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OSHA FOCUS 4 – ACEC REFRESHER

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Course Outline Fall Hazards

- **Introduction to the OSHA Focus 4**
  - Section Framework
    - » Injury Metrics
    - » Workplace Risk Awareness
    - » Control Solutions and Systems
- **Fall Hazards**
- **Caught - In or - Between Hazards**
- **Struck By Hazards**
- **Electrocution**
- **Review & Questions**

What are the OSHA Focus 4

- Four main hazard types
- Both worker and community at risk
- Simple maintenance work

Falls

Caught-In or -Between

Struck-By

Electrocution

Fall Hazards

Fall Hazards

OSHA's Top 10 Most-Cited Safety Violations of 2023

Standard (Standard Number) – Violations

1. Fall Protection – General Requirements (1926.501) – 7,271
2. Hazard Communication (1910.1200) – 3,213
3. Ladders (1926.1053) – 2,978
4. Scaffolding (1926.451) – 2,859
5. Powered Industrial Trucks (1910.178) – 2,561
6. Lockout/Tagout (1910.147) – 2,554
7. Respiratory Protection (1910.134) – 2,481
8. Fall Protection – Training Requirements (1926.503) – 2,112
9. Personal Protective and Lifesaving Equipment – Eye and Face Protection (1926.102) – 2,074
10. Machine Guarding (1910.212) – 1,644

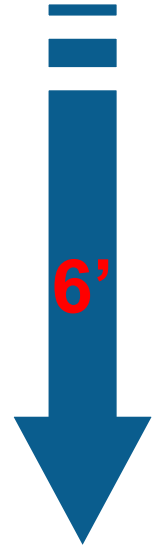
In 2024 OSHA's maximum penalties for serious and other-than-serious violations will increase from $15,625 per violation to $16,131 per violation. The maximum penalty for willful or repeated violations will increase from $156,259 per violation to $161,323 per violation.

Fall Hazards

OSHA §1926 Subpart M

Where workers on a construction site exposed to vertical drops of 6 feet or more, OSHA requires that employers provide fall protection in one of three ways before work begins:

1) General Fall Types
2) Conventional Fall Protection
3) Other Work Methods
4) Alternative Fall Protection



OSHA § 1910.28(b)(1)(i)

Except as provided elsewhere in this section, the employer must ensure that each employee on a walking-working surface with an unprotected side or edge that is 4 feet (1.2 m) or more above a lower level is protected from falling by one or more of the following:

Fall Types

Falls on a single level

Falls or trips on a single working level. Uneven paths or debris are common trigger. Worn footwear or footwear with an incompatible tread. You can control these fall hazards by maintaining clear footways, requiring specific shoe tread, and implementing passive fall protection systems like handrails, enclosed ladders, and catwalks.

Falls to a lower level

Falls from an elevated to a lower level. Falling off a roof or falling off the top of a vehicle. Most fall-related injuries and deaths result from these types of falls.

Swing Falls

Swing falls occur when a worker in a fall arrest system falls from an elevated level, and the anchor point is not directly overhead, causing the worker to fall at an angle in the lanyard. The worker is swung back toward the attachment point by the lanyard, hitting whatever vertical surface is present.

"Conventional" Fall Protection Options

1) Guardrails

2) Covers

3) Personal Fall Arrest System (PFAS)

Guardrail Systems

- **Barrier built to OSHA specifications; constructed to prevent falls to lower levels**

- **Protects against these hazards:**
  - Window and Wall Openings
  - Unprotected Sides and Edges
  - Floor Holes

Rail Height Requirements

Hole Covers Are Needed For:

Any hole larger than 2 inches x 2 inches:

- Fireplace openings
- Skylights
- Basement stair openings
- Floor heating, ventilating, and air-conditioning (HVAC) registers
- Plumbing floor cutouts
- Damaged flooring

These are a leading cause of recordable, missed workday injuries that can lead to long term recovery.

Hole Covers

Secured and marked cover which protects workers from tripping or stepping into or through a hole and keeps objects from falling through a hole

Protects against falls through hazards in this category:

- **Floor Holes**
- **Hole Covers**

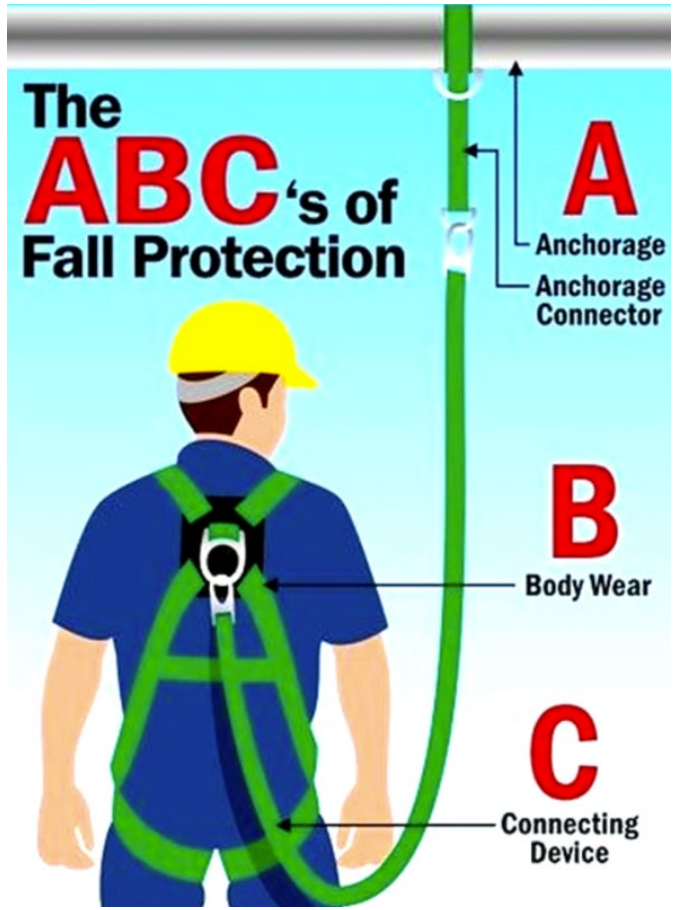
Personal Fall Arrest System (PFAS)

Equipment comprised of an anchorage point, connectors, and a body harness; used to keep a worker from free falling from an elevated surface

Protects against these hazards:

- Unprotected Sides and Edges
- Floor Holes
- Leading Edges

The use of personal fall arrest system requires both instruction and hands on training.



