

# HAZARD RECOGNITION

**DAECHER**  
CONSULTING GROUP

**BUS** industry **SAFETY** council



**DETROIT**  
**ABA 2023**  
MARKETPLACE

**busworld.**  
NORTH AMERICA DETROIT

# HAZARD RECOGNITION

## Identifying Hazards

- Facility inspections
  - Accident investigations
- Use the facility inspection checklist as a guide.
  - Identify hazards in the workplace.
  - Update checklist as needed. Customize to your operation.
  - Address system not just the symptoms.
  - Prioritize and develop an action plan.

Inspector(s): \_\_\_\_\_ Date: \_\_\_\_\_

Check "X" under the Y for Satisfactory Condition observed; N for Improvement Recommended Condition observed.

Housekeeping	Yes	No	Comments
Shop appearance reasonably neat and orderly	<input type="checkbox"/>	<input type="checkbox"/>	_____
Floors/platforms free of liquids, debris and tripping hazards	<input type="checkbox"/>	<input type="checkbox"/>	_____
Work areas clear of debris, tools & parts not in use	<input type="checkbox"/>	<input type="checkbox"/>	_____
Work areas are adequately illuminated	<input type="checkbox"/>	<input type="checkbox"/>	_____
New and used batteries are properly stored	<input type="checkbox"/>	<input type="checkbox"/>	_____

Personal Protective Equipment and First Aid	Yes	No	Comments
Required PPE available and stocked	<input type="checkbox"/>	<input type="checkbox"/>	_____
PPE is clean and in good useable condition	<input type="checkbox"/>	<input type="checkbox"/>	_____
First aid and body fluid kits stocked and available	<input type="checkbox"/>	<input type="checkbox"/>	_____
Eyewash solution stocked and available	<input type="checkbox"/>	<input type="checkbox"/>	_____
Eyewash station in good condition, cleared and labeled	<input type="checkbox"/>	<input type="checkbox"/>	_____

Exits	Yes	No	Comments
Doors free and clear of obstructions; easily open outward	<input type="checkbox"/>	<input type="checkbox"/>	_____
Exit signs at each exit and illuminated by a reliable light	<input type="checkbox"/>	<input type="checkbox"/>	_____
Exit doors are not locked when the building is occupied	<input type="checkbox"/>	<input type="checkbox"/>	_____

Fire Protection	Yes	No	Comments
Extinguishers mounted, accessible and labeled	<input type="checkbox"/>	<input type="checkbox"/>	_____
Extinguishers inspected monthly	<input type="checkbox"/>	<input type="checkbox"/>	_____
Extinguishers inspected/serviced annually	<input type="checkbox"/>	<input type="checkbox"/>	_____
Is the maximum travel distance between extinguishers 75'	<input type="checkbox"/>	<input type="checkbox"/>	_____
Emergency lighting available and operational	<input type="checkbox"/>	<input type="checkbox"/>	_____

Location Safety	Yes	No	Comments
Adequate lighting for vehicles/parking	<input type="checkbox"/>	<input type="checkbox"/>	_____
Location is free of potholes and ruts	<input type="checkbox"/>	<input type="checkbox"/>	_____
Speed limit posted and followed	<input type="checkbox"/>	<input type="checkbox"/>	_____

Flammable and Combustible Materials	Yes	No	Comments
All chemical containers in shop correctly labeled	<input type="checkbox"/>	<input type="checkbox"/>	_____
Flammable & combustible materials stored properly	<input type="checkbox"/>	<input type="checkbox"/>	_____
Oily rags/combustible materials stored in covered containers	<input type="checkbox"/>	<input type="checkbox"/>	_____
"Open top" containers emptied after use	<input type="checkbox"/>	<input type="checkbox"/>	_____
Dispensing drums of flammables are bonded and grounded	<input type="checkbox"/>	<input type="checkbox"/>	_____
Chemical inventory list and SDS book available and updated	<input type="checkbox"/>	<input type="checkbox"/>	_____

# WALKING AND WORKING SURFACES

## Housekeeping

- Obstructions, clutter, hazards, etc.



All places of employment, aisles, storerooms, etc. kept clean, orderly and in a sanitary condition.

