UNIVERSITY OF GUELPH | Environmental Health and Safety

MATERIAL HANDLING AND LOADING DOCK SAFETY GUIDELINES

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1 PURPOSE

Material handling involves the use of motorized or non-motorized equipment to handle heavy and awkward loads and frequently involves the use of equipment or manual material handling around loading docks.

Workers who in the course of their duties lift, carry or move materials, articles or things using material handling equipment and/or work around loading docks are presented with unique hazards that could result in injury if not controlled. These hazards can include ergonomic hazards such as muscle strains from improper lifting and awkward postures to safety hazards such as falls from docks or lift gates; being struck, pinched, or run over by moving equipment or parts, such as from for example forklifts, dock plates or unsecured loads.

This document sets forth the minimum requirements for University departments with material handling operations and work around loading docks. It is intended to provide University departments with such operations, general guidance on developing or improving their own safe work practices and procedures based on the types of hazards, activities, equipment, and vehicles involved. For the purpose of this document, material handling equipment refers to powered or manual pallet movers, lift trucks, dock levelers, lift gates on moving vans, dollies and push carts, for example.

2 SCOPE

This guideline is applicable to any University department that engages in material handling, loading dock activities and the use of associated equipment and vehicles. Guidance on the use of Lift Trucks is covered under the U of G Lift Truck Program.

3 APPLICABLE LEGISLATION AND STANDARDS

Occupational Health and Safety Act (OHSA) of Ontario, R. S.O. 1990

O. Reg.851 R.R.O. (as amended), Industrial Establishments, s. 13, 45 - 48

CSA Z1004 Workplace Ergonomics

ANSI A10.40-200x

4 GENERAL REQUIREMENTS

The following sets out minimum requirements for material handling and loading dock operations.

1. All University employees, students, contractors, and vendors shall abide by the provisions of these guidelines.

2. Workers assigned material handling tasks or tasks at loading dock operations shall be trained, supervised and competent in the work procedures assigned and the operation of required equipment.

3. Workers must operate material handling and loading dock equipment devices as intended and in accordance with their training and manufacturer requirements to avoid injury or damage.

4. All equipment and devices involved in lifting and handling loads shall be inspected before use and in accordance with manufacturer specifications.

5. A hazard assessment should be conducted before commencing material handling or loading dock tasks.

6. Appropriate control measures should be selected using the hierarchy of controls (elimination, substitution, engineering/isolation, administrative and personal protective equipment).

7. Appropriate personal protective equipment (PPE) shall be used after all other control measures have been explored and deemed to be inadequate or not practicable, to eliminate the hazard.

8. All records and documentation regarding inspection of equipment, operating procedures, hazard assessment, training, and equipment maintenance shall be retained.

9. Procedures shall be developed for loading dock operations and safe handling of loads received and shipped.

10. Passersby and untrained staff are prohibited from accessing and entering loading dock areas. Warning signage shall be posted.

5 DEFINITIONS

Wheel Chock	A wedge-shaped device made of wood, metal, rubber, or other substance that is placed under a wheel, to prevent the vehicle from being loaded from moving
Container	A large trailer-like box without wheels that is mounted on a chassis or flatbed rail car, designed for intermodal transportation
Trailer	A 40-foot or larger semi-trailer generally pulled by a semi-tractor or yard tractor
Dock Leveler	A height-adjustable platform used as a bridge between dock and trailer

Dock Plates	Load-rated portable ramps to bridge between dock and trailer
Ground Level Dock	A ground level dock with little or no elevation change
Loading Dock	An elevated platform for loading and unloading trucks
Material Handling Equipment (MHE) Operator	A qualified/certified operator of materials handling equipment.
Shipper/Receiver	This term includes full-time staff members and part-time staff members, responsible for the receiving and shipping of goods.
Truck Driver	This term includes full-time staff members, temporary workers, seasonal workers, supplier drivers, and contractors operating a truck.