Requirements for Anchor Point

OSHA requires that anchor points be capable of supporting 5,000 lbs. (2,273 kg) or twice the intended load

The qualified person must determine that a structure is strong enough to support an anchor point for a PFAS.

What if a Worker Falls? Need a Rescue Plan!

A rescue plan describes steps taken to rescue a fallen worker (even if they are wearing a PFAS). Steps include:

- Contacting appropriate emergency personnel
- Using ladders or other safe work methods to rescue worker if they are suspended by PFAS
- Ensuring the plan can safely rescue a suspended worker within 3-4 minutes of falling
- May pass out in as short as 5 minutes

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Scaffolding Requirements

- Scaffolding that is 10 ft. or higher must be equipped with guardrails
- A competent person must supervise the set-up and take down of all scaffolding
- Walls that support exterior scaffold must be capable of supporting, without failure, the weight of the scaffold and four times the maximum intended load on the scaffolding
- Scaffolding must be fully planked, and planks must be secured so they cannot move


08/08/2005 09:55


Workers could fall while climbing on the shoring structure to set it up and remove it.
YES
Ladders and lifts must be provided.
08/03/2005 09:55


Lack of fall protection for workers on fabricated frame scaffolds.
Planks appear to be overloaded and there is no safe access for workers.
YES
The workers are exposed to a 35-foot fall hazard from a scaffold while stacking blocks prior to overhand bricklaying operations.

OSHA Rules and Regulations: Falls

Proper PPE, including personal fall arrest equipment, should always be worn. This is in addition to hard hats, safety glasses, gloves, and more.

Workers should always maintain three points of contact when working at elevated heights, especially when mounting and dismounting equipment.

Shoes or boots with adequate traction should always be worn on site.

Professionals should be properly trained on using ladders and mobile elevated lift units prior to working with them.

Scaffolding should be installed correctly and inspected each day to ensure it is safe.

In addition to fall arrest equipment, guardrails, nets, and other components should be installed when appropriate.

The job site must remain neat and tidy to prevent tripping over equipment, debris, building materials, or any other objects.

Caught – In or – Between Hazards

CAUGHT-IN HAZARDS

- Caught-in injuries are the result of a worker being crushed between objects, rather than being injured from the impact of an object.

CAUGHT-IN STATISTICS

- **Each year, workers die from ‘caught-in’ accidents.**

On Average:

- Total deaths from ‘caught-in’ cases: 388
- Caught-in deaths in construction: 95
- Approximately 8% of deaths in construction are from ‘caught-in’ accidents.
- Approximately 7% of all occupational deaths are from ‘caught-in’ accidents.


Potential crushing hazard from overhead boulder.
No protective system in this excavation.

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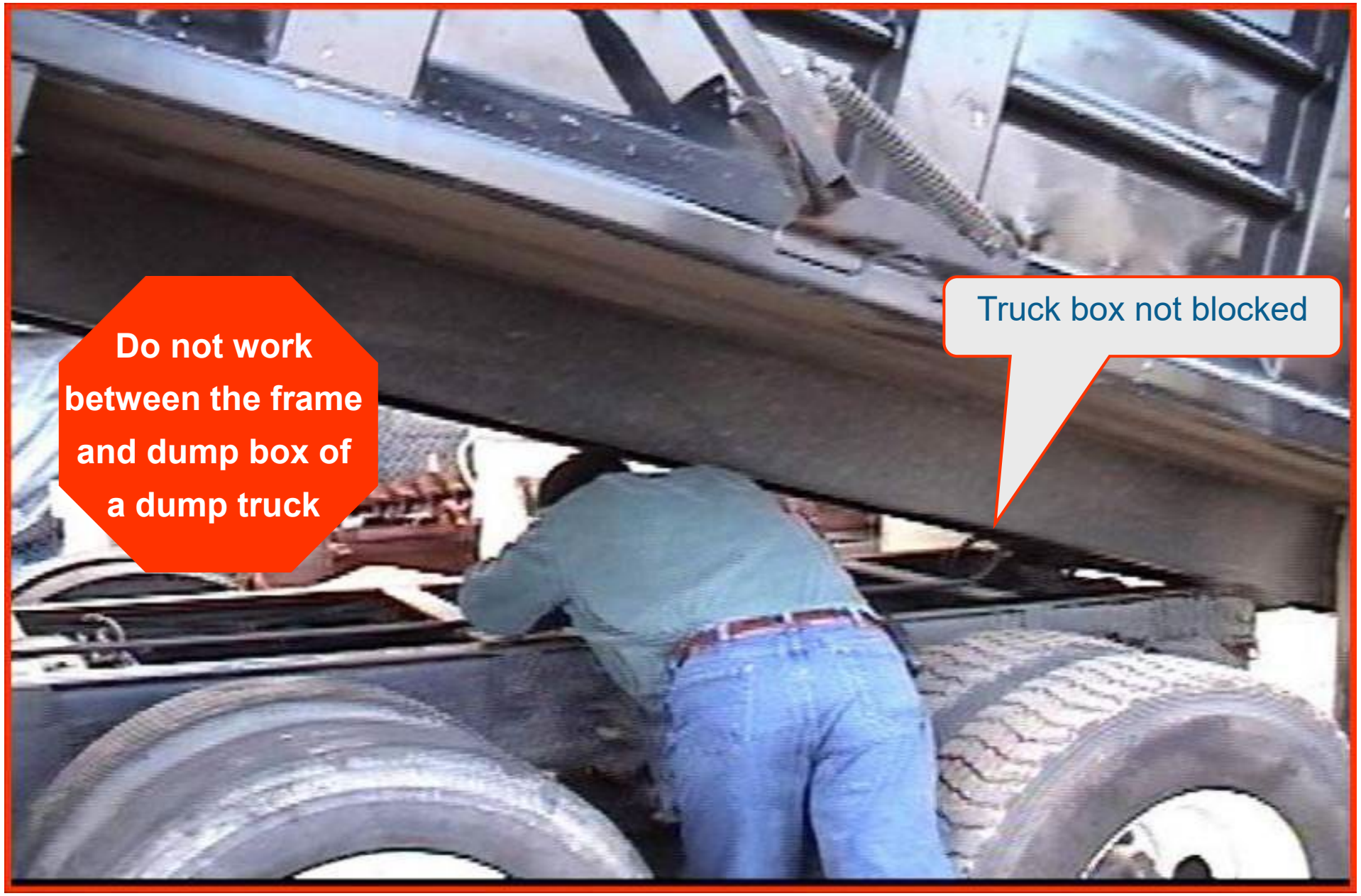
Caught-in hazards occur when a worker could be caught inside of or in between different objects


