Material Handling and Storage



PREAMBLE

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.

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.

INCIDENT

Background:

- On August 22, 2018, a worker for Skyjack Inc. was removing a flange pin from the boom of a Skyjack boom truck at the company’s Woodlawn Road location. The worker was in a kneeling position on top of the cowling, which is the cover of the body of the truck and about seven feet above ground level.
- The cowling is made of smooth fiberglass and slopes toward the boom, and is only 21 inches wide.
- The worker was using pry bars to release the flange pin when the pin gave way, causing the worker to fall backwards off the cowling. The worker suffered critical injuries.
- Skyjack as an employer neither provided a suitable and safe platform upon which the worker could carry out the work nor did it take other measures to protect the worker from the danger of falling.
- Skyjacks did not take every precaution reasonable in the circumstances, contrary to section 25(2)(h) of the Occupational Health and Safety Act.

As a result, of the inaction of Skyjack Inc, the following occurred;

- Worker Injury Results in $45,000 Fine for Guelph Manufacturer
- **Convicted:** Skyjack Inc., 287 Speedvale Avenue West in Guelph, a manufacturer of elevated material handling equipment such as boom trucks and scissor lifts.
- **Description of Offence:** A worker suffered a critical injury after falling from a boom truck.
- **Date of Offence:** August 22, 2018.

Date of Conviction: October 4, 2019.

Penalty Imposed:

- Following a guilty plea, Skyjack Inc. was fined $45,000.
- The court also imposed a 25-per-cent victim fine surcharge as required by the *Provincial Offences Act*. The surcharge is credited to a special provincial government fund to assist victims of crime.

BUSINESS / REGULATION

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.

Regulations for Industrial Establishments (O. Reg. 851)

In addition to the OHSA duties, the Regulation for Industrial Establishments outlines specific requirements for the:

- safe lifting, moving and storage of materials and
- safe maintenance and operation of lifting devices, cranes and other equipment.

STATISTICS

Material handling is the most frequent cause of workplace injuries, according to a new report from The Travelers Companies, Inc in 2016. The company’s Injury Impact Report identifies the most common causes of workplace accidents and injuries, compiled by analyzing more than 1.5 million workers compensation claims filed between 2010 and 2014 from a variety of business sizes and industries.

The most frequent causes of workplace injuries included:

- Material handling (32 percent of total claims)
- Slips, trips and falls (16 percent)

- Being struck by or colliding with an object (10 percent)
- Accidents involving tools (7 percent)
- Traumas occurring over time, for example when a part of the body is injured by overuse or strain (4 percent)

The above incidents most often resulted in strains, sprains, cuts, punctures, contusions, inflammation, fractures, or chronic sicknesses resulting from a type of work (e.g., a skin disease caused by chemical exposure). On average, strains and sprains resulted in 57 missed work days, followed by cuts and punctures at 24 days. Of the most commonly-resulting injuries, inflammation and fractures caused the most time away from work at 91 and 78 days, respectively.

INDUSTRY-SPECIFIC FINDINGS

Analysis of the workers compensation claim data revealed that certain causes of accidents and resulting injuries were more prevalent in some industries than others:

- While material handling accidents were the top cause of injuries overall, these were especially common in the manufacturing and retail industries, causing nearly 40 percent of injuries in both sectors.
- Falling from height was among the top causes of injuries in both the construction and retail industries.
- The oil and gas industry were the only segment in which motor vehicle accidents were one of the most frequent causes of injury.
- Eye injuries were one of the most frequent types of injuries in manufacturing and construction.

The injuries with the highest average incurred costs included amputations, dislocations, electric shock, crushing and multiple trauma injuries, such as breaking multiple bones at once. These severe injuries have typically occurred less frequently overall.

PREVENTION

Precautions when moving materials manually

When moving materials manually, workers should attach handles or holders to loads. In addition, workers should always wear appropriate personal protective equipment and use proper lifting techniques.

To prevent injury from oversize loads, workers should seek help in the following situations:

- When a load is so bulky that employees cannot properly grasp or lift it,
- When employees cannot see around or over a load, or
- When employees cannot safely handle a load.

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.

Employers

Some examples of employers’ duties under the Occupational Health and Safety Act (OHSA):

- provide information, instruction and supervision to workers to protect them from material handling hazards.
- take every precaution reasonable in the circumstances for the protection of workers from musculoskeletal disorders, such as low back or shoulder injuries.
- ensure equipment, materials and protective devices required by the regulations (such as lifting devices and mobile equipment, etc.) are provided and maintained in good condition.

Supervisors

Examples of supervisors’ OHSA duties:

- ensure workers comply with the OHSA and its regulations.
- ensure any equipment, protective device or clothing required by the employer is used and/or worn by workers.
- advise workers of any potential or actual health or safety dangers known by the supervisor.

- if prescribed, provide workers with written instructions about measures and procedures to be taken for the workers’ protection.
- take every precaution reasonable in the circumstances for the protection of workers from material handling hazards.

Workers

Examples of workers’ OHSA duties:

- use or operate equipment (such as lift trucks or other lifting devices) in a safe manner.
- work in compliance with the OHSA and its regulations.
- report any known workplace hazards or OHSA contraventions (such as missing slip-resistant feet on ladders, poorly maintained storage systems) to your supervisor or employer.
- Workers should also be aware of their OHSA rights, including the right to refuse unsafe work and the right to know about any potential hazards they may be exposed to in the workplace.