6 ROLES AND RESPONSIBILITIES

6.1 MANAGERS/SUPERVISORS

All Managers and Supervisors that oversee material handling or loading dock operations have the following responsibilities:

- Develop, document, implement and maintain appropriate work procedures, measures, inspections, and precautions to control material handling and loading dock hazards that may be present by using these guidelines.
    - As applicable, all safe operating procedures should be developed in accordance with manufacturers' operations manuals.
- Provide training to staff, specific to their area’s material handling operations, loading docks and equipment used.
- Maintain training records.
- Confirm workers wear appropriate personal protective equipment (PPE) for the tasks performed.
- Confirm that workers operating motorized or non-motorized equipment receive the appropriate training and/or certification for the applicable equipment.
    - Only operators who have the appropriate training and certification shall operate designated machines and equipment.
- Confirm that equipment is maintained in a safe working condition.
- Confirm that workers under their supervision comply with all safety procedures and requirements.

6.2 WORKERS

All workers that perform material handling duties or work at loading docks have the following responsibilities:

- Comply with all safety procedures related to material handling operations and loading dock safety.
- Participate in any required training to operate specialized equipment or work around loading docks.
- Wear personal protective equipment (PPE) as required.
- Inspect equipment prior to use and report unsafe working conditions or equipment to their Supervisor.
- Care for and maintain equipment in an acceptable condition.
- Report to their Manager/Supervisor an injury or near miss incident immediately.

6.3 ENVIRONMENTAL HEALTH AND SAFETY

Environmental Health and Safety has the following responsibilities:

- Develop, implement, and maintain guidance on material handling and loading dock safety in accordance with applicable standards and regulatory requirements.
- Providing support regarding the development and/or review of department standard operating procedures for safe operation of material handling equipment
- Assisting in hazard assessments as required or requested.
- Monitor changes in regulatory requirements, applicable standards and best practices pertaining to material handling and loading dock safety
- Periodically inspect and/or audit material handling and loading dock operations.

7 HAZARD ASSESSMENT

A hazard assessment should be conducted when workers are expected to manually lift, lower, push, pull, carry, handle or transport a load using any material handling equipment (e.g., pallet jack, fork lifts, dock levelers, lift gates). A hazard assessment is the first step in identifying the control measures required for a task or in a work area. Control measures (elimination, substitution, engineering, administrative and PPE) have been established for a number of departments and work areas at the University of Guelph Main Campus, Ridgetown Campus and the Research Stations. Refer to safety manuals (e.g., Biosafety, Laboratory Safety and Radiation Safety) and department-specific procedures for established requirements in your work area.

For new tasks or changes to existing work processes, a hazard assessment should be conducted by the supervisor or manager and is an important first step in identifying hazards that may pose a health or safety risk to workers. When identifying control measures, consider the outcome of past injury or illness data. Workplaces and tasks should be periodically re-assessed as conditions, equipment or procedures change.

The Hazard Assessment Form in the Personal Protective Equipment Guidelines (Appendix A) is a tool to complete and document the hazard assessment process. While completing the assessment consider the following:

- The weight of the load
- The size of the load
- The shape of the load
- The number of times the load will be moved, and
- How the load will be moved
- Should a manually lifted load exceed 45lbs., it is to be deemed a “two-person” lift
- Environmental conditions (e.g., pathways, inclines, clearances, lighting)
- Other hazards (e.g., biological, chemical, physical, etc.)

Supervisors must retain a copy of the Hazard Assessment Form for as long as the work task/process is conducted. EHS is available for guidance and consultation at any point during the hazard assessment process.

If a worker reports potential work-related symptoms of a musculoskeletal injury, the Supervisor should promptly review the activities of the workers, and other workers performing similar tasks, to identify work-related causes of the symptoms, if any, and implement corrective measures to avoid further injuries if work-related.