Next to a residential structure
Worker in an unprotected vertical wall trench [pipe work] is exposed to being totally engulfed by the trench if it collapses.
No protective systems in use
Ladder at the end of the trench


Do not work between the frame and dump box of a dump truck
Truck box not blocked


Employee could be caught between track of dozer and wall

OSHA Rules and Regulations: Caught – In or – Between

•Workers should be trained on the basics, such as ensuring that they never put themselves between any piece of heavy equipment and an immovable object.

•Workers should refrain from wearing baggy clothes, jewelry or other items that may get caught in vehicles or equipment.

•Stay away from the swing radius of any moving or rotating objects.

Struck-By

STRUCK-BY HAZARDS

- A struck-by hazard refers to an accident in which a worker is hit and injured by an object, tool or equipment. Struck-by hazards are mostly related to improper material and equipment handling and poor housekeeping.

STRUCK-BY HAZARDS

- Each year workers die from ‘struck-by’ accidents. On average:
- Deaths from struck-by cases: 583
- Deaths in construction: 119
- Approximately 10% of deaths in construction are from ‘struck-by’ accidents
- Approximately 10% of all occupational deaths are from ‘struck-by’ accidents

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STRUCK-BY HAZARDS

- Struck-by hazards originate from many sources. The most common include:
- Accidental hits by cranes, heavy equipment, loader trucks etc.
- Falling, flying, slipping, rolling and swinging equipment, and materials
- Poorly stacked heavy materials that may fall, slip and slide
- Concrete constructions while being constructed

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Unsecured gas cylinders are being transported, exposing workers to struck-by hazard from flying projectiles

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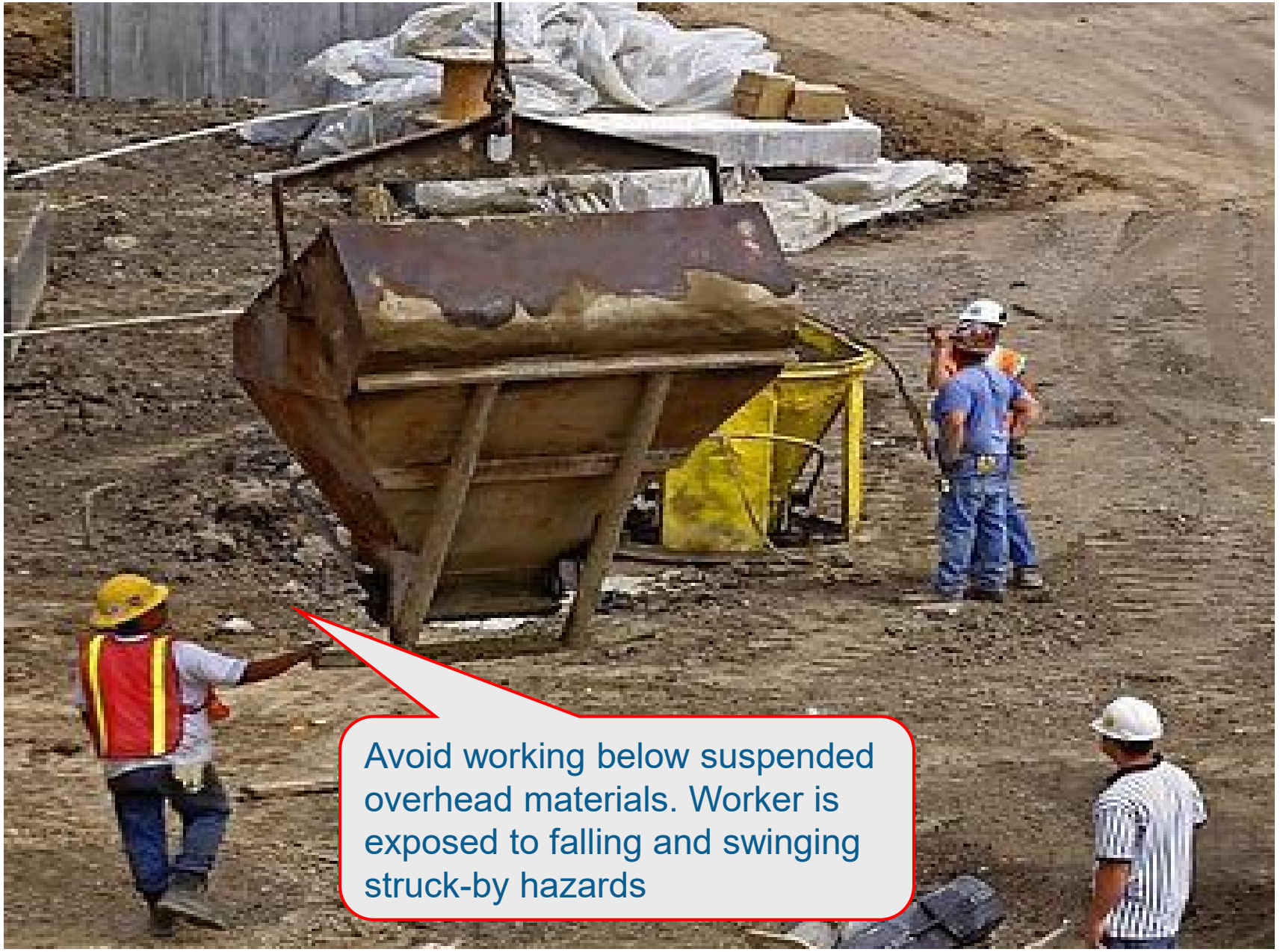
Avoid working below suspended overhead materials. Worker is exposed to falling and swinging struck-by hazards

