

NORTH CAROLINA Department of Transportation



Materials Handling, Storage, Use, and Disposal

Materials Handling, Storage, Use, and Disposal

Lesson Overview

- Types of material handling equipment.
- Hazards associated with material handling activities
- Prevention of hazards associated with material handling equipment
- Employer requirements to protect workers from material handling hazards

Types of Equipment Powered evors Industrial Trucks

Conveyors



Source: OSHA



Source: TEEX-Harwood

Types of Equipment

Cranes

Slings





Source: OSHA

Source: OSHA

Factors Contributing to Injuries

- Weight and bulkiness of objects
- Bending, twisting, turning movements





- Improper operation of equipment
- Accumulated materials or clutter



- Unsafe conditions of materials or containers
- Flammability or toxicity of some materials



- Weight of materials
- Binding ties or other devices that secure bundles or bound materials





- Falling objects
- Lifting, pushing, pulling, or otherwise manually moving large, heavy items





- Improperly stacked materials
- Struck-by or caught-in/-between hazards



Injuries

- Types of injuries commonly reported
 - Sprains, strains, tears
 - Soreness and pain
 - Bruises and contusions
 - Cuts, lacerations, and punctures



Injuries

- Examples of events or exposures leading to injuries
 - Contact with objects and equipment
 - Transportation incidents
 - Exposure to harmful substances or environments



Source: OSHA



Source: OSHA

Injuries

- Falls, slips, trips, or loss of balance
- Repetitive motion
- Overexertion



Source: OSHA



Source: OSHA

- Moving materials manually
 - Use devices to assist with holding loads
 - Wear PPE
 - Use proper lifting technique
 - Seek help for oversized loads







Preventing Hazards

- Cranes
 - Major types of crane accidents
 - Contact with power lines
 - Overturns
 - Falls
 - Mechanical failure



Source: OSHA

- Hoisting tons of material, steel, and concrete with cranes
- Operated only by thoroughly trained and competent workers



Source: OSHA



Source: TEEX - Harwood

- Eliminate/reduce crane hazards by:
 - Knowing
 - Load
 - Capacity of the crane
 - When the load is safe to lift
 - Always checking crane load chart and never exceed load limits



Source: TEEX - Harwood



- Inspection of crane by a qualified person
 - Modified, repaired, or adjusted
 - Post-assembly
 - At least every 12 months
 - Equipment not in regular use
- Visual inspection by a competent person
 - Prior to each shift
 - Monthly



Source: OSHA

- Slings
 - Connect a crane hook to a load
 - Proper selection
 - Inspection





Source of photos: OSHA

- Reduce sling hazards by:
 - Lubricated
 - Do not shorten with knots, bolts, or other devices, or kink legs
 - Keep clear of loads
 - Avoid sudden movement





Source: OSHA

Source: OSHA

- Forklifts
 - Main causes of injuries
 - Forklift overturns
 - Forklift striking workers on foot
 - Persons crushed by forklifts
 - Persons falling from forklifts



Source: OSHA

- Illegal forklift operators
 - Anyone under 18
 - Anyone not properly trained and certified





Preventing Hazards



Driving the forklift

- Obstructed vision
- Travel path
- Approaching people
- Elevated platform
- Seat belts and ROPS
- Raising/lowering forks
- Safe distance







- Elevating workers with forklift
 - Standing on forks
 - Lifting personnel
 - Approved lift platform
 - Restraining means



- Driving forklift on Grades/Ramps
 - Use extreme caution
 - No turns
 - Tilting and raising load
 - Point load up the incline







Source of photos: OSHA

- Forklift operating speed
 - Tip-overs
 - Turning
 - Avoiding collisions
 - Wet and slippery floors
 - Ascending/descending
 - Obstructed vision







Source of photos: OSHA

Avoiding Excess Weight

- Do not exceed weight capacity of forklift.
- Center loads and secure to keep from shifting to maintain balance of weight



- Use of Dock Boards for Loading/Uploading
 - Bridging space
 - Securing portable dock boards
 - Handholds for dock boards



Source: OSHA

- Exiting the Forklift

- Set brake, lower forks/lifting carriage, neutralize controls
- Stand-up type forklift

– Riding the forklift

- No passengers allowed
- Exception seat is provided





Source of photos: OSHA

- Avoiding Struck-by/Crushed-by
 - Don't jump from an overturning, sit-down type forklift.
 - Stay with the truck, hold on firmly, and lean in the opposite direction of the overturn.