8 MANUAL MATERIAL HANDLING

The matching of physical demand with physical ability in manual material handling is essential. Manual material handling tasks, if not done carefully, can result in injuries to the back, sprains, and musculoskeletal conditions.

The severity of injuries related to manual material handling can be minimized by adhering to safe work practices. It is important to minimize the amount of lifting, twisting, bending, and reaching done above shoulder height.

Risk factors that may increase the chance of injury include:

- force expended to perform the task
- direction that the force is applied
- repetition of the motion
- posture
- load characteristics
- grip on the load
- workplace conditions
- lighting and visibility

1. Workers performing material handling tasks shall be provided with the training and equipment that will assist in the reduction or elimination of incidents or injuries resulting from lifting and handling heavy or awkward loads, where reasonably practical.

2. Supervisors or a competent designate shall conduct a hazard assessment when workers are expected to manually lift, lower, push, pull, carry, handle, or transport a load. This hazard assessment shall consider: the weight, size, and shape of the load; the number of times the load will be moved and how the load will be moved. Should a manually lifted load exceed 45 lbs, it is to be deemed a 'two-person' lift. The weight of loads may be estimated using drawings, weight charts, shipping manifests or manufacturer specifications.

3. Workers shall not attempt to lift a load that they determine is too awkward or heavy and shall ask for assistance.

4. Workers involved in manual material handling should participate in ergonomic training to reduce the potential and severity of injury.
   - Refer to the guidance: Manual Material Handling – Tips to Prevent a Lifting Injury.
   - Contact Occupational Health and Wellness for more information on educational sessions on Ergonomics and MSDs Hazards and Controls.

9 MATERIAL HANDLING EQUIPMENT

1. Use material handling equipment (MHE) for heavy loads. Consider the task, location, pathways, and environmental conditions where the device will be used.

2. Prior to use, review the manufacturer's operations manual and safety content and adhere to the specified load capacity. Retain copies of MHE operating manuals in accessible locations, near the equipment.

3. Inspect the device for damage, wear, leaks, wheel condition, and broken or missing parts. For powered pallet movers, complete the equipment pre-operational checklist. Report any deficiencies to your supervisor.

4. Refer to the training tools (Safety Checks) on the EHS Material Handling and Loading Dock Safety webpage for more information and guidance on safe work practices.

5. Equipment must be maintained in accordance with manufacturer guidelines. Damaged equipment should be reported and removed from service immediately.

6. In addition to above, for powered pallet movers, adhere to the OHSA-required training and best practices around safe operation (e.g., load securement, clearances, checking surroundings, charging practices, etc.)

7. Refer to the U of G Lift Truck Policy and Program for guidance and requirements on safe operation of lift trucks.

10 LOAD SECUREMENT

1. Loads must be stable and secure before transporting. Strapping and shrink wrapping should be used as appropriate to stabilize loads.

2. Pallets must be stable and balanced when loading and unloading.

3. Load must be centered and of appropriate height and width for visibility, overhead clearances and pathways.

4. For transporting any chemicals, confirm chemical compatibility of the products and review Safety Data Sheets (SDSs), as required.

5. Store empty pallets such that they are not impeding access to emergency exits, fire extinguishers or other emergency equipment or in the path of traffic or pedestrians.

The following sections provide additional guidance and reminders regarding load securement on pallets.

10.1 STACKING LOADS ON PALLETS

- Poorly constructed loads on pallets can collapse, creating lifting hazards or falling on delivery staff or pedestrians.
- Do not stack heavy loads on top of light loads; stack light loads on top of heavy loads. This will keep the centre of gravity low and prevent the stack from falling over.
- If you are stacking loads on a pallet, they should not stick out over the sides of the pallet but be stacked straight centered on each other.
- Limit the stacked height of materials especially if workers will be working around the material. Never climb a rack or stacked materials.
- If stacking materials near the ceiling, make sure they are at least 18 inches away from sprinkler heads.