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Highway construction worker needs to wear high visibility reflective clothing to help prevent struck-by hazard from moving heavy equipment


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Slip form paver had blind spot to the rear exposing workers to a struck-by hazard from moving heavy equipment; mirror was added for operator to see


OVER SIZE LO

Stay clear of loads that are suspended or about to be suspended which create struck-by hazards from falling or swinging objects. If control of the load by a worker is necessary then a tag line should be used


Powder-actuated tools can create flying object struck-by hazards. Never drive into easily penetrated materials when workers are on the other side

OSHA Rules and Regulations: Struck-By

Ensure materials are stacked and stored properly.

Set up barriers around any heavy or suspended loads to ensure workers are a safe distance away.

Secure tools and equipment properly when not in use, especially if they're at elevated heights.

Ensure reverse signal alarms are always working properly on equipment to help alert any workers in the vicinity of potential threats.

Ensure workers are wearing high-visibility safety vests so they can be seen by those operating equipment or vehicles.

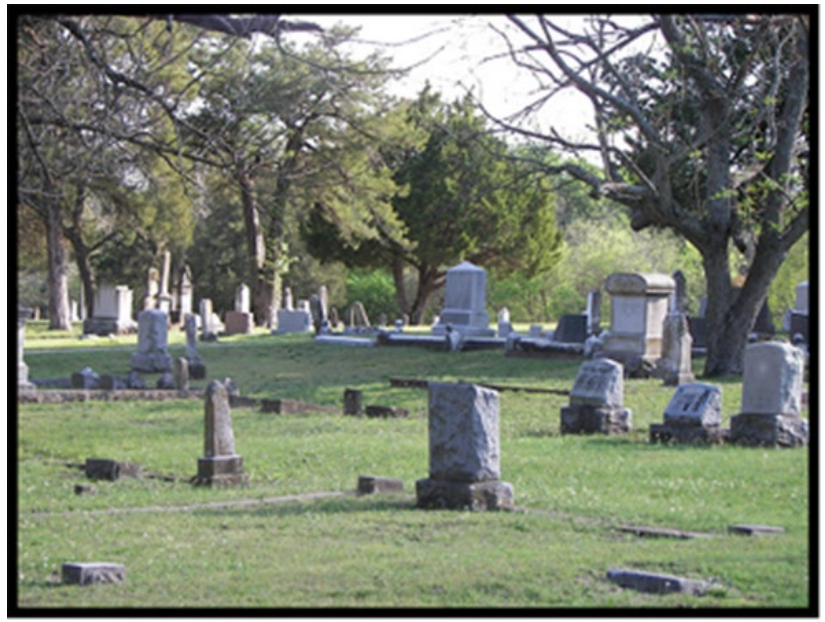
Electrocution

ELECTRICAL HAZARD STATISTICS

- Each year workers die from contacting electric current.

On Average

- 247 workers die after contacting electric current.
- 124 are construction workers.
- Nearly 4.5% of all deaths result from electrocutions.



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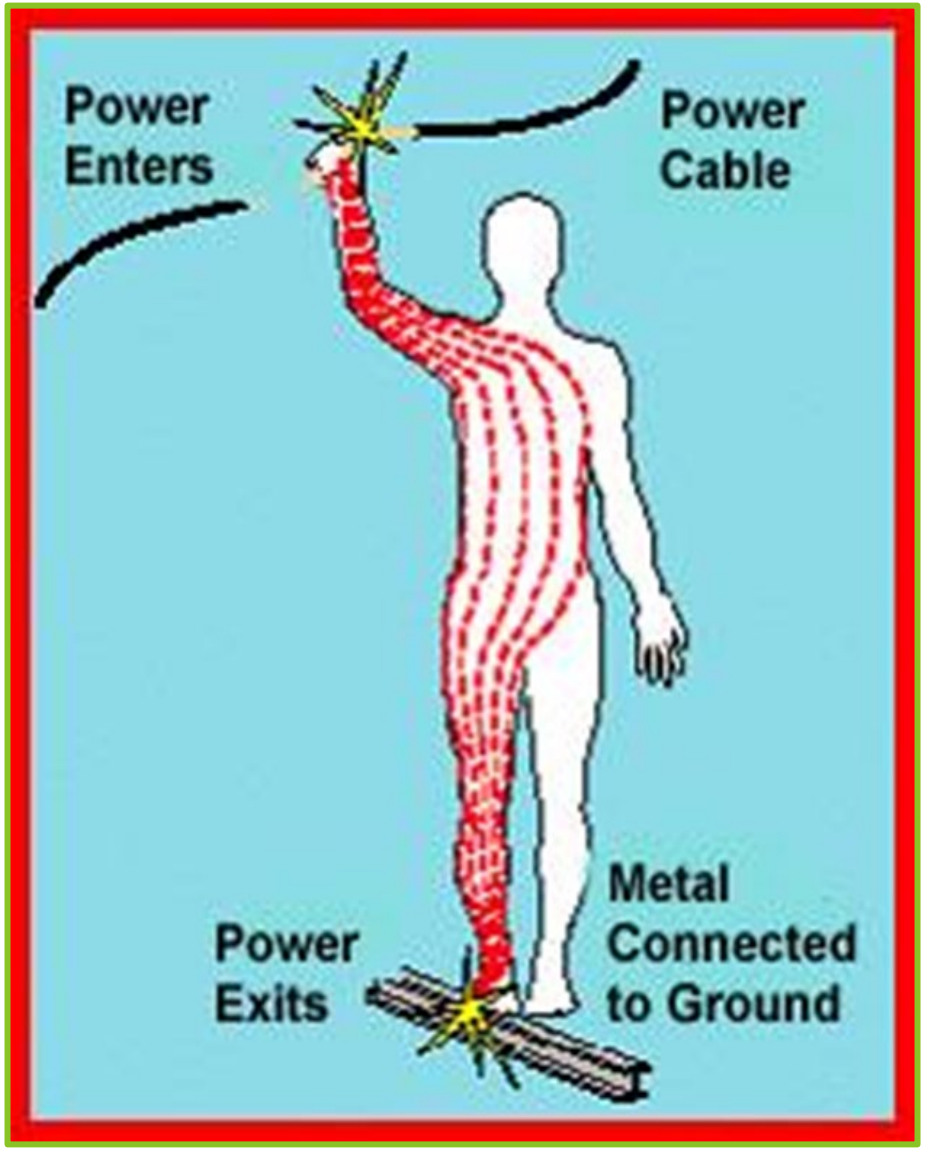
WHAT IS ELECTRICITY?

