Materials Handling and Storage – Checklist



PREAMBLE

There’s hardly a workplace that doesn’t handle or store materials. Whether your company has a large warehouse or a small storage room, whether you have loading docks and forklifts or just garages and pallet jacks, there’s material that needs to be moved around. And you need to make sure you approach this common task with safety in mind.

Handling and storing materials involve diverse operations such as hoisting tons of steel with a crane; driving a truck loaded with concrete blocks; carrying bags or materials manually; and stacking palletized bricks or other materials such as drums, barrels, kegs, and lumber. The efficient handling and storing of materials are vital to industry. In addition to raw materials, these operations provide a continuous flow of parts and assemblies through the workplace and ensure that materials are available when needed. Unfortunately, the improper handling and storing of materials often result in costly injuries.

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PREVENTION

Hazards involving material handling can lead to serious worker injuries and even death. In particular, workers are at risk of injuries resulting from being struck by, caught between, or crushed by materials, equipment, lifting devices or vehicles. Workers are also at risk of developing musculoskeletal disorders, such as low back or shoulder injuries.

OSHA recommends that employers establish a **Formal Training Program** to teach workers how to recognize and avoid **materials handling hazards**. Instructors should be well-versed in safety engineering and materials handling and storing.

The **Training** should reduce workplace **Hazards** by emphasizing the following factors:

- Dangers of lifting without proper training.

- Avoidance of unnecessary physical stress and strain.
- Awareness of what a worker can comfortably handle without undue strain.
- Use of equipment properly.
- Recognition of potential hazards and how to prevent or correct them.

Here are some examples of the dangers of Materials Handling

1. **Struck-by incidents**

    - An excavator-bucket swinging around and striking a person is a struck-by-incident.
    - One of the biggest exposures for a fatality on a construction site is ground personnel being struck by moving equipment. OSHA states approximately 75% of struck by fatalities involve heavy equipment such as trucks or cranes
    - Work areas where heavy equipment is should be clearly marked and barricaded.
    - Ground personnel entering a work area where there is equipment operating need to make their presence known to all operators in the area.
    - Operators should avoid backing whenever possible and need to stop their work task if they lose sight of any ground personnel.
    - A spotter should be used if equipment is operating in a tight area or when operating around ground personnel.
    - Plan work tasks accordingly and eliminate the need for a spotter if possible.

2. **Caught-in or between incidents**

    - A caught – in or between incident is when there is an injury due to crushing between two objects.
    - One important safeguard in protecting yourself from these incidents is to stay out of the line of fire.
    - You should first always consider the safest place to be around equipment with regards to the line of fire.
    - Never put yourself in a situation where you do not have an out to escape danger.

3. **Other Hazards/Dangers**

    - Slips, trips, and falls are some of most common types of incidents that result in injuries to workers. Climbing into the cab of equipment or walking on the slick surfaces of a machine are two common occurrences that result in injuries.
    - Door jams or equipment hoods are two common pinch point locations where operators injure fingers.
    - Loose cargo can lead to injury due to an operator losing control of their equipment or when an object that is not secured gets stuck in a control or under a pedal of the equipment.
    - Leaks on equipment can lead to multiple different types of injuries or property loss. Leaking can inject fluid underneath the skin of a worker which can result in amputation of the affected body part and also lead to a slip incident for those who step on the fluid.

4. **Other Sources of injury that are problematic for operators and personnel**

    - Repairing and servicing equipment in dangerous positions.
    - Unexpected violent tipping of the equipment.
    - Uncontrolled traffic within or through the work area.
    - Unexpected violent shocks or jars to the machine.
    - Sudden movement of a power unit while it is being attached to earth moving equipment.
    - Limbs if trees or overhead obstructions.
    - Leaving earth moving or other equipment in dangerous positions while unattended.
    - Failure of lifting mechanisms.

Using the following Personal Protective Equipment prevents needless injuries when manually moving materials

- Hand and forearm protection, such as gloves, for loads with sharp or rough edges.
- Eye protection.
- Steel-toed safety shoes or boots.
- Metal, fiber, or plastic metatarsal guards to protect the instep area from impact or compression.

