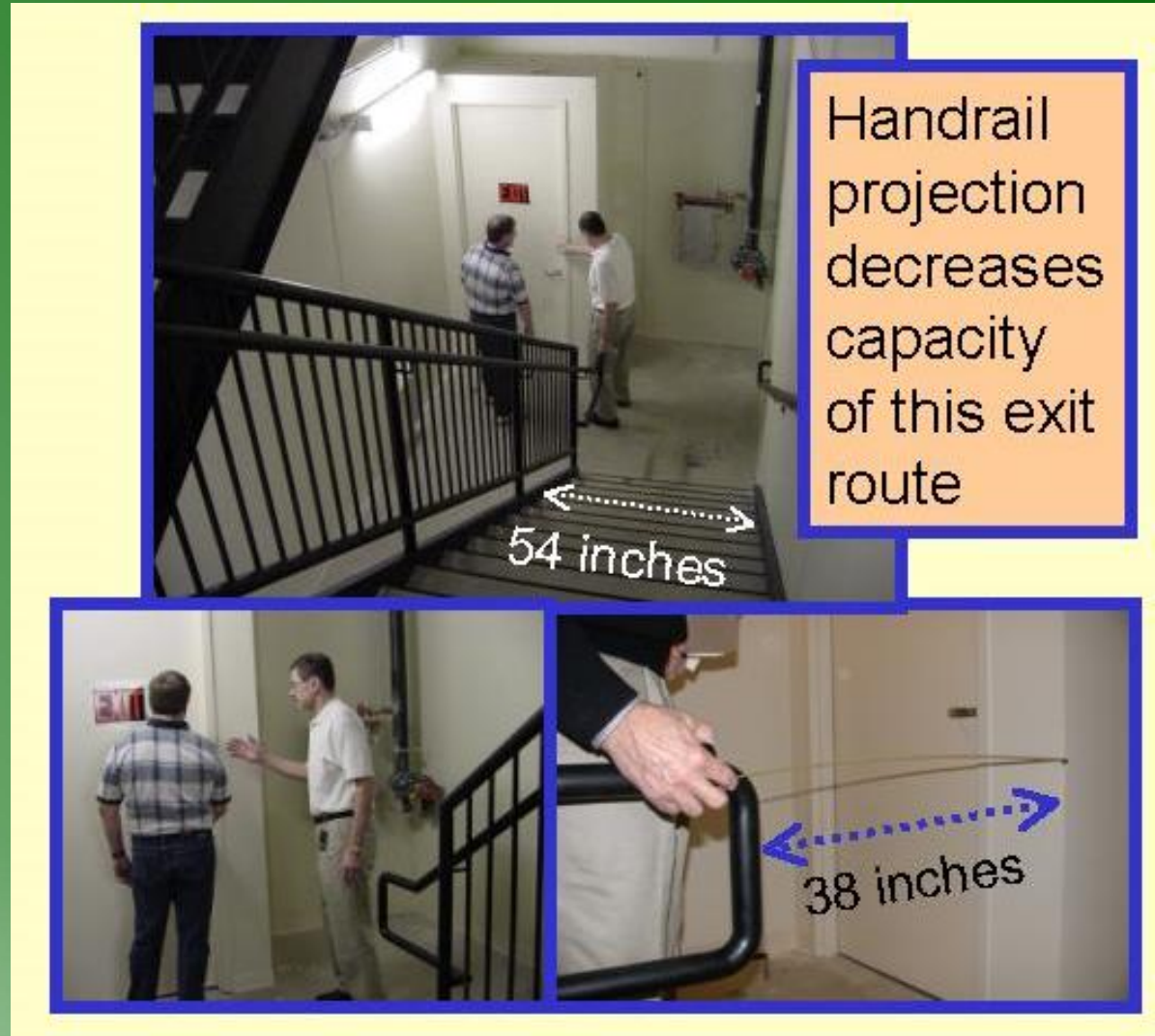
See factors for occupant load and capacity the NFPA Life Safety Code - Chapter 7

1910.36 (f)(1)