## Fall Protection

Provide fall protection for open sided floor or platform above 4 feet

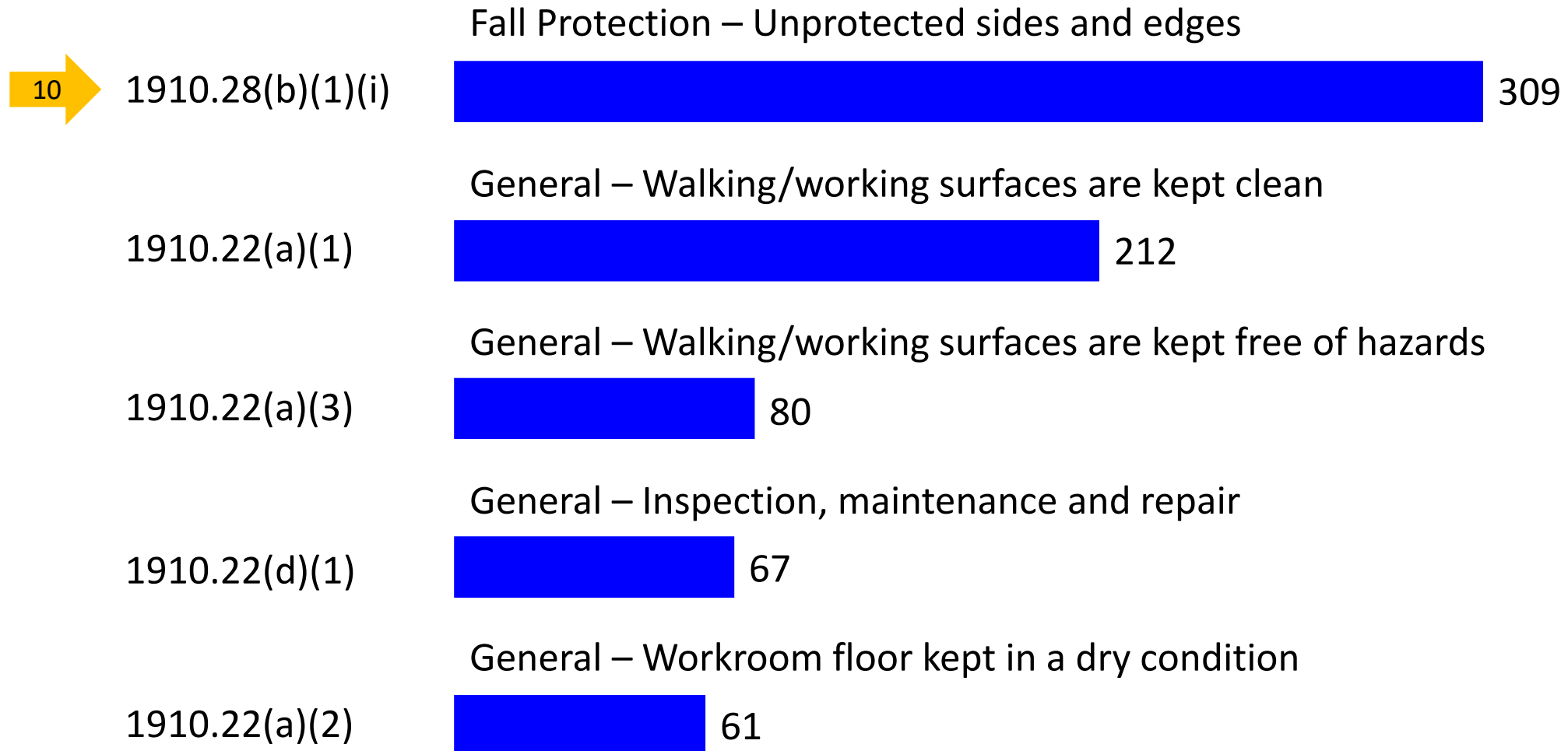
- A toeboard required when falling material could create a hazard



Provide covers, netting or railings for pits and/or cover when not in use.

# WALKING AND WORKING SURFACES

## Walking and Working Surfaces [1910.21 - .30]



Number of Serious Violations



# EMERGENCY ACTION AND FIRE PREVENTION

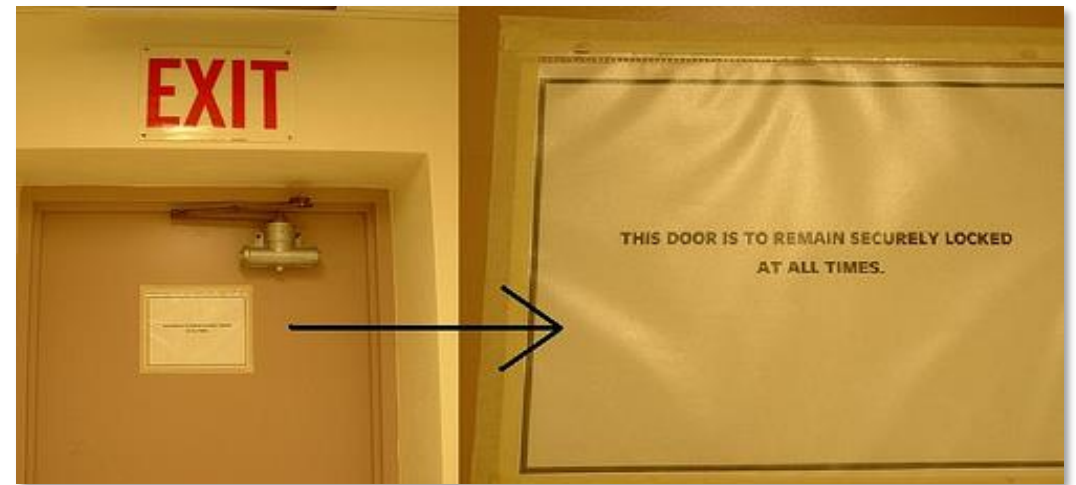
## Means of Egress



Free and unobstructed

Able to open at all times  
without keys, tools or  
special knowledge

## Exit Doors



# EMERGENCY ACTION AND FIRE PREVENTION

## Exit Markings

- Clearly visible and marked “Exit”
- If direction of exit is not immediately apparent, signs posted indicating direction
- Doorways along an exit access labeled



- Exit signs illuminated by a reliable source.
- Externally and internally illuminated signs visible in both normal and emergency light mode.

## Exit Lighting

Periodic testing of emergency lighting

- 30 second (monthly) and 90-minute (annual) testing



Diagnostic LED which illuminates to convey test results



Self-diagnostic equipment can be setup to automatically perform routine tests. A visual inspection is still required.



