

# **Materials Handling, Storage, Use, and Disposal**

## **OSHA 10-hour Outreach Training General Industry**

# Introduction

Lesson objectives:

1. Identify types of material handling equipment.
2. Describe hazards associated with material handling activities.
3. Identify methods to prevent hazards associated with material handling equipment.
4. Recognize employer requirements to protect workers from material handling hazards.

# Types of Equipment

## Conveyors



Source: OSHA

## Powered Industrial Trucks



Source: TEEX-Harwood

# Types of Equipment

## Cranes



Source: TEEX

## Slings



Source: OSHA

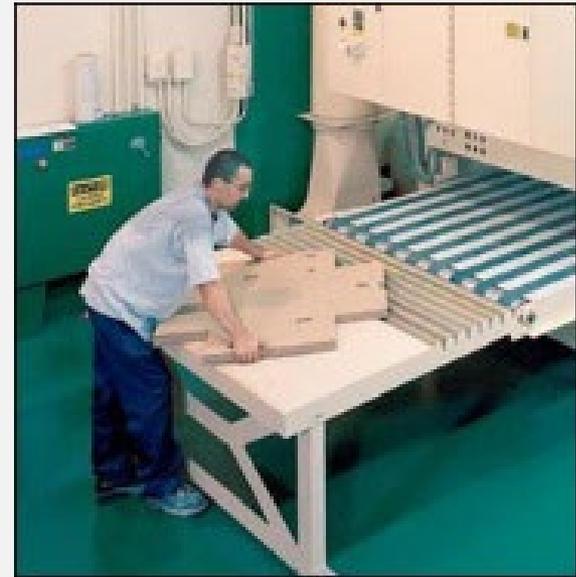
# Hazards Associated with Materials Handling

Factors contributing to injuries:

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



Source of photos: OSHA



# Hazards Associated with Materials Handling

## Hazards:

- Improper operation of equipment
- Accumulated materials or clutter



Source: OSHA

# Hazards Associated with Materials Handling

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



Source: OSHA

# Hazards Associated with Materials Handling

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



Source: OSHA

# Hazards Associated with Materials Handling

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



Source: OSHA



Source: OSHA

# Hazards Associated with Materials Handling

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



Source TEEX - Harwood

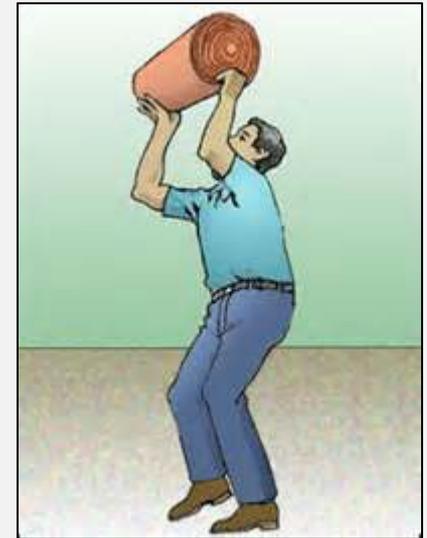


Source: OSHA

# Hazards Associated with Materials Handling

Types of injuries commonly reported:

- Sprains, strains, tears
- Soreness and pain
- Bruises and contusions
- Cuts, lacerations, punctures, crushing, and amputations

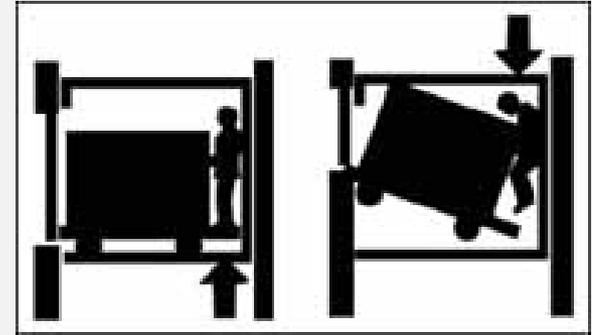


Source: OSHA

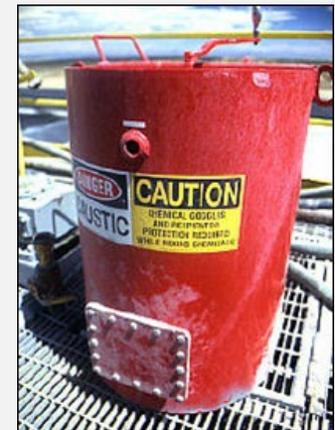
# Hazards Associated with Materials Handling