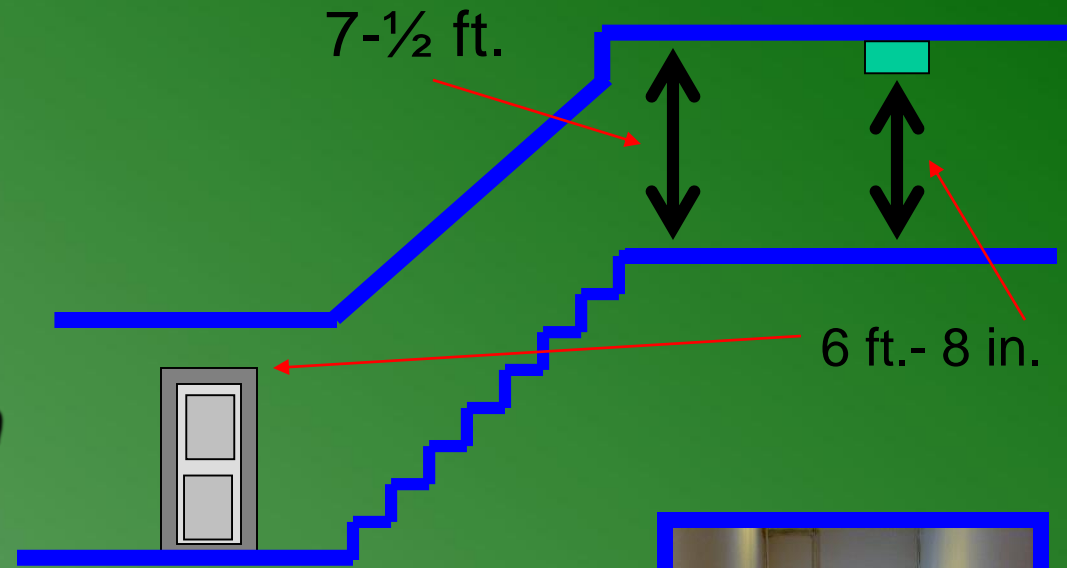
Exit Route Capacity and Dimensions

- Capacity must not decrease in the direction of exit route travel to the exit discharge



Exit Route Capacity and Dimensions

- ◇ Ceiling must be at least 7-½ ft. high with no projection reaching a point less than 6 ft.- 8 in. from floor
 - ◇ An exit access must be at least 28 in. wide at all points
- 1910.36 (g)(1) and (2)



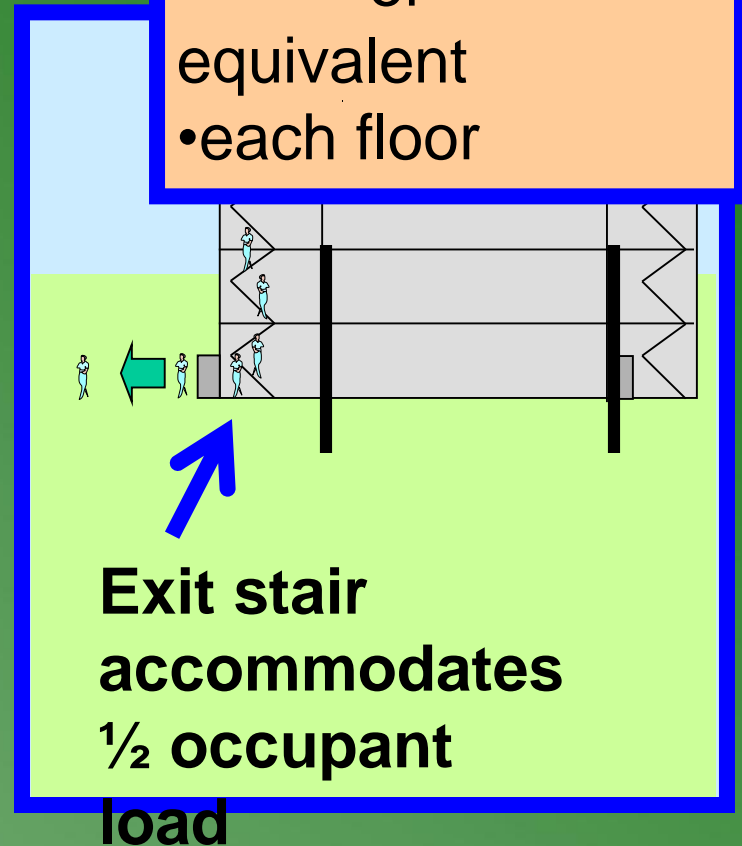
Exit Route Capacity and Dimensions

- ◇ The width of an exit route must be sufficient to accommodate the maximum permitted occupant load of each floor served by the exit route.