- Man-made electricity consists of energy flowing through copper wire, also called electrical current.

- Electricity flows through some materials better than others. Materials that have very little resistance to the flow of electrical current are called "conductors". Typical conductors are metals such as copper, water, the earth, and the human body.

- Electrical current flows through conductors from one point to another and must have a completed path to flow. If the path breaks, then electricity cannot flow, and equipment does not work.



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IMPROPER GROUNDING

- When you remove the ground pin, you have removed one of the most important safety features built into the flexible extension cord. Without the direct path to ground, any leakage current has the potential to shock and injure you!

- NEVER use an extension cord or electric tool that has a broken or missing ground pin!

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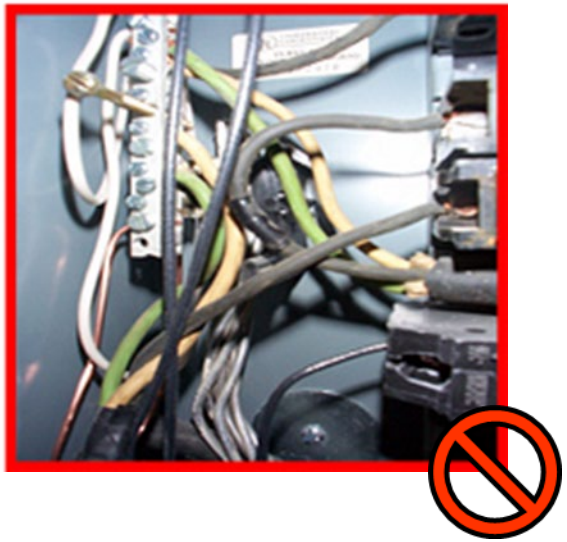
EXPOSED ELECTRICAL PARTS

In this example an electrical panel has exposed wires due to missing circuit breakers. Never use a panel that has exposed wires.

- **This electrical panel has missing circuit breakers.**



- **Never use a panel that has exposed wires.**

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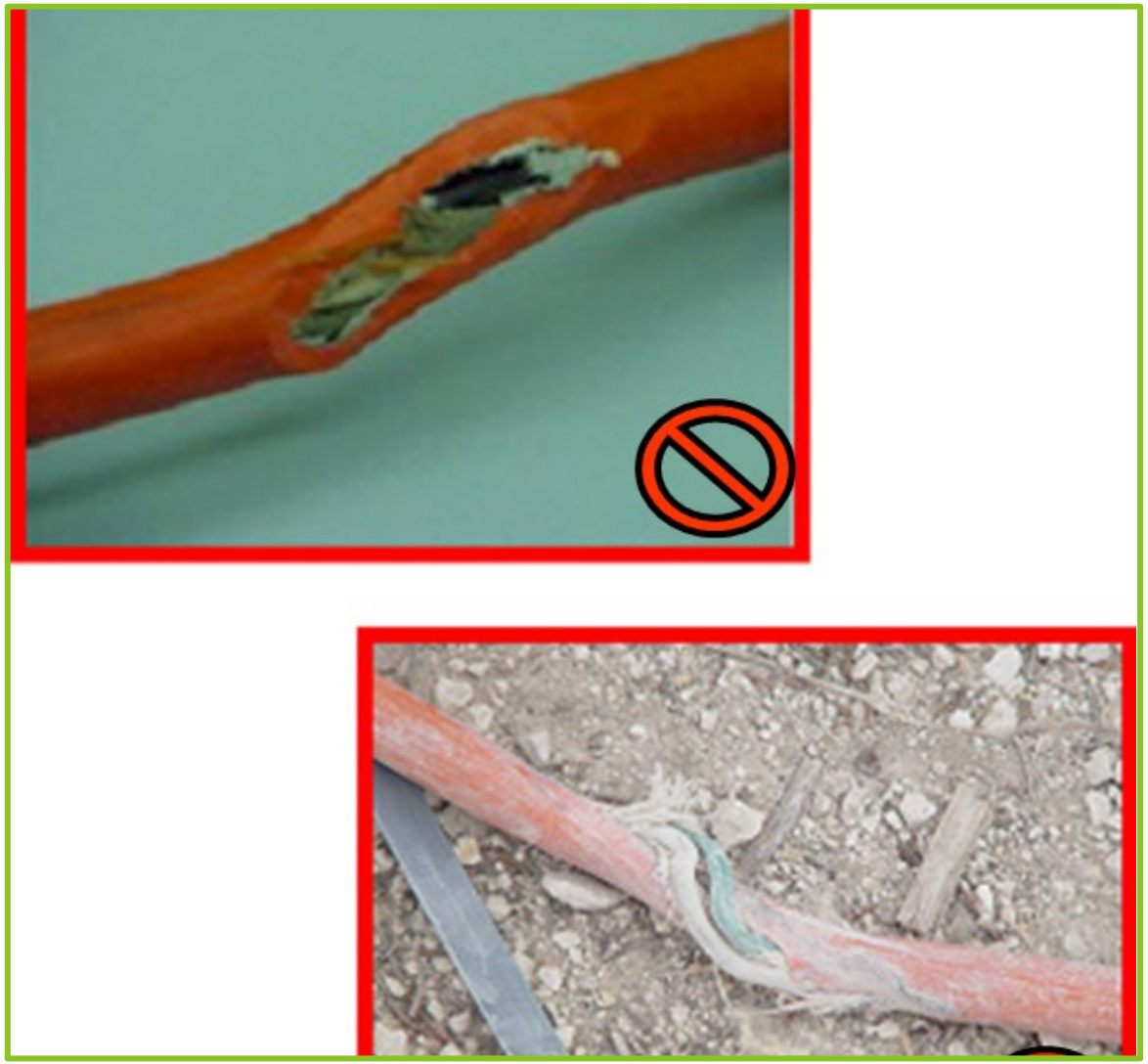
EXPOSED ELECTRICAL PARTS