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

# Hazards Associated with Materials Handling

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



Source: OSHA



Source: OSHA

# Preventing Hazards

## Moving materials manually:

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



Source of photos: OSHA

# Preventing Hazards

## Overhead and gantry cranes:

- Never move a load over co-workers or allow co-workers to walk underneath
- Return the load block to its designated location after use
- Do not leave the load block low enough for someone to run into
- Never leave a suspended load unattended



Source: OSHA

# Preventing Hazards

- Do not leave unused slings suspended on a crane hook
- Store wall-mounted cranes against the wall
- Continuously observe equipment for any sign of problems during operation.
- Don't allow yourself to become distracted.

# Preventing Hazards

- Operated only by thoroughly trained and qualified workers

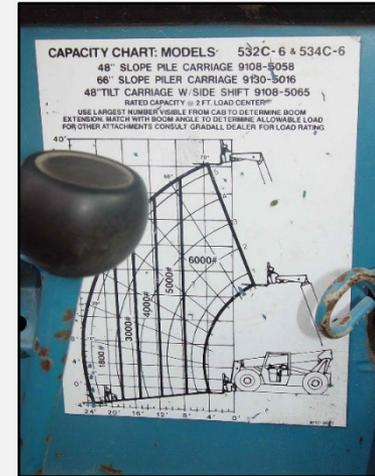


Source: UA

# Preventing Hazards

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



Source: TEEX - Harwood

# Preventing Hazards

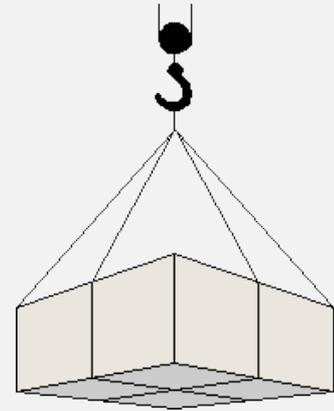
- Inspection of crane by a qualified person
  - Modified, repaired, or adjusted
  - Post-assembly
  - At least every 12 months
  - Equipment not in regular use
- Visual inspection by a competent person
  - Prior to each shift
  - Monthly



Source: OSHA

# Preventing Hazards

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



Source of photos: OSHA

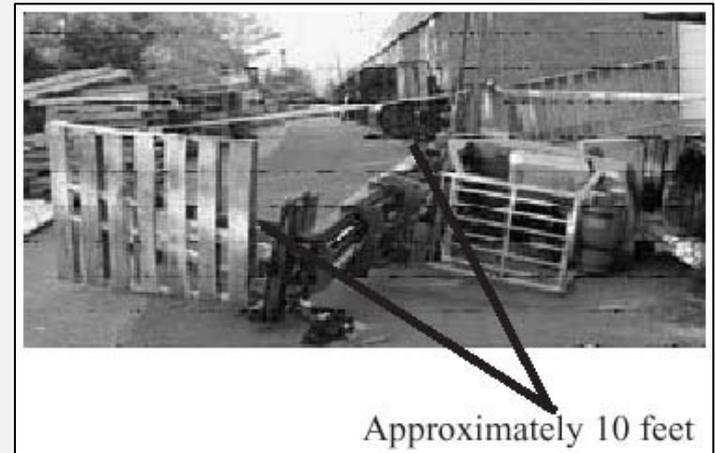
# Preventing Hazards

- Reduce sling hazards by:
  - Lubricating
  - Not shortening with knots, bolts, or other devices, or kink legs
  - Keeping clear of loads
  - Avoiding sudden movement

# Preventing Hazards

## Forklifts

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



Forklift toppled sideways possibly due to shift in center of gravity.  
Source: OSHA