# EMERGENCY ACTION AND FIRE PREVENTION

## Fire Extinguishers and Fire Protection



Blocked



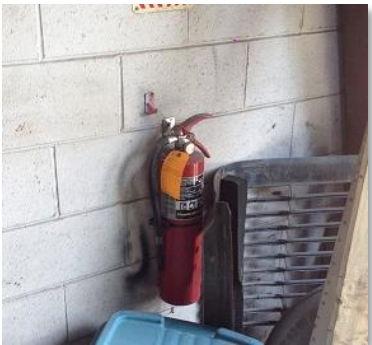
Un-mounted



Unmarked



Annual inspections



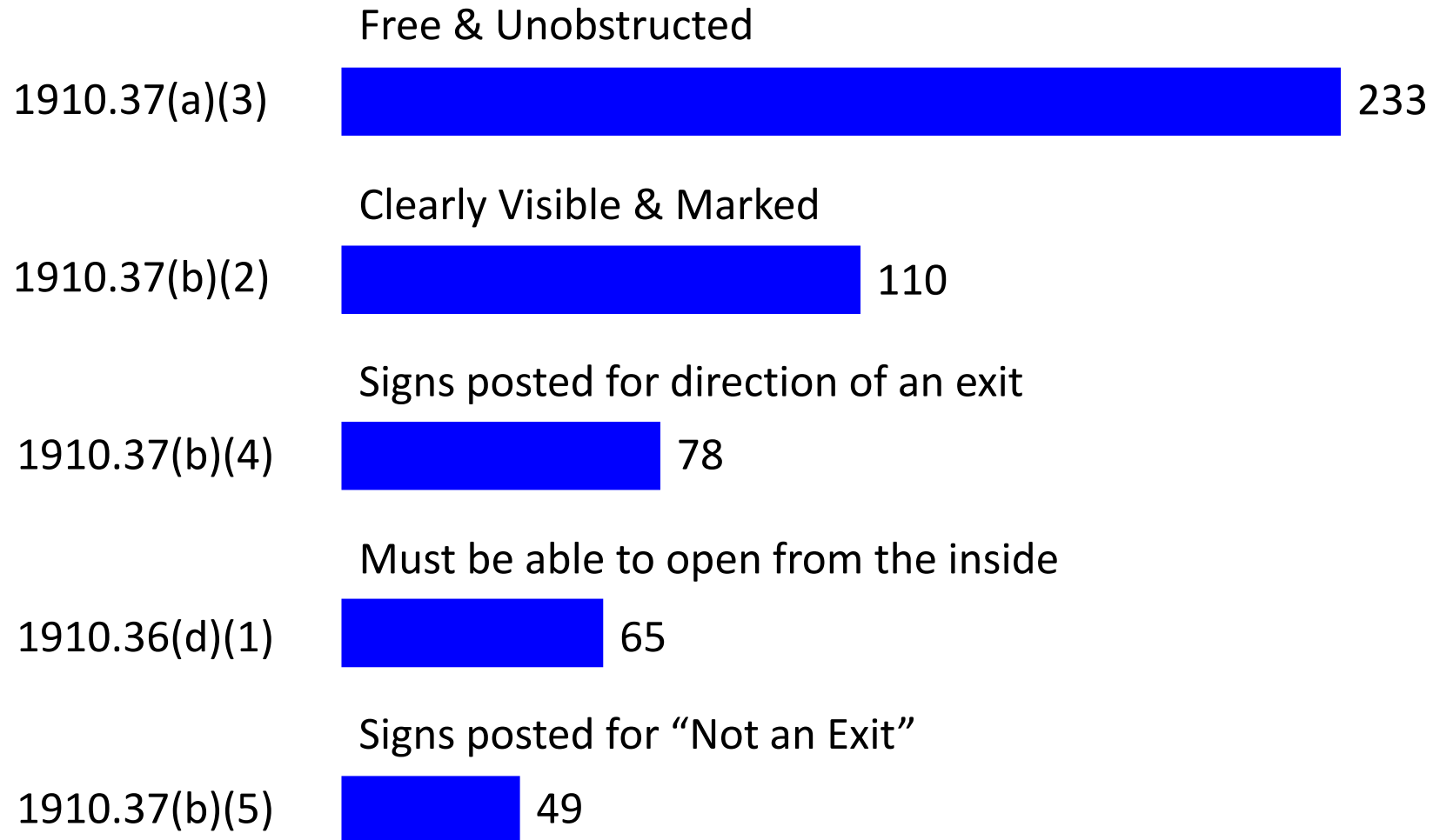
Inspections (annual/monthly)