- Openings in panel boxes, junction boxes, and any other electrical boxes must be closed with approved covers and without missing knockouts. The openings expose electrical parts and are electrical hazards.

- In this picture, there is an opening in the electrical panel exposing the internal wires – this is very hazardous!

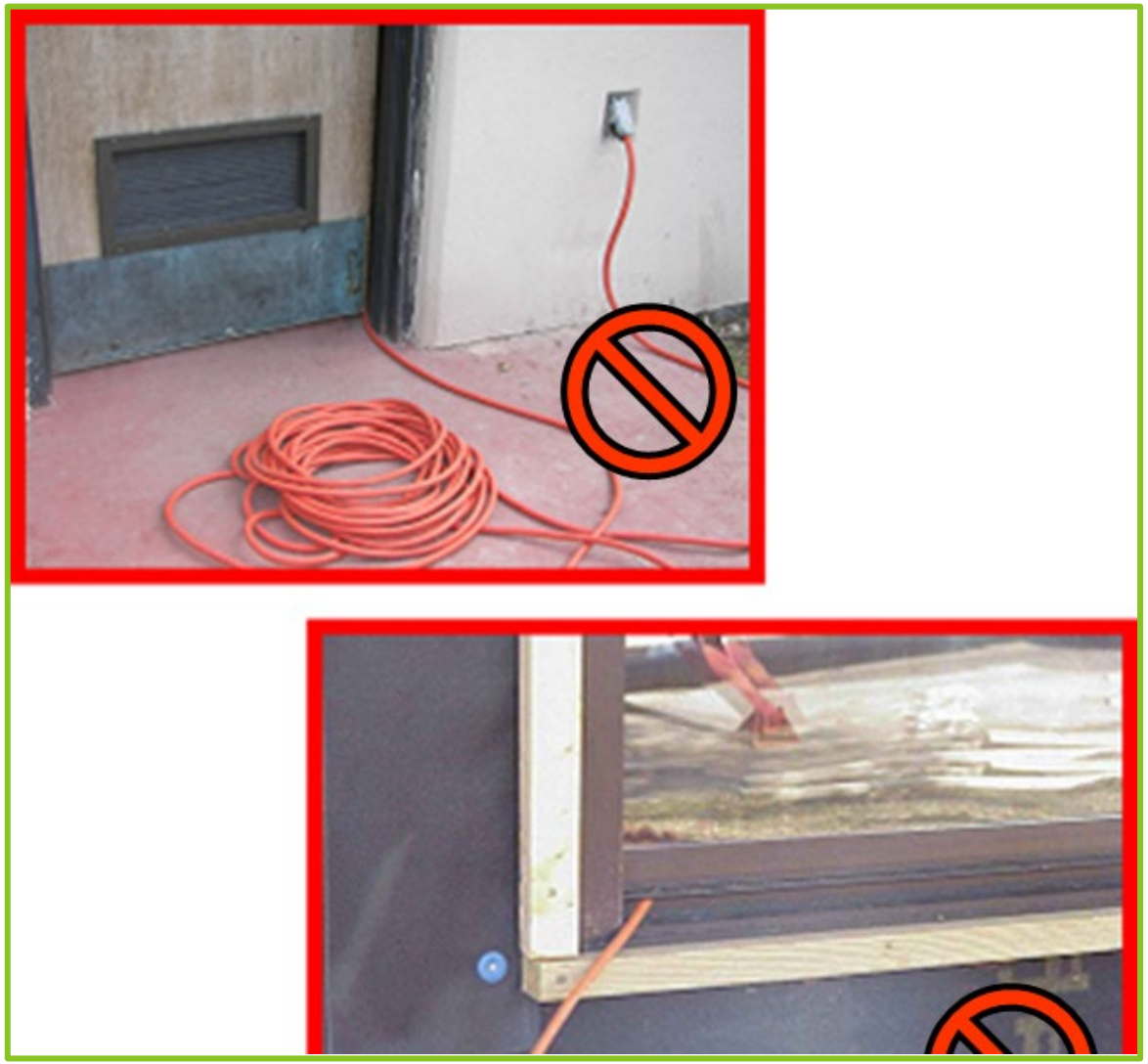
DAMAGED INSULATION

- Insulation that is defective or inadequate is an electrical hazard. Usually, insulation is made of a plastic or rubber covering over the wires. Insulation prevents conductors from coming in contact with each other or people. Insulation also protects the wires from getting damaged due to the environment.



