



Material Handling & Storage



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Garrison Safety Office (GSO)
U.S. Army Installation Management Command

Materials Handling and Storage

- Materials handling is conducted in every department, warehouse, office, or facility of a company.
- Materials handling is a job that is performed by almost every worker in the workforce as sole duty or part of regular work and either by hand or with mechanical help.



Materials Handling and Storage

- ***29 CFR 1910.176 - Handling Materials – General***



Preventing Common Injuries

- Handling of material accounts for 20% to 45% of all occupational injuries.
- Injuries can occur in any part of the operation, not limited to stockroom or warehouse.
- Strains, sprains, fractures, and contusions are the most common form of injuries resulting.



- Overhead hoisting operators and maintenance personnel are exposed to fall hazards.
- Certain items of protective equipment are desirable for the prevention of various types of material handling injuries.
- Because toe and finger injuries are among the most common types of injuries, handlers should wear safety shoes and stout gloves, preferable with leather palms.
- Other PPE such as goggles and aprons are recommended for the handling of certain materials.



Personal Protection (Cont.)

- Hazard assessment should be conducted to determine the required and recommended PPE.
- Gloves should be dry and free of grease and oil.
- Clean, leather-palmed gloves give you a better grip when handling smooth metal objects.
- Do not wear gloves near certain machinery such as conveyors or wherever there is a risk of gloves being caught in the machine.



Personal Protection (Cont.)

- Where toxic materials are being handled, workers should take daily showers to remove the material from their person before they leave the facility.
- Encourage workers to wash thoroughly at the end of their shift.
- Provide cleaning materials and PPE for workers (suits, caps, coveralls).



- Since most injuries occur to feet and hands, give the following general pointers to employees who handle materials:
 - Inspect materials for slivers, jagged or sharp edges, burrs, rough or slippery surfaces.
 - Grasp objects with a firm grip.
 - Keep fingers away from pinch and shear points.
 - Wipe off greasy, wet, slippery, or dirty objects before handling them.
 - Keep hands free of oil, dirt, or grease.



- Manual Lifting
 - Most lower back injuries come from tasks requiring lifting. Other activities such as lowering, pushing, pulling, carrying material, or twisting the body can also cause back injuries.
 - Back injuries are 2nd in number after injuries to the fingers and hands.
 - Consider all three main factors in manual lifting: load location, task repetition, and load weight when determining what is safe or unsafe to lift.
 - *NIOSH Applications Manual for Revised NIOSH Lifting Guidelines (DHHS Publication 94-110)*



- Back belts

- Back injuries account for nearly 20% of workplace injuries and are the leading cause of injuries to workers under the age of 45.
- Estimates put the annual cost of back injuries at \$20 billion to \$50 billion.
- The debate over back belts focuses on two issues:
 1. Employees are rarely trained in proper lifting techniques or shown how to use belts correctly.
 2. Wearing a back belt can give a false sense of security.
- Scientific studies have failed to show that back belts prevent lifting injuries. However, they are useful for protection and post injury.
- NIOSH states:

The best way to protect workers is through ergonomic approaches designed to reduce the hazards of lifting.



General Work Practices

- Get help for large loads
- When blocking a raised load:
 - Keep hands from underneath before releasing load
 - Use blocking materials of adequate strength
 - Look for cracks, splintered pieces, rounded corners, etc.
- Attach handles or holder to loads
- PPE
 - Gloves, eye protection, safety boots (for heavy loads)



General Work Practices

- Do not overload equipment
- Refer to equipment rated capacity
- General forklift procedures
 - Center load on forks and close to mast
 - Do not overload
 - Do not add extra weight to counterbalance
 - Travel with load at lowest position



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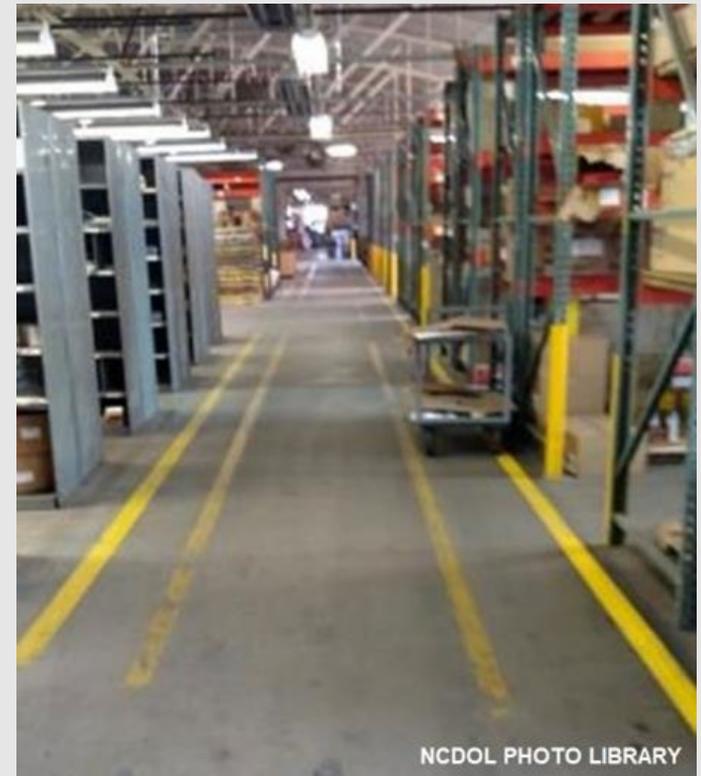