Blocked sprinkler heads

# EMERGENCY ACTION AND FIRE PREVENTION

## Exit Routes and Emergency Planning [1910.33 - .39]

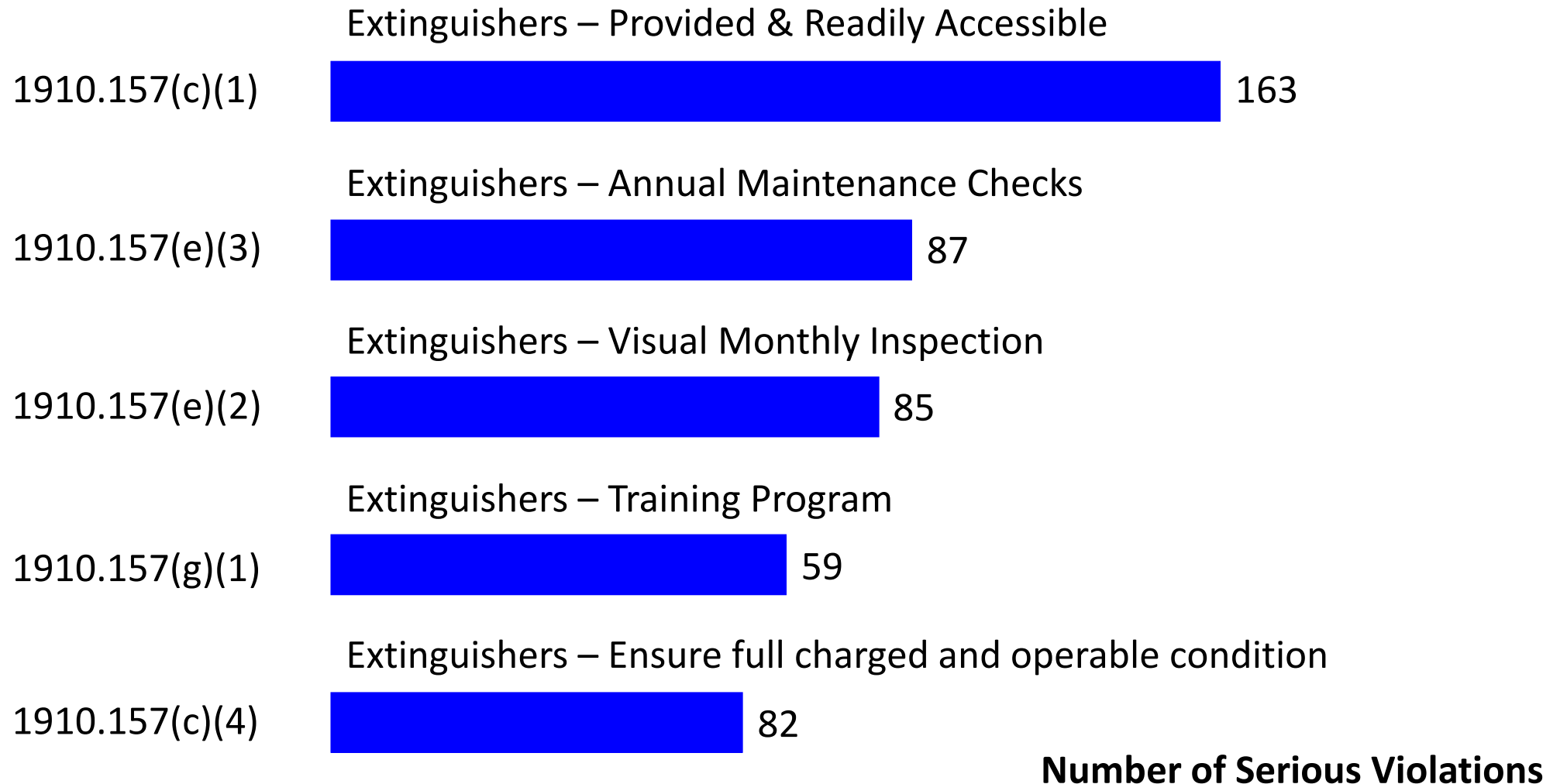


Number of Serious Violations






# EMERGENCY ACTION AND FIRE PREVENTION

## Fire Protection [1910.155 - .165]



# EMERGENCY ACTION AND FIRE PREVENTION

## Medical and First Aid [1910.151 - .152]

	Medical & First Aid – Eye and/or body washing facilities provided	
1910.151(c)		297
	Medical & First Aid – First aid training & supplies readily available	
1910.151(b)		23
	Medical & First Aid – Medical personnel advice & consultation	
1910.151(a)		3

Number of Serious Violations

# HAZARDOUS MATERIALS

## Chemical Storage and Labeling



Flammable Storage Cabinets



Unlabeled chemical containers

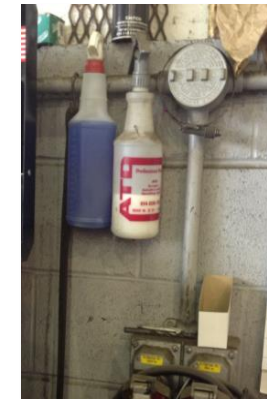
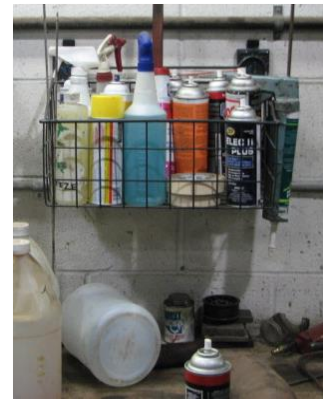


Storage tanks and labeling

### Ingestion (Swallowing):



This product may be harmful or fatal if swallowed. This product may cause nausea, vomiting, diarrhea and restlessness. Do not induce vomiting. Do not give anything by mouth because this material can enter the lungs and cause severe lung damage. If victim is unconscious or drowsy, place on the left side with the head down. Seek immediate medical attention.