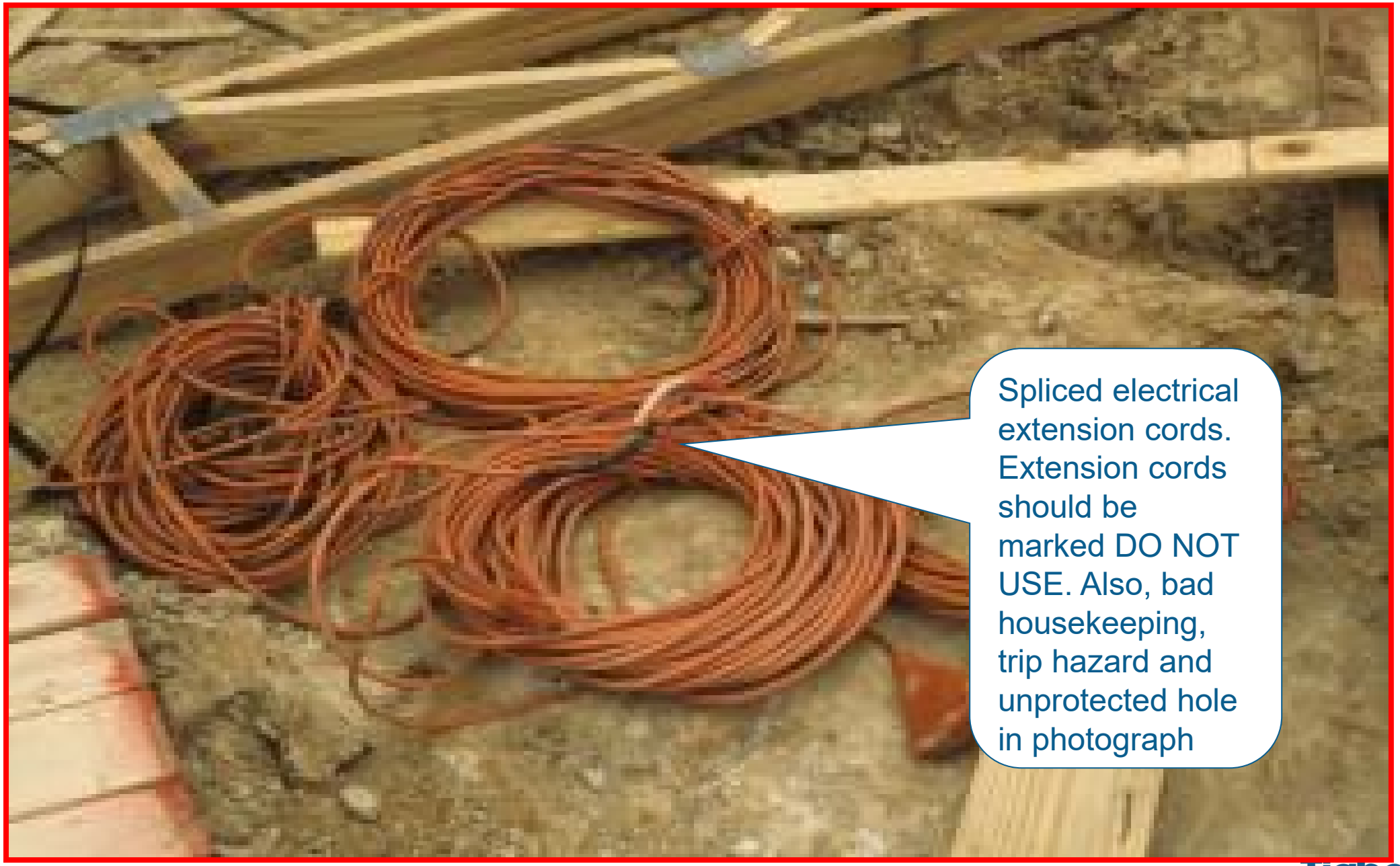
DAMAGED INSULATION

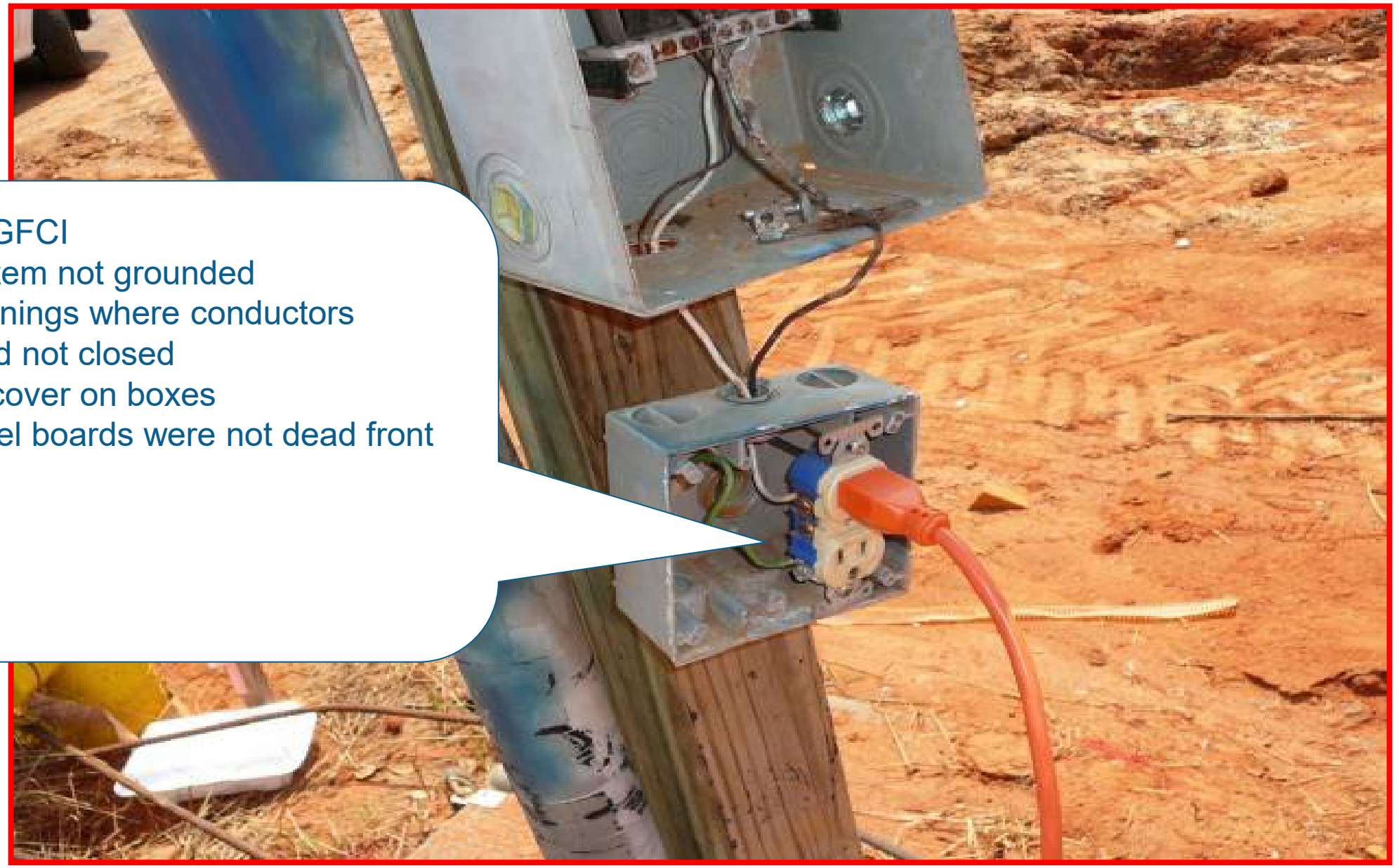
- Do not run extension cords through windows, doors, walls or other areas where they could be cut, pinched or otherwise damaged. When a cord is pinched or cut, damage may occur to the inner wires without evidence on the outside.