Handling Materials

● General

– Where mechanical equipment is used, sufficient safe clearances shall be maintained.

- » Aisles
- » Loading docks
- » Through doorways
- » Turns of passage



Handling Materials

- **General**

- Aisles and passageways shall be kept clear and in good repair.

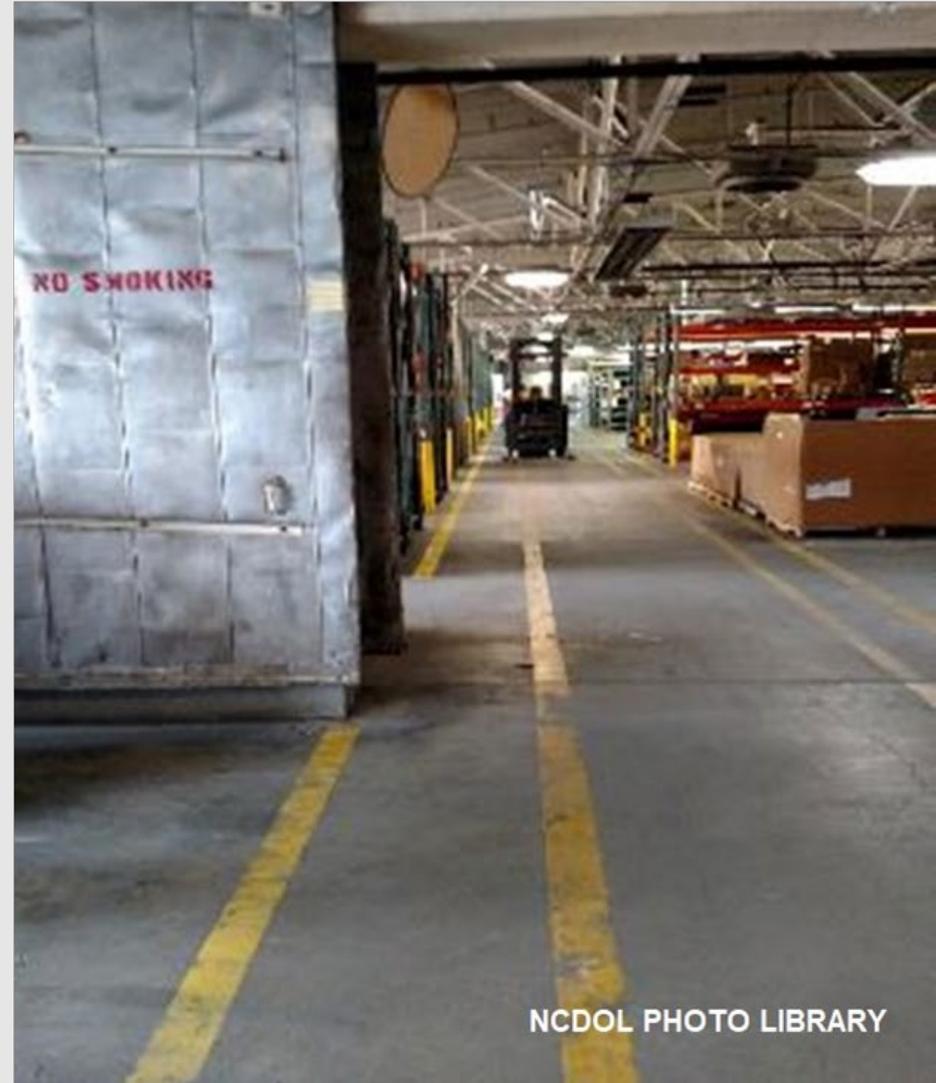


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- **General**

- Permanent aisles and passageways shall be marked.