10.2 LOADING AND UNLOADING PALLETS

- Always confirm that pallets are stable and balanced when loading and unloading
- Never use a damaged pallet.
- Store pallets flat and no taller than shoulder height (about 4ft). Never store pallets end to end.
- Do not store pallets where they may impede access to emergency exits, entrances/doorways, fire extinguishers, other emergency equipment etc.
- Do not leave pallets in the path of traffic or pedestrians.
- Wear appropriate PPE such as gloves and CSA approved safety shoes when using pallets.
- Avoid walking on pallets.

11 LOADING DOCK OPERATIONS

Loading docks are typically recessed platforms or bays in a building or facility where materials are loaded or unloaded from trucks, trailers or moving vans. They can be busy areas where workers can be exposed to a range of high-risk hazards, therefore it is essential to recognize, anticipate and control the potential hazards in these locations.

Common hazards found in loading dock areas include but are not limited to:

- Inadequate housekeeping
- Dock is slippery from moisture or oil
- Loose dock plates
- Vehicles not properly positioned and secured
- Trailer wheels not properly chocked
- Potential to be struck by material handling and lifting devices (for example forklifts)
- Improper use of loading and unloading equipment and inadequate vehicle restraint.
    - For example, load run-away, driver pull away, trailer creep etc.
- Improper lifting and carrying of materials
- Uneven surfaces
- Poor lighting
- Minimal safety markings and signage
- Pedestrian awareness and vehicle traffic
- Stacking and securing loads
- Carbon monoxide exposure from vehicle exhaust

Regularly inspect loading docks and ground level receiving areas for potential hazards and refer to the Loading Dock Safety Checklist.

11.1 SHIPPING AND RECEIVING AREAS

1. Delivery van and truck drivers shall safely place the truck in the designated shipping and receiving area with the engine shut off and breaks applies and safely place goods in the receiving area

2. Tractor Trailer drivers shall place the truck in the designated shipping lane, with the trailer square to the loading dock, placed within 2” of the dock bumper stops with the brakes applied, engine shut off and wheel chocks in place; and prepare the trailer for unloading

3. Shipping /receiving doors must be secured when doors are in open position and not be used for pedestrian travel, where there is a person-door available.

4. Where applicable, pallet staging areas should be demarcated and maintained.

5. Where appliable loading dock receiving areas should be demarcated with painted lines using Ministry of Transportation of Ontario grade yellow marking paint, to identify the receiving lane, the width of the receiving lane, and the length of a tractor-trailer.

11.2 LOADING AND UNLOADING MATERIALS

1. Where applicable, shipper/receivers shall inspect trailers and check it is safe to be unloaded prior to unloading. This shall include confirming that appropriate vehicle restraints have been applied to secure the trailer or vehicle.

2. Trailers shall be properly chocked, and vehicles properly secured prior to loading and unloading, taking into consideration exposure to adverse weather or snow load.

3. Material handling equipment operators shall check dock plate or dock leveler is properly positioned and the trailer has been deemed safe to be unloaded by the receiver before entering the trailer.

4. Material handling equipment travel ways must be maintained free of obstructions.

11.3 TRAFFIC MANAGEMENT

1. Shipping/receiving areas should be demarcated to ensure delivery vehicles have a safe and secure area to unload and receive goods.

2. Pedestrian walkways should be established where practicable with every effort to minimize interaction between pedestrians and material handling equipment.

3. For loading dock areas operating continuously, supervisors shall determine a site-specific traffic management plan to designate material handling equipment travel areas, pedestrian pathways, and exclusion zones.

11.4 DOCK INFRASTRUCTURE

1. Dock plates (fixed and portable) must be rated to handle the combined weight of the material handling equipment, any attachments, and the maximum product load. Rated capacity should be stamped on the dock plate.

    a. They must be inspected before use for signs of wear, tear and corrosion, grease, moisture, spills and certified once per year.
    b. They should be lowered to ground level when not in use
    c. Be secured in position before driving or walking over it.
    d. Be positioned flush with the surface to minimize movement and wear at edges
    e. Have painted edges, as warning to MHE operators.