# Preventing Hazards

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



Source of photos: OSHA

# Preventing Hazards



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



Source of photos: OSHA

# Preventing Hazards

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



Source: OSHA

# Preventing Hazards

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



Source of photos: OSHA



# Preventing Hazards

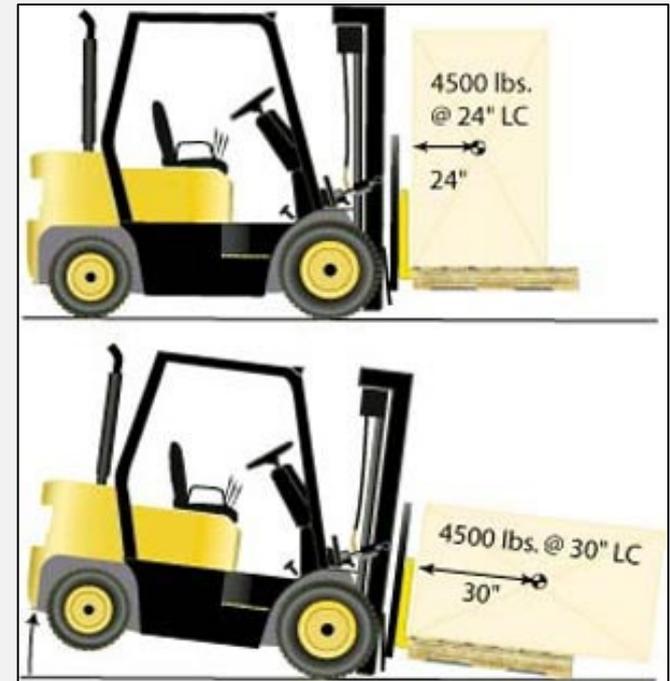
- Forklift operating speed
  - Tip-overs
  - Turning
  - Avoiding collisions
  - Wet and slippery floors
  - Ascending/descending
  - Obstructed vision



Source of photos: OSHA

# Preventing Hazards

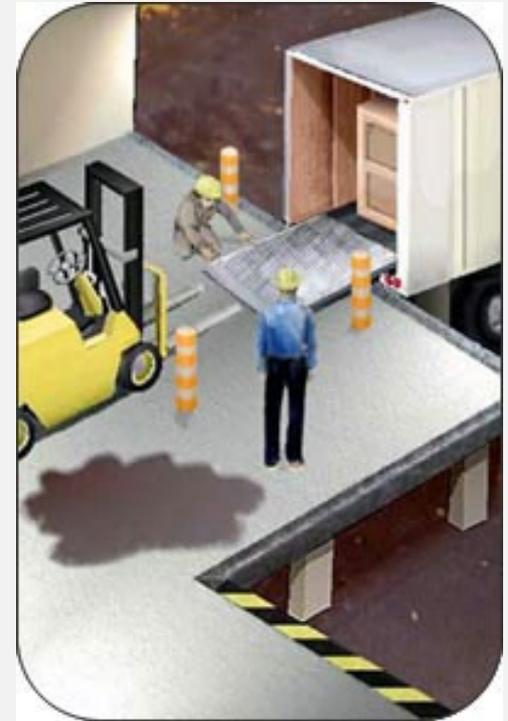
- Avoiding excess weight
  - Do not exceed weight capacity of forklift.
  - Center loads and secure to keep from shifting to maintain balance of weight



Source of graphics: OSHA

# Preventing Hazards

- Use of dock boards for loading/unloading
  - Bridging space
  - Securing portable dock boards
  - Handholds for dock boards