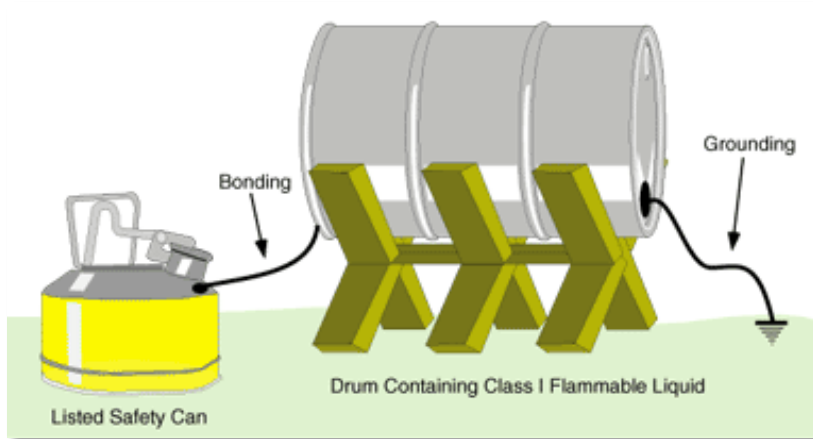


Control quantities outside of storage area and cabinets

# HAZARDOUS MATERIALS

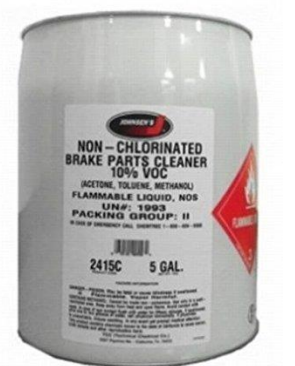
## Dispensing Flammable Liquids

- Bonding and grounding



**Category 1 or 2 flammable liquids or category 3 flammable liquid with a flashpoint below 100 °F**

- GHS Category: 1, 2 or 3
- NFPA Rating: 3 or 4
- HMIS Rating: 3 or 4





# HAZARD MATERIALS



# HAZARDOUS MATERIALS





# HAZARDOUS MATERIALS

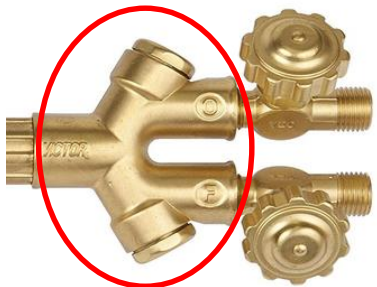
## Compressed Gas Cylinders



Backflow Valves



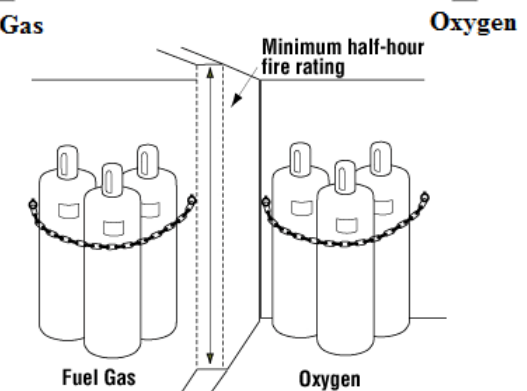
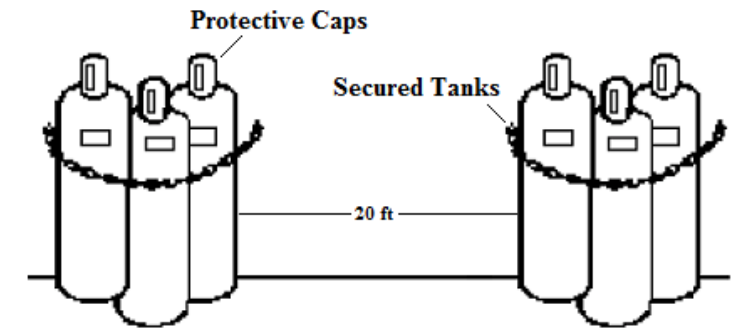
Flashback Arrestors



Unsecured cylinders



Missing Valve Caps



# HAZARDOUS MATERIALS

Can you spot the hazards?



High Voltage

Oxygen

- Unsecured
- Missing Caps

Acetylene

- Unsecured
- Missing Caps



Flammable Liquid



# HAZARDOUS MATERIALS

## Compressed Gas Cylinders



Safe work practices



# HAZARDOUS MATERIALS

## Compressed Gas Cylinders

Tanks stored with relief valve in communication with vapors



**Incorrect storage**








**Correct storage**



Propane tank storage






# HAZARDOUS MATERIALS

## Hazardous Materials [1910.101 - .126]

	Compressed Gases – Handling, storage and Use	
1910.101(b)		72
	Flammable Liquids – Shall not be dispensed unless bonded & grounded	
1910.106(e)(6)(ii)		28
	Process System Management – Employer shall document the equipment	
1910.119(d)(3)(ii)		28
	Process System Management – Written procedures	
1910.119(j)(2)		24
	Flammable Liquids – Prevent the ignition of flammable vapors	
1910.106(e)(6)(i)		21
Number of Serious Violations		

# HAZARDOUS MATERIALS

## Welding, Cutting & Brazing [1910.251 - .255]

	Oxygen cylinders stored away from fuel-gas cylinders	
1910.253(b)(4)(iii)		80
	General – Protection from arc welding ray	
1910.252(b)(2)(iii)		41
	Cylinder storage inside buildings (location)	
1910.253(b)(2)(ii)		33
	Arc Welding & Cutting – Damaged cables shall be replaced	
1910.254(d)(9)(iii)		20
	Oxygen cylinder storage next to combustibles	
1910.253(b)(4)(i)		18

Number of Serious Violations

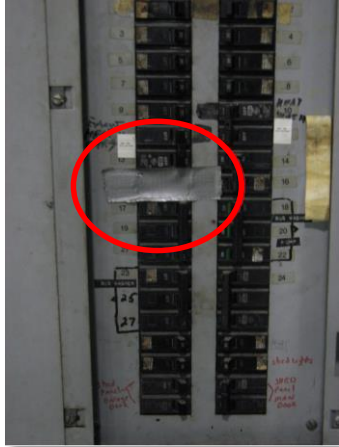


# ELECTRICAL

## Electrical Panels



Inserts missing inside panel box



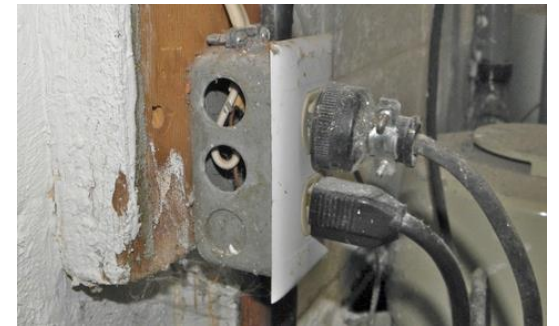
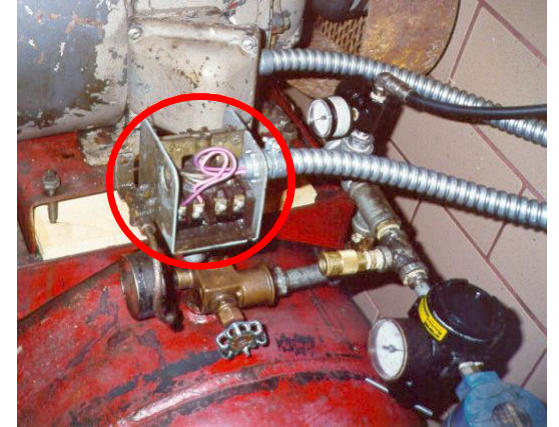
Labeled circuits



Blocked electrical panels and switches



## Covers, Faceplates & Openings



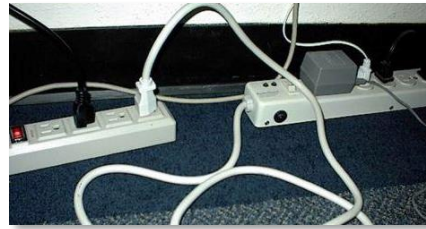
Outlets, junction boxes and fittings must have cover, faceplate or fixture canopy