1910.36 (g)(3)

Occupant load:

- use and square footage or equivalent
- each floor



Exit Route Capacity and Dimensions

- ❖ Objects that project into the exit route must not reduce the width of the exit route to less than the minimum width requirements for exit routes.



Minimize Danger to Employees

- Exit routes must be kept free of explosive or highly flammable furnishings or other decorations.

1910.37 (a)(1)



Minimize Danger to Employees

- Exit routes must be free and unobstructed

1910.37 (a)(3)



Minimize Danger to Employees

Exit routes must be free and unobstructed



Exit door
locked
and
blocked

1910.37 (a)(3)

Minimize Danger to Employees

- ◇ Arrange exit routes so that employees will not have to travel toward a high hazard area, unless it is effectively shielded
- ◇ Emergency safeguards (e.g., sprinkler systems, alarm systems, fire doors, exit lighting) must be in proper working order at all times

1910.37 (a)(2) and (4)



Flammable vapors and gases
Combustible dusts
Combustible fibers or flyings
Chemical or explosives manufacturing storage or handling

Lighting and marking must be adequate and appropriate.

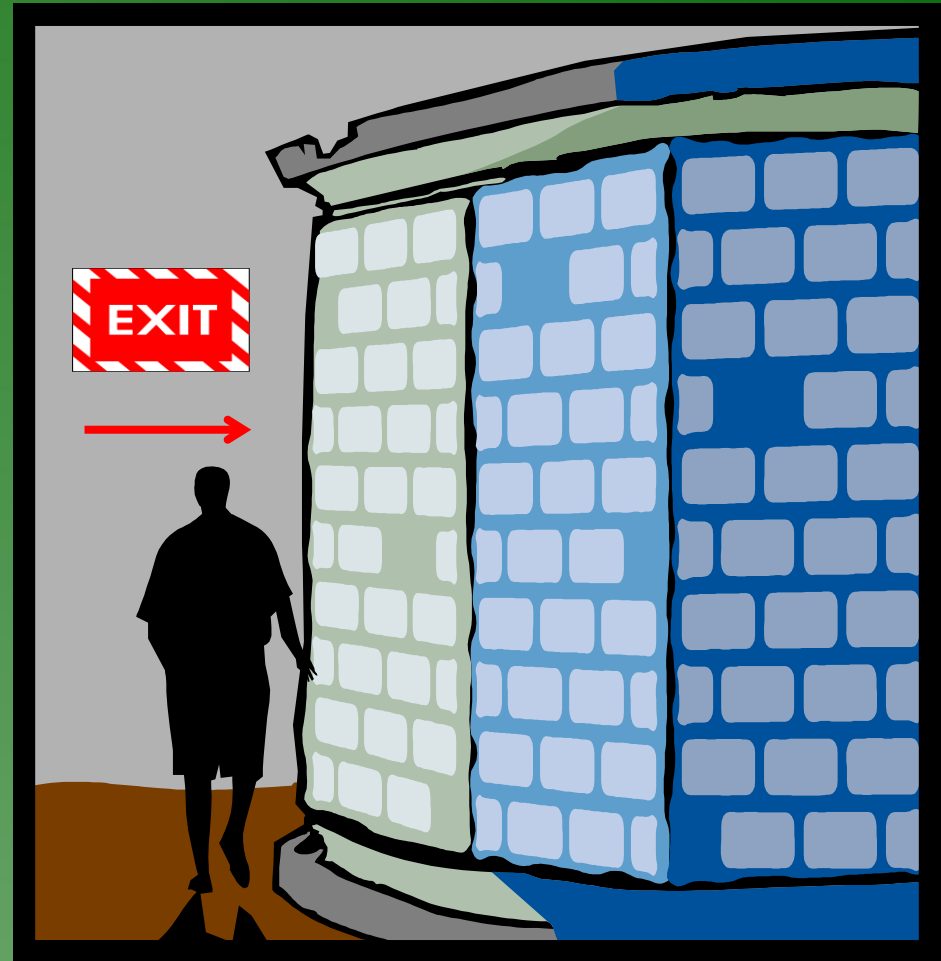
- ◇ Each exit must be clearly visible and marked with an "Exit" sign
- ◇ Each exit route door must be free of decorations or signs that obscure the visibility of the door