Precautions when moving materials mechanically

- Using mechanical equipment to move and store materials increases the potential for employee injuries. Workers must be aware of both manual handling safety concerns and safe equipment operating techniques. Employees should avoid overloading equipment when moving materials mechanically by letting the weight, size, and shape of the material being moved dictate the type of equipment used.
- Employers must ensure that the equipment-rated capacity is displayed on each piece of equipment and is not exceeded except for load testing.

WORKERS SHOULD TAKE PRECAUTIONS WHEN STACKING AND STORING MATERIAL

When picking up items with a powered industrial truck, workers must do the following:

- Center the load on the forks as close to the mast as possible to minimize the potential for the truck tipping or the load falling.
- Avoid overloading a lift truck because it impairs control and causes tipping over.
- Do not place extra weight on the rear of a counterbalanced forklift to allow an overload.
- Adjust the load to the lowest position when traveling.
- Follow the truck manufacturer’s operational requirements, and
- Pile and cross-tier all stacked loads correctly when possible.

Precautions to avoid STORAGE hazards

Stored materials must not create a hazard for employees. Employers should make workers aware of such factors as the materials’ height and weight, how accessible the stored materials are to the user, and the condition of the containers where the materials are being stored when stacking and piling materials.

To prevent creating hazards when STORING materials, employers must do the following:

- Keep storage areas free from accumulated materials that cause tripping, fires, or explosions, or that may contribute to the harboring of rats and other pests.
- Place stored materials inside buildings that are under construction and at least 6 feet from hoist ways, or inside floor openings and at least 10 feet away from exterior walls.
- Separate noncompatible material.
- Equip employees who work on stored grain in silos, hoppers, or tanks, with lifelines and safety belts.

Safeguards when STACKING materials

Stacking materials can be dangerous if workers do not follow safety guidelines. Falling materials and collapsing loads can crush or pin workers, causing injuries or death.

To help prevent injuries when STACKING materials, workers must do the following:

- Stack lumber no more than 16 feet high if it is handled manually, and no more than 20 feet if using a forklift.
- Remove all nails from used lumber before stacking.
- Stack and level lumber on solidly supported bracing.
- Ensure that stacks are stable and self-supporting.
- Do not store pipes and bars in racks that face main aisles to avoid creating a hazard to passersby when removing supplies.
- Stack bags and bundles in interlocking rows to keep them secure.
- Stack bagged material by stepping back the layers and cross-keying the bags at least every ten layers (to remove bags from the stack, start from the top row first).

During materials STACKING activities, workers must also do the following:

- Store baled paper and rags inside a building no closer than 18 inches to the walls, partitions, or sprinkler heads.
- Band boxed materials or secure them with cross-ties or shrink plastic fiber.
- Stack drums, barrels, and kegs symmetrically.
- Block the bottom tiers of drums, barrels, and kegs to keep them from rolling if stored on their sides.
- Place planks, sheets of plywood dunnage, or pallets between each tier of drums, barrels, and kegs to make a firm, flat, stacking surface when stacking on end.
- Chock the bottom tier of drums, barrels, and kegs on each side to prevent shifting in either direction when stacking two or more tiers high.
- Stack and block poles as well as structural steel, bar stock, and other cylindrical materials to prevent spreading or tilting unless they are in racks.
- Stand with your feet about shoulder width apart to lift the object. Bend your knees, keep your back straight, grasp the item and raise it slowly.
- Set the load down by keeping your back straight and the load close to your body. Bend your knees and move slowly and smoothly.

Stack Materials Safely

There are three simple steps for stacking materials safely:

1. Start with a level, solid base for a stack.
2. Observe the maximum load limits for floors, shelving, elevators and other surfaces.
3. Materials should be stacked with weight, size and shape taken into consideration so they do not fall over. For example,
    - Heavy materials should never be stacked too high.
    - While bags or boxes may be stacked in layers, cylindrical objects must be racked on solid supports to prevent them from shifting and rolling.

Store Materials Correctly

1. Pay attention to what materials and other substances are stored together. Some examples:
    - A fire might occur if flammable materials and fuels or solvents are placed close to each other.
    - Incompatible chemicals might explode.
    - Do not store liquid chemicals above dry ones.
2. Know how to properly store chemicals and other potentially hazardous materials. Read the safety data sheet (SDS).
3. Make sure there is adequate space in storage areas for an emergency escape route, emergency equipment and personnel.