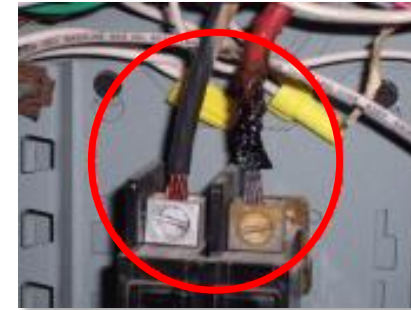


# ELECTRICAL

## Wiring and Damaged Electrical Equipment



"daisy chaining"



Damaged cords and equipment



Overloaded outlet



Removing the ground



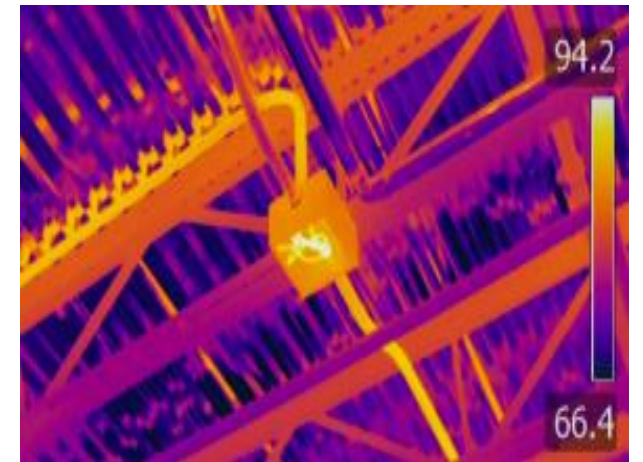
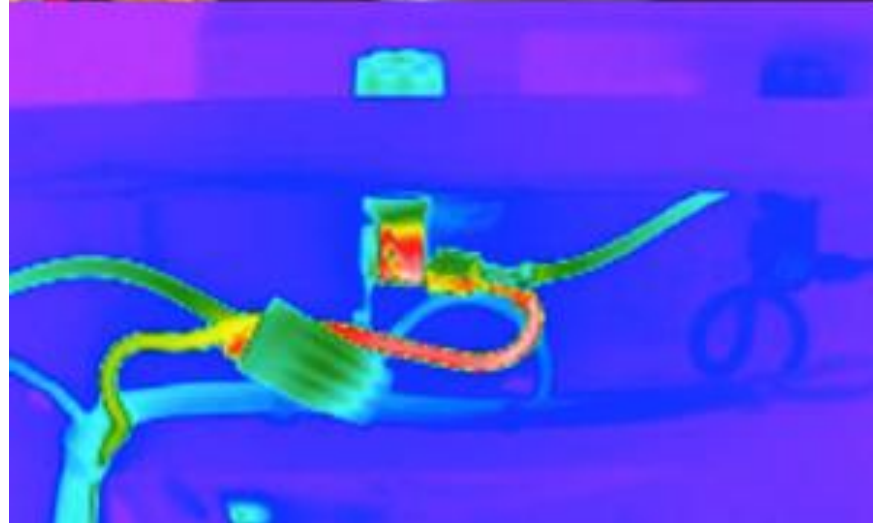
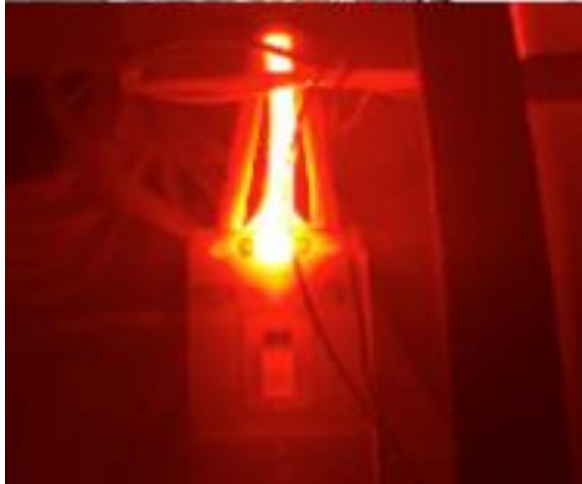
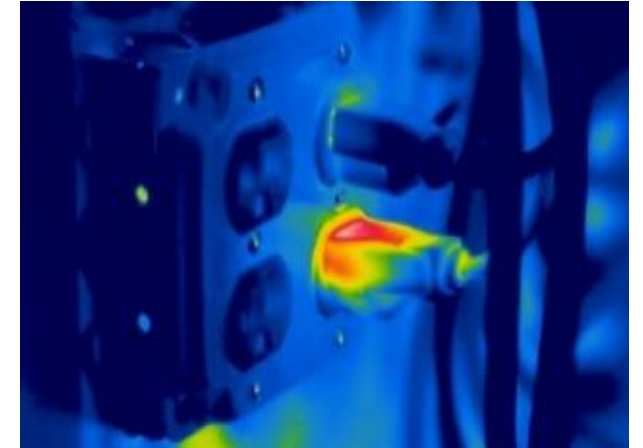
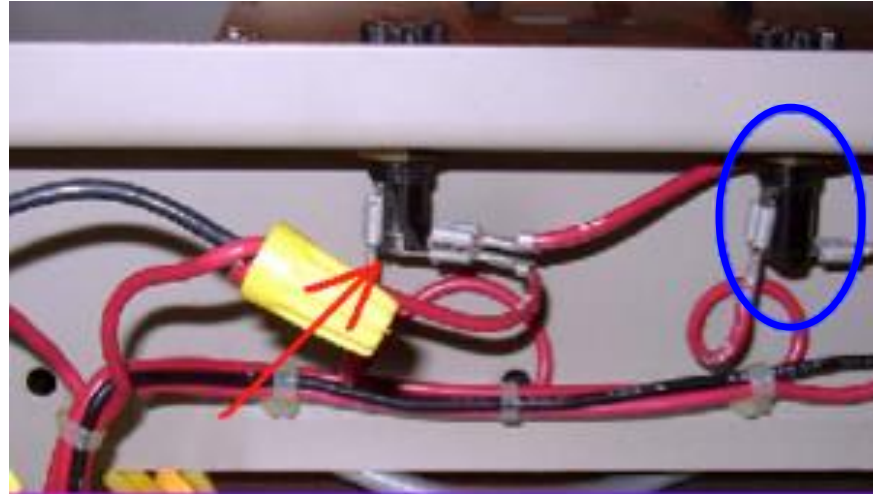
- Temporary wiring only during periods of repair, construction, remodeling, or demolition.
- Not to be used as a substitute for fixed wiring of a structure.