1910.37 (b)(1) to (3)



Lighting and marking must be adequate and appropriate.

- ◇ If the direction of travel to the exit or exit discharge is not immediately apparent, signs must be posted along the exit access indicating direction to the nearest exit
- ◇ The line-of-sight to an exit sign must clearly be visible at all times



Lighting and marking must be adequate and appropriate.

- ◇ Each doorway or passage along an exit access that could be mistaken for an exit must be marked "Not an Exit" or similar designation, or be identified by a sign indicating its actual use (e.g., closet).

1910.37 (b)(5)



Exit routes must be maintained during construction, repairs, or alterations

- ◇ ... Employees must not occupy a workplace until the exit routes ... are completed and ready for employee use ...

1910.37 (d)(1)



Exit routes must be maintained during construction, repairs, or alterations

- ◆ Employees must not be exposed to hazards of flammable or explosive substances or equipment used during construction, repairs, or alterations, that are beyond the normal permissible conditions in the workplace, or that would impede exiting the workplace.



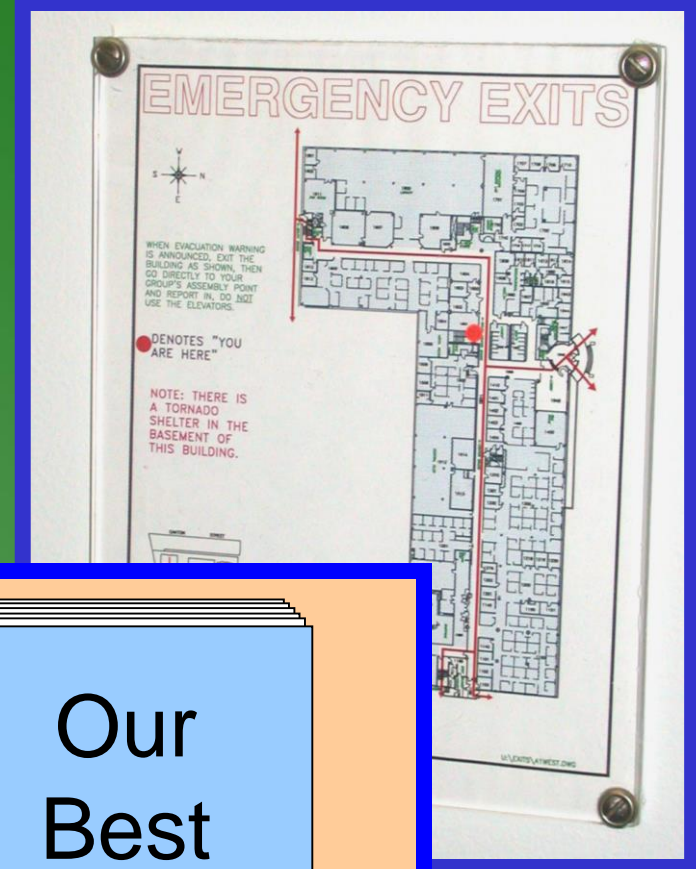
1910.37 (d)(3)



Contractor supplies stored in exit stair shafts

§ 1910.38 Emergency action plans.

- a) Application
- b) Written and oral emergency action plans.
- c) Minimum elements of an emergency action plan.
- d) Employee alarm system.
- e) Training.
- f) Review of emergency action plan.