Preventing Hazards

- Forklift Training do not operate a forklift without proper training and licensing.
- Reporting Damage any damage or problems that occur to a forklift during a shift should be reported to the supervisor.



Source: OSHA

- Earth-Moving Equipment
 - Scrapers
 - Loaders
 - Crawlers
 - Bulldozers
 - Off-highway trucks
 - Graders
 - Tractors



Source of photos: TEEX - Harwood

- Earth-Moving Equipment
 - Seatbelts
 - Reverse gear not used unless that piece of equipment has:
 - Back-up signal alarm or
 - Signaler
 - Operator properly trained



Source: OSHA

Employer Requirements

- Comply with OSHA standards related to materials handling, including:
 - Training requirements, including requirements for forklift training.
 - Inspection requirements



Source of photos: OSHA



Employer Requirements

• Comply with manufacturers' requirements and recommendations for materials handling equipment.

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Recognizing Hazards

Identify potential hazards and possible solutions:

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Recognizing Hazards

Identify potential hazards and possible solutions:



What three steps need to take place before an employee may operate any piece of mobile equipment?

- 1. Class room instruction and written test
- 2. Equipment overview and hands-on
- 3. Final operational evaluation

Why do we fill out pre-operation inspection sheets?

- Keep up with equipment maintenance
- 2. Ensure equipment is safe to operate
- 3. Compliance

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Are cell phones, earphones, etc. allowed to be used while operating mobile equipment?



NO CELL PHONES



What rule or method must be used when mounting and dismounting mobile equipment?



3 Points of Contact

What is the proper way to dismount a skid steer?





What must be in place before placing any piece of mobile equipment into motion?







Does a skid steer's lap bar take the place of the seatbelt?

 No, the seat belt must always be worn with the lap bar.



What are the steps to safely enter a trailer with a piece of mobile equipment?

- 1. Make sure brakes are set.
- 2. Chock trailer wheels
- 3. Jack stand in place if the truck is not connected
- 4. Check condition of floor/sides
- 5. Dock plate is secure
- 6. Secure keys from driver, dock lock, etc.

When is a piece of mobile equipment considered unattended?

 Operator is more than 25 feet away

Or

2. Piece of equipment is out of the operators sight

What piece of mobile equipment is the exception to the unattended rule?



Why?

When can a piece of equipment exceed its rated capacity?



Where can the rated capacities be

found?







What direction does a loaded piece of equipment always need to face on a slope?

- Loaded forks or bucket need to face UP the slope at all times.
- Never attempt to turn on a slope.





Why do we carry loads as close to the ground as possible?

 Center of gravity and the stability triangle.



Who is responsible for pedestrian safety around mobile equipment?

- Ultimately the operator, but pedestrians have responsibility too.
- "10 foot rule"

- How many employees are needed to safely complete rail movements?
- Min. of Two.
- ALWAYS work in pairs when operating rail equipment.
- There should be one conductor (switchman) and one engineer.



Is it safe to walk or stand on the tracks?

 No, it is never safe to walk or stand in the "line of fire" or in the gauge.



How far should you be from the end of a railcar before crossing?



Is it acceptable to set a hand brake from the ground?

- No, hand brakes must be set from the brake platform.
- Reduces risk of back strain and standing in front of railcars.





Where should the spotter be standing while coupling cars?



- 3'+ off the side of the tracks.
- Never authorize movement until completely clear.
- Never reach in to make last second adjustments to knuckle.



Questions?