2. Dock bumpers shall be inspected regularly to confirm they are functioning appropriately.

3. Docks and dock doors shall be large enough to accommodate the loads received. They shall be maintained regularly.

4. Visual indicators or physical barriers must be in place if dock doors are open for ventilation or other purposes when there is not a trailer at the dock. Visual indicators such as ropes or chains, or physical barriers such as gates must be used to provide added protection for operators and pedestrians. Painting door edge lines in a highly visible contrasting color may be used “in addition to” chains/ropes but may not be the sole visual indicator for the opening.

5. Loading docks with open outside platforms must also have the dock ledges protected against a fall hazard by having a physical barrier in place to prevent falls such as ropes, chains, or a physical metal fence or gate.

6. Every effort should be made to maintain a level grade on staging lanes. As part of the site hazard assessment loading docks with an uneven grade should be assessed and proper precautions are undertaken to ensure the safe transfer of goods. Consideration should be made to only allow the use of MHE equipment with a hydraulic or electric-assisted braking system.

7. Dock areas shall have sufficient lighting for dock activities

8. As applicable, signage shall be posted as reminders of:
   - Drops in grade
   - PPE requirements
   - Turning off ignition
   - Speed limits
   - Pedestrian traffic areas
   - Safe lifting
   - Keeping pathways clear as part of good dock housekeeping

11.5 HOUSEKEEPING

Maintain good housekeeping at loading docks, keeping loading and unloading areas and pathways free of obstructions, debris and stored items.

- Clean up any spills and leaks immediately and remove any packaging materials (cardboard, pallets, plastic, etc.). Workers should be trained to recognize spills and work to mitigate and/or clean them immediately.
  - Any material that enters a catch basin/sewer is considered a reportable spill to the Ministry of the Environment and the City of Guelph.
    - Be cautious of material having the potential to enter catch basins/sewer.
    - Loading and Unloading operations should be performed in a manner that mitigates the potential of a reportable spill.

- Do not block fire exits, extinguishers or sprinklers, eye wash stations or showers and first aid kits.
- Do not use the loading dock as a storage area.
- Do not eat or smoke in the loading dock area.
- There must be designated areas for all tools and equipment to prevent them from falling or creating tripping hazards.
- Any electrical outlets near openings in the loading dock should be protected from the weather (rain, snow, ice), effectively grounded, and/or contain ground fault circuit interrupter (GFCI).
- Cracked, broken or uneven floor surfaces and other tripping hazards should be reported.
- In the winter months, the loading dock area should be kept free of snow and ice.

11.6 EMERGENCY EQUIPMENT AND RESPONSE

- All users of loading docks should know the location of and how to use emergency equipment such as fire extinguishers, first aid kits, eye wash stations or showers, alarms, and spill kits.
- Staging areas or loading/unloading areas should not interfere with emergency egress routes.
- Considerations should be given to carbon monoxide (CO) monitoring for trucks.
- A list of emergency numbers should be posted in the loading dock area - immediate first aid and/or emergency medical aid by calling the University of Guelph Campus Safety Office at either 519-824-4120 ext. 2000 or 519-840-5000 or by calling 911.
- All incidents should be reported immediately to the Supervisor and the University's Incident Reporting Process should be followed.

11.7 PERSONAL PROTECTIVE EQUIPMENT

Individuals should wear proper personal protective equipment (PPE) for the job being performed. PPE should be in good condition and fit correctly. PPE used in or around a loading dock shall include:

- CSA-approved safety shoes with toe and sole protection
- High visibility vest

Additional PPE may be worn depending on the task and can include the following:

- Gloves
- Hearing protection
- Eye protection
- Hard hat

12 ADDITIONAL RESOURCES

Loading Dock Safety Checklist

U of G Material Handling and Loading Dock Safety Webpage