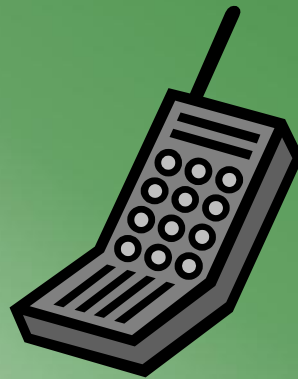
(b) Written and oral emergency action plans.

- ◇ An emergency action plan must be in writing, kept in the workplace, and available to employees for review.
- ◇ However, an employer with 10 or fewer employees may communicate the plan orally to employees.



(c) Minimum elements of an emergency action plan.

1. An emergency action plan must include at a minimum:
 - **Procedures for reporting a fire or other emergency;**



(c) Minimum elements of an emergency action plan.

2. Procedures for emergency evacuation, including type of evacuation and exit route assignments;



(c) Minimum elements of an emergency action plan.

- 3) Procedures to be followed by employees who remain to operate critical plant operations before they evacuate;



(c) Minimum elements of an emergency action plan.

4. Procedures to account for all employees after evacuation;



Verify that employees are safe.

(c) Minimum elements of an emergency action plan.

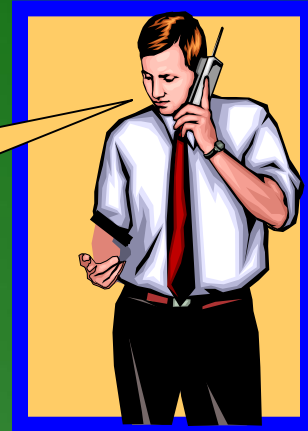
5. Procedures to be followed by employees performing rescue or medical duties; and



(c) Minimum elements of an emergency action plan.

6. The name or job title of every employee who may be contacted by employees who need more information about the plan or an explanation of their duties under the plan.

What do I do??



We do this!



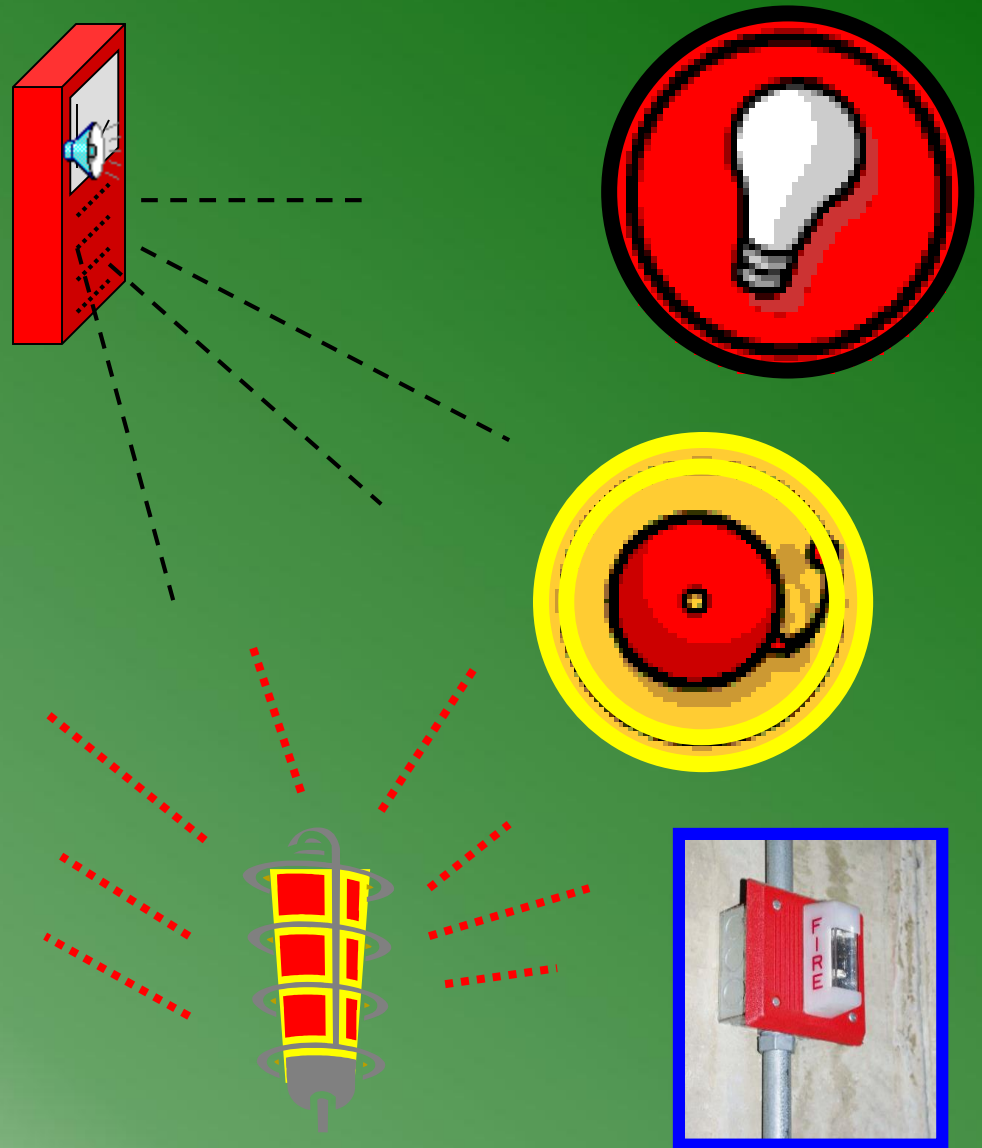
(d) Employee alarm system.