Spliced electrical cords






# ELECTRICAL

## Wiring and Damaged Electrical Equipment



# ELECTRICAL

## Electrical [1910.301 - .399]

	General – Proper installation & use of equipment	
1910.303(b)(2)		275
	Wiring Methods – Flexible cords used as fixed wiring	
1910.305(g)(1)(iv)(A)		171
	General – Space about electrical equipment	
1910.305(g)(1)		158
	Wiring Methods – Flexible cord strain relief	
1910.305(g)(2)(iii)		146
	Wiring Method – Boxes and fittings shall be provided with covers	
1910.303(b)(2)(i)		117

**Number of Serious Violations**



# VEHICLE LIFTS



## Vehicle Lift Safety

- Certified Automotive Lift (Gold Label)
- Qualified Operator Training
- Automotive Lift Safety Tips Placard
- Safety/Warning Decals
- Vehicle Lift Inspections
  - Pre-use
  - Periodic (annual)



# WHEEL RIM MAINTENANCE



# FORKLIFT OPERATIONS

## BLS Estimates

- 85 fatalities per year
- 34,900 serious injuries per year
- 61,800 non-serious injuries per year

## Accidents resulting in fatalities

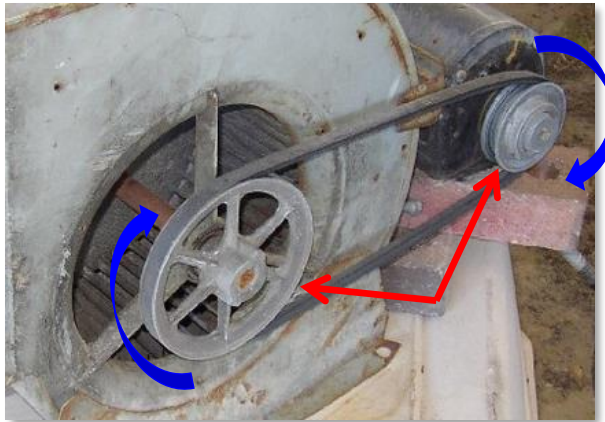
- 42% tip overs
- 25% crushed between vehicle and an object
- 11% crushed between two vehicles
- 10% struck or run-over
- 8% struck by falling material
- 4% fall from a platform on forks



# MACHINERY AND MACHINE GUARDING

## Machine Hazards

- Point of operation
- Power transmission equipment
  - Flywheels, pulleys, sprockets & chains, etc.
- Moving parts



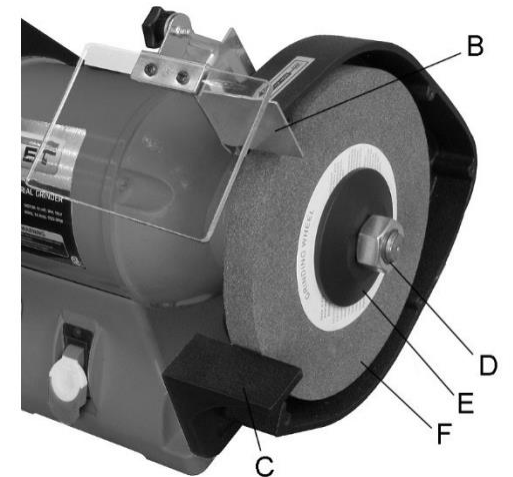
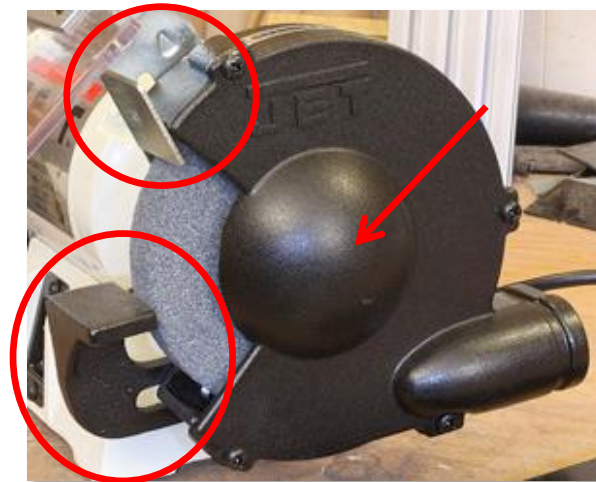
In-running nip points



Point of operation

## Bench Grinder (abrasive wheel)

- Work rest adjusted to 1/8" of wheel
- Tongue guard adjusted to 1/4" of wheel
- Side guards must cover flange, spindle end and nut