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Materials Storage

- Stacked loads correctly piled and cross-tiered
- Stored material must not create hazard
- Areas free of accumulated material
- In buildings, no stored materials within 6 feet of hoist ways or 10 feet of exterior building walls
- Store non-compatible material separately



Lumber and Brick Storage

- Lumber
 - Maximum stack height
 - » 16 feet (manual handling)
 - » 20 feet (forklift)
 - Remove nails from used lumber
 - Stacks stable and self-supporting
- Bricks
 - Maximum 7 feet high
 - Above 4 feet, taper stacks 2 inches per foot



Box and Drum Storage

- Boxed materials
 - Hold in place using cross-ties or shrink plastic
- Drums, barrels, kegs
 - Stacked symmetrically
 - If stored on side, block bottom tiers to prevent rolling
 - If stacked on ends, use planks, pallets, etc. between each tier
- Block cylindrical material (bars, poles, etc.)
- Use bins or shelves for materials that cannot be stacked



2-Wheeled Hand Trucks

- Tip load forward and slip tongue underneath
- Keep center of gravity low
- Let the truck carry the load - don't lean it too far
- Walk forward - keep load height low enough to see
- Secure bulky items to the truck
- Use specialty equipment
 - Drums
 - Appliances



Secure Storage

- Storage of material shall not create a hazard.



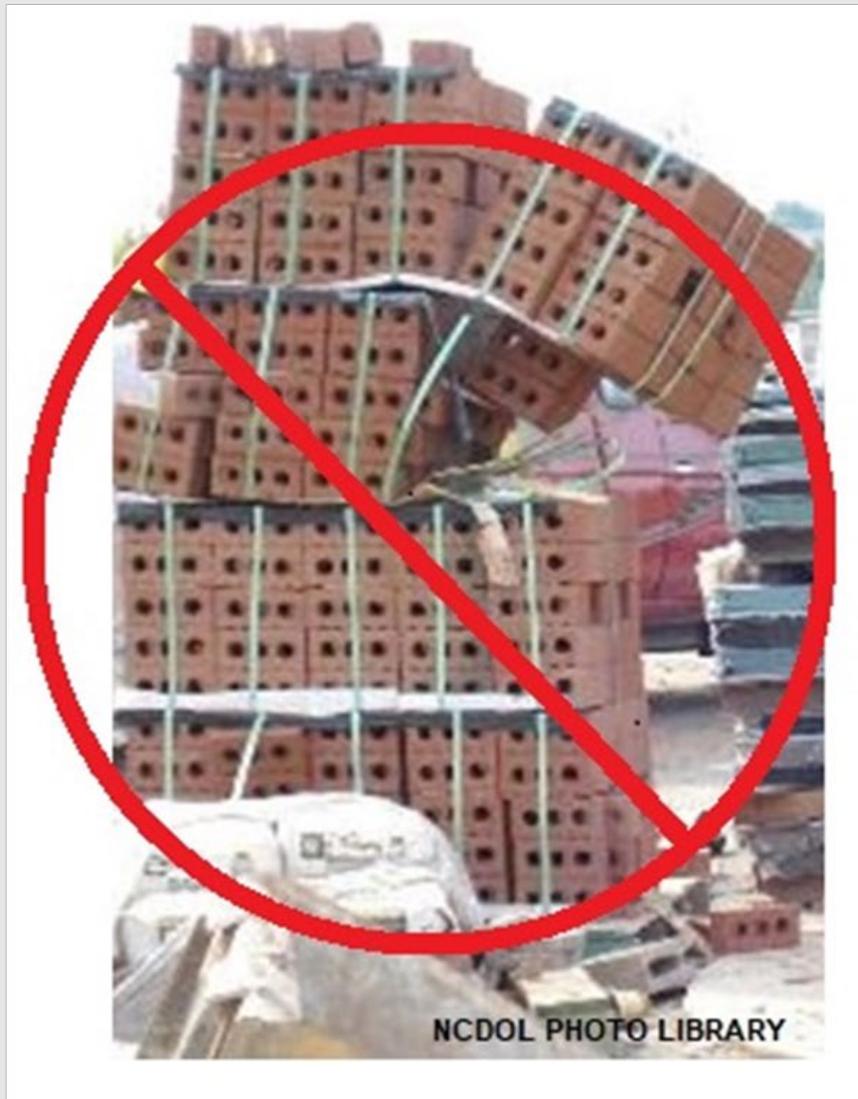
Secure Storage

- Bags, containers, bundles, etc., stored in tiers
 - Stacked, blocked, interlocked
 - Limited in height so that they are stable
 - Secure against sliding or collapse



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Secure Storage



Housekeeping

- Storage areas kept free from accumulation of materials that create hazards from:
 - Tripping
 - Fire
 - Explosion
 - Pest harborage



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Clearance Limits

- Clearance signs to warn of clearance limits shall be provided.



Summary

- In this course, we covered:
 - General material handling requirements
 - » Secure storage, housekeeping, clearance limits, rolling railroad cars and guarding.



Thank You For Attending!

Final Questions?