- ◇ An employer must have and maintain an employee alarm system.



(d) Employee alarm system.

- ◇ ...The employee alarm system must use a distinctive signal for each purpose and comply with the requirements in § 1910.165.



(e) Training.

- ◇ An employer must designate and train employees to assist in a safe and orderly
 - **evacuation of other employees.**



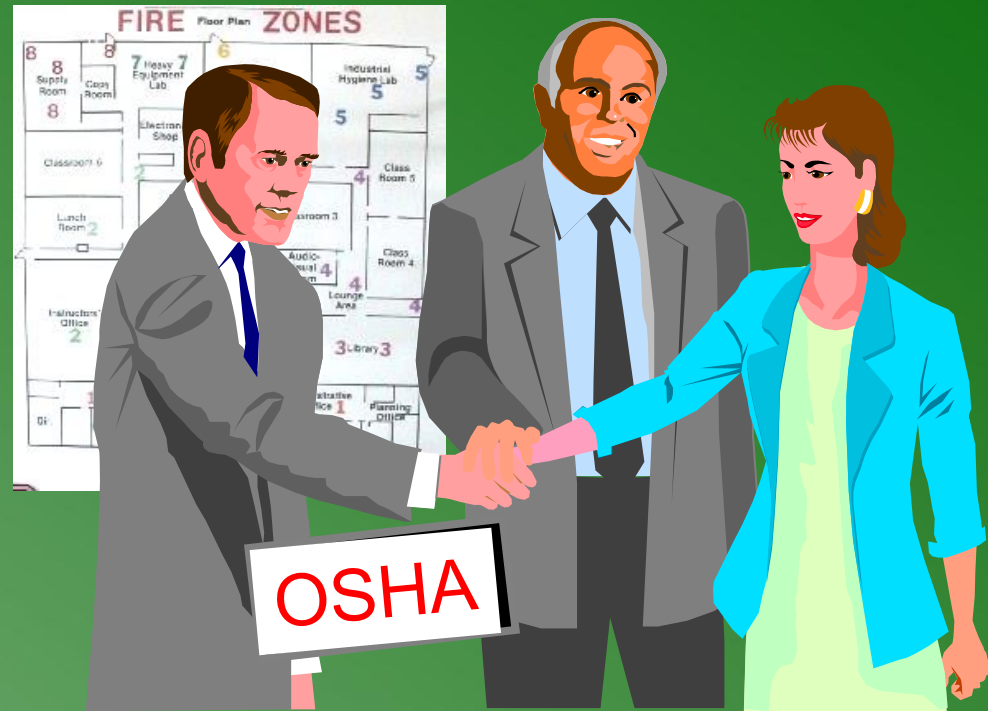
(f) Review of emergency action plan.