LOCK-OUT/TAG-OUT

- Once the on/off switch is securely locked out:
- The switch must be tagged.
- The tag lets others know why the switch is off.

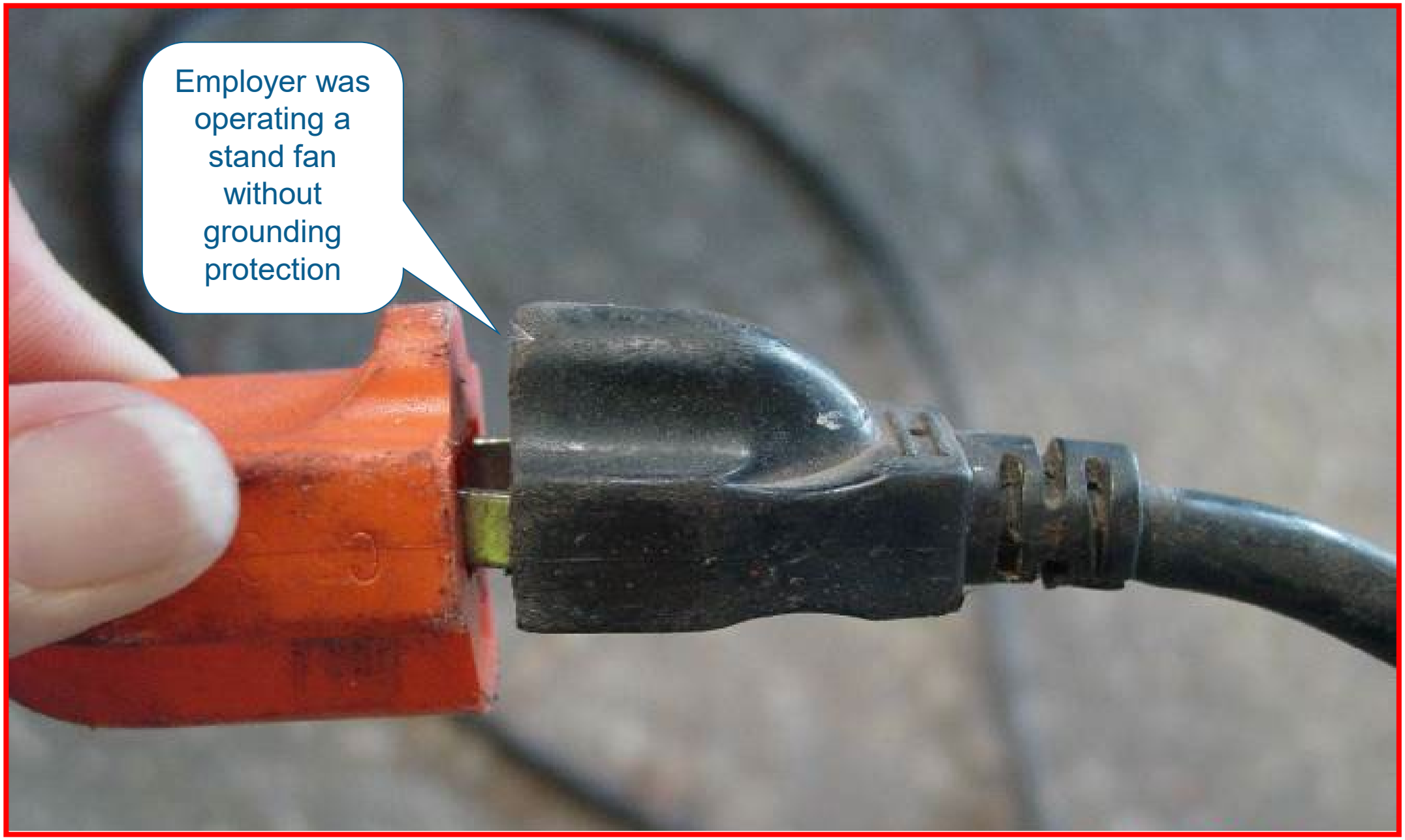

Spliced electrical extension cords. Extension cords should be marked DO NOT USE. Also, bad housekeeping, trip hazard and unprotected hole in photograph



1. No GFCI
2. System not grounded
3. Openings where conductors entered not closed
4. No cover on boxes
5. Panel boards were not dead front


DW257


Electric drill flexible cord was spliced to a non-flexible conductor with damaged insulation


Employer was operating a stand fan without grounding protection

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OSHA Rules and Regulations: Electrocution

Ensure that PPE is worn properly by all workers. This includes gloves, boots, long sleeves, safety glasses, and may also include face shields.

Enforce a lockout and tag-out procedure on the job site so that equipment can be properly used, stored, and secured when not in use.

Ensure equipment is de-energized properly.

Set up mobile barriers and ensure that workers stay safely away from any parts or equipment that is energized and could pose a safety threat.

Maintain a safe working distance from power lines, especially those that are overhead.

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