Source: OSHA

# Preventing Hazards

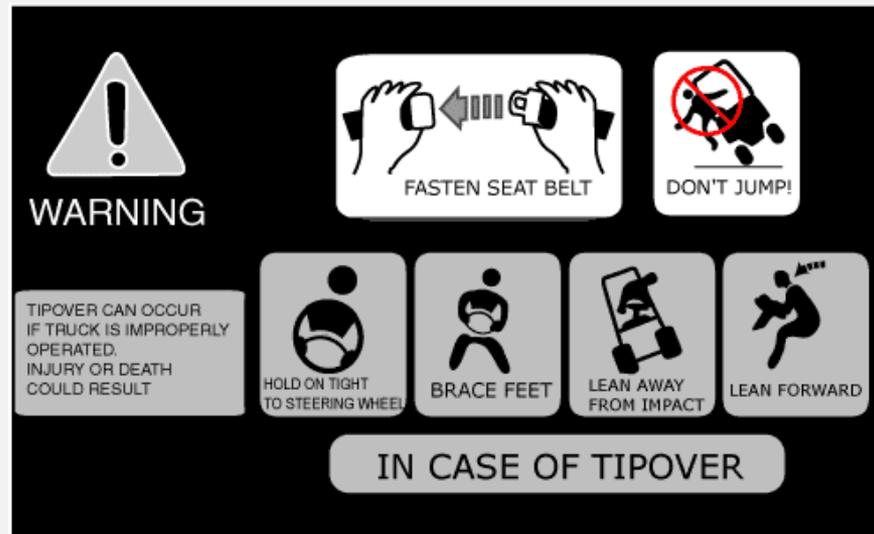
- Exiting the forklift
  - Set brake, lower forks/lifting carriage, neutralize controls
  - Stand-up type forklift
- Riding the forklift
  - No passengers allowed
  - Exception – seat is provided



Source of photos: OSHA

# Preventing Hazards

- 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.



Source: OSHA

# Preventing Hazards

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



Source: OSHA

# Employer Requirements

Comply with OSHA standards related to materials handling, including:

- Training requirements
- Inspection requirements



Source of photos: OSHA



# Employer Requirements

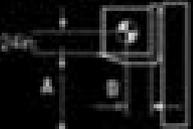
- Comply with manufacturers' requirements and recommendations for materials handling equipment.

**WARNING** IMPROPER OPERATION OR MAINTENANCE  
COULD RESULT IN INJURY OR DEATH

MODEL \_\_\_\_\_ SERIAL No. **JFM000000**  
TYPE **1125** TRUCK WT. **8,600** lbs

CAPACITY OF STANDARD TRUCK WITH SIMPLEX MAST  
AND FORKS: **5,000**

MAXIMUM HEIGHT of 130 IN. RATED CAPACITY WITH  
OPTIONAL MAST AND/OR ATTACHMENT LISTED BELOW.

MAST: VERTICAL	A	B	FORKS ONLY	ATTACH
	in	in	Eq	Eq
	<b>156</b>	<b>24</b>		<b>4,500</b>

ATCHMODEL **Sideshifter**  
MEETS DESIGN SPECS ANSI B56.1

Source : OSHA

# Recognizing Hazards

Identify potential hazards and possible solutions:



Source: OSHA

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Source: OSHA



Source: TEEX - Harwood

# Recognizing Hazards

Identify potential hazards and possible solutions:



Source of photos : TEEX Harwood



Source of photos : OSHA -UFCW

# Knowledge Check

1. What is the minimum age requirement for the operation of a forklift, regardless of training?
  - a. 16
  - b. 18
  - c. 21
  - d. 25

**Answer: b. You must be at least 18 years old to operate a forklift.**

# Knowledge Check

2. A way to prevent materials handling hazards is to \_\_\_\_.
- a. refuse to allow personnel to ride equipment without a seat and seatbelt
  - b. report all damaged equipment immediately
  - c. operate within manufacturer's specifications
  - d. All of these

**Answer: d. All of these are good ways to prevent materials handling hazards.**

# Knowledge Check

3. Which of the following is a method for eliminating or reducing crane operation hazards?
- a. A competent person should visually inspect the crane once a year
  - b. Never exceed the load limit by more than 10%
  - c. Never move a load over co-workers
  - d. All of these

**Answer: c. Never move a load over co-workers or allow co-workers to walk underneath.**

# Knowledge Check

4. Employers must comply with OSHA standards related to materials handling, including training and \_\_\_\_\_.
- a. equipment
  - b. operations
  - c. inspection
  - d. all of these

**Answer: c. Employers must comply with OSHA standards for training and inspection.**