- ◇ An employer must review the . . . EAP . . . with each employee covered by the plan:
 1. When the plan is developed or the employee is assigned initially to a job;
 2. When the employee's responsibilities under the plan change; and
 3. When the plan is changed.



1910.38 Employee emergency plans

- ◇ Outcome:
 - **living, breathing, realistic plan**
- ◇ NOT A BOOKSHELF PLAN!!



Fire Prevention Plan

The plan must include:

- ◇ A list of the major fire hazards and handling, storage, and control procedures
- ◇ Names or job titles of persons responsible for maintenance of equipment and systems to prevent or control ignitions or fires
- ◇ Names or job titles of persons responsible for control of fuel source hazards
- ◇ Training for all employees who have responsibilities in the plan

Portable Fire Extinguishers

If portable fire extinguishers are provided for employee use, the employer must mount, locate and identify them so workers can access them without subjecting themselves to possible injury.

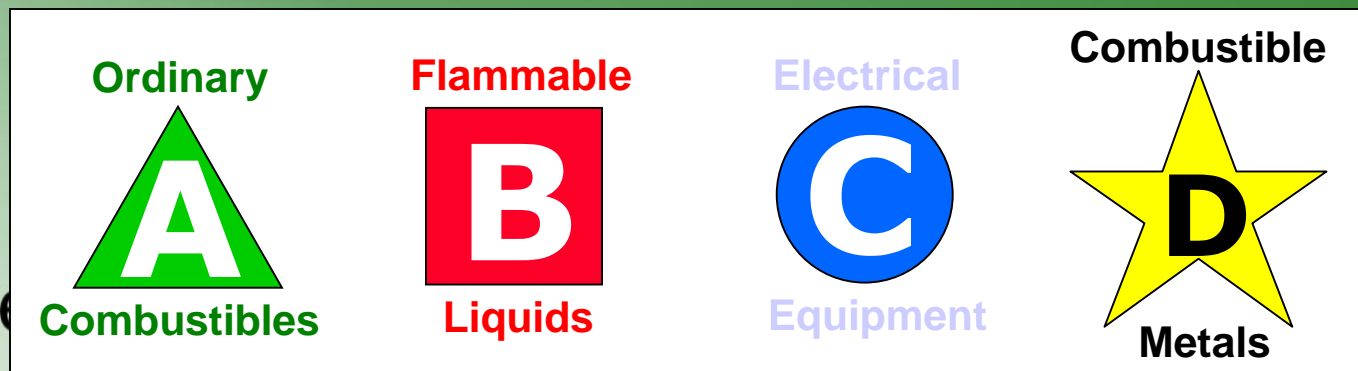


Blocked extinguisher

Extinguisher Classification

Letter classification given an extinguisher to designate the class or classes of fire on which it will be effective.

- ◇ **Class A** – ordinary combustibles (*wood, cloth, paper*)
- ◇ **Class B** – flammable liquids, gases, greases
- ◇ **Class C** – energized electrical equipment
- ◇ **Class D** – combustible metals



Extinguisher Rating

- ◇ Numerical rating given to Class A and B extinguishers which indicate how large a fire an experienced person can put out with the extinguisher
- ◇ Ratings are based on tests conducted at Underwriters' Laboratories, Inc.
 - **Class A: 1-A, 2-A, . . . 40-A**
 - **Class B: 1-B, 2-B, . . . 640-B**
- ◇ A 4-A extinguisher, for example, should extinguish about twice as much fire as a 2-A extinguisher

Maintaining Portable Fire Extinguishers

- ◇ Must maintain in a fully charged and operable condition
- ◇ Must keep in their designated places at all times except during use
- ◇ Must conduct an annual maintenance check
- ◇ Must record the annual maintenance date and retain this record for one year after the last entry or the life of the shell, whichever is less



Portable Fire Extinguisher Training and Education

- ◇ Where portable fire extinguishers have been provided for employee use in the workplace, employees must be provided with an educational program on the:
 - **General principles of fire extinguisher use**
 - **Hazards of incipient (beginning) stage fire fighting**
- ◇ Employees designated to use extinguishers must receive instruction and hands-on practice in the operation of equipment