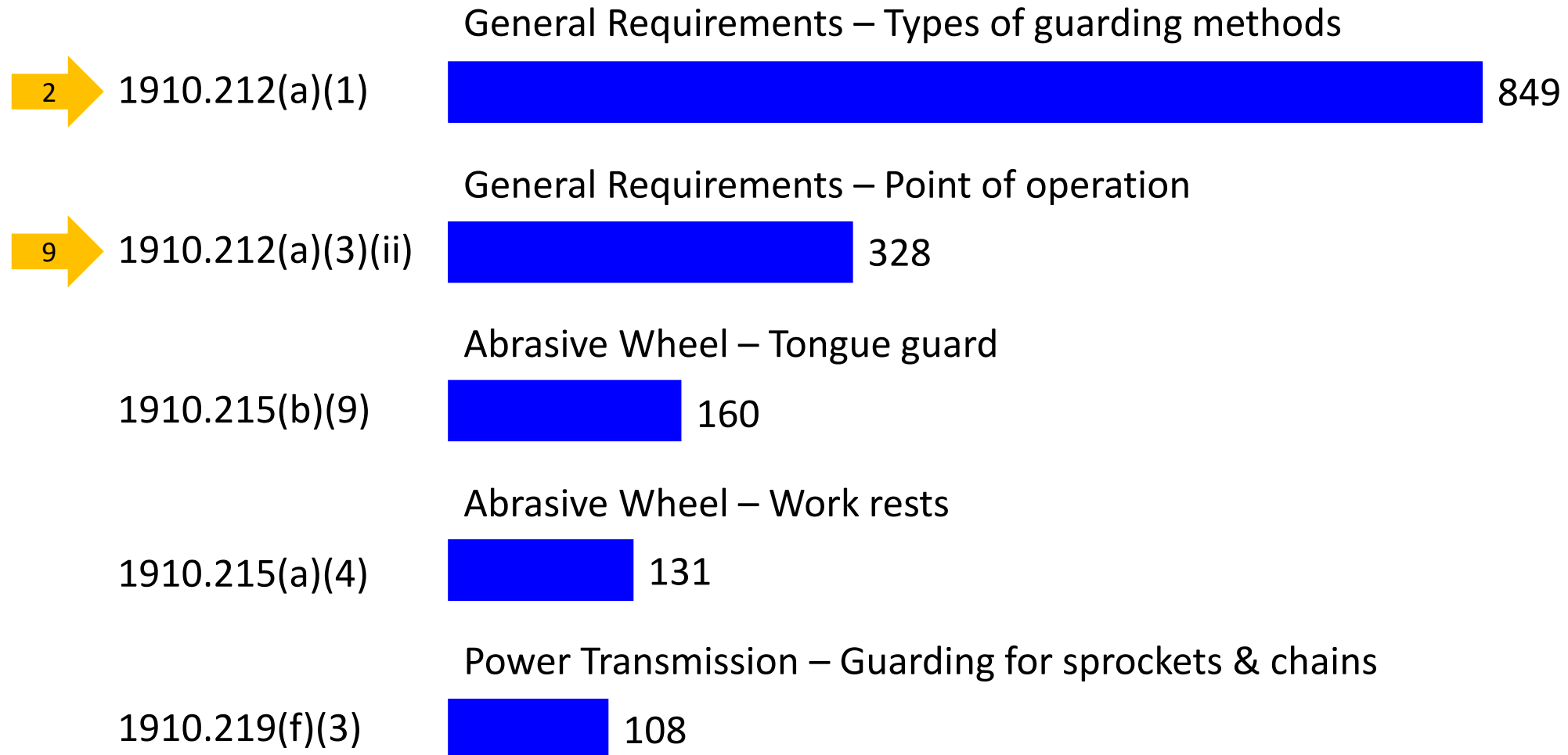


# MACHINERY AND MACHINE GUARDING



# MACHINERY AND MACHINE GUARDING

## Machinery and Machine Guarding [1910.211 - .219]

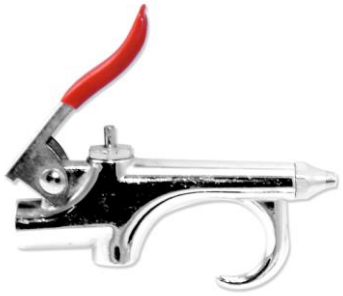


Number of Serious Violations

# HAND AND POWER TOOLS

## Compressed Air

When pressurized air greater than 30 psi is used for cleaning, the nozzle needs a pressure relief device that limits 30 psi



Male end tips



Safety nozzles

## Damaged Tools and Equipment





# HAND AND POWER TOOLS

## Other Hand-Held Equipment

### Jacks and Jack Stands



Place damaged or defective equipment out of service








Legible capacity labels





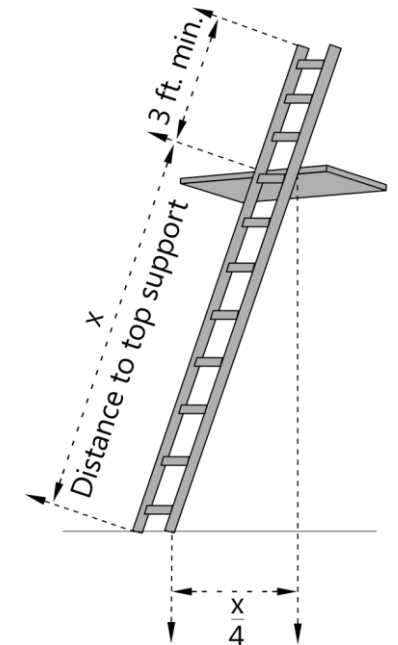
# HAND AND POWER TOOLS

## Hand and Power Tools [1910.241 - .244]

	General – Compressed air for cleaning	
1910.242(b)		143
	Guarding of powered tools – abrasive wheels shall be guarded	
1910.243(c)(1)		29
	Vertical portable grinders shall be guarded	
1910.243(c)(3)		16
	General – Condition of tools & equipment	
1910.242(a)		15
	Rated load shall be legible and permanent on jack	
1910.244(a)(1)(ii)		10

Number of Serious Violations

# PORTABLE LADDERS





# PERSONAL PROTECTIVE EQUIPMENT

## Personal Protective Equipment

- Damaged? Usable? Stocked? Available? Proper?



# PERSONAL PROTECTIVE EQUIPMENT





# QUESTIONS

## Contact Information

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**DAECHER**  
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