



Photo by Cassandra Albert

Loading Docks — Danger Zones for Workers

Loading docks are a vital component of Navy and Marine Corps shore activities. Large, fast-paced equipment is used to move tons of products each day. The Navy doesn't track the exact number of mishaps around loading docks, but we do know there have been more than 500 mishaps with forklifts in the past 10 years. Since there is heavy forklift traffic around loading docks, it's a safe bet that a good many of these mishaps happened there. Here are two of the more tragic ones:

A Navy civilian worker was trying to secure shrink wrap around freight on a pallet. When he pulled on the material, it separated and made him lose his balance. He fell behind the right front wheel of a passing straddle truck. A co-worker yelled to alert the straddle-truck driver. He immediately stopped the truck, but for some reason, backed up. When he did, his right-front wheel ran over the chest of the fallen worker. The worker died from his injuries.

After working in a warehouse, a lance corporal was returning a forklift to the motor pool. He was backing out of the warehouse, through a bay door and down a ramp, with no load on his mast. His rear tire rubbed the curb on the ramp. A by-stander twice yelled to the driver to straighten his tires, but the lift went over the curb. All the lift's tires were off the ramp, and the lift was perched precariously on the edge of the 6-inch-high curb. Even though his sergeant told him not to, the driver started to jump out of the lift, which shifted its weight. When both he and the lift fell, the forklift landed on him. The edge of the cage decapitated the driver.

You can take several steps to improve the safety and efficiency of loading docks.

Ramp slopes are something you need to take into consideration. A slightly downward-sloping driveway toward the ramp is best, as it allows for dock height to be about 2 inches below the average height of a truck

bed. Since a full trailer will be lower when parked at the dock and higher when empty, dock height is crucial. Ideally, ramp slope should allow for a three-percent grade.

Weather plays a role as well. For example, warehouse employees must get down from the dock to the trailer being unloaded to check wheel chocks, trailer condition and landing wheels. To ensure safe access from the dock, provide a ladder designed according to OSHA specifications. Stairs should have handrails and non-skid steps. Employees must know that jumping off the dock is not acceptable; post signs to reinforce this rule.

Unintentional movement of trailers is one of the more dangerous actions that occurs at a dock. Because a lift truck can easily fall from the dock if the trailer creeps or the driver pulls away from the dock too soon, the trailer must be secured.

If you consider that a **dock plate** has a small moveable lip about 15 inches wide, it becomes clear that placement and security of this plate can be the difference between life and death. The lock-leveler lip extends from the dock plate onto the rear of the trailer bed. This metal bridge absorbs the impact of the forklift crossing over it repeatedly while loading or unloading the trailer.

Wheel chocks are standard safety devices. It is the forklift operator's responsibility to make sure the wheels of the trailer are chocked on both sides. However, wheel chocks are often missing or go unused. Or their use is simply not enforced.

In some cases, chocks aren't fully effective. For example, at an outdoor dock, snow or ice may cause chocks to slip away from the wheel. Poor drainage can allow water to pool in areas where trailer wheels should be spotted. Rather than wade through ankle-deep water to place and remove chocks, some employees may simply decide not to use them.

Collapse of a **landing wheel** can cause the forklift and operator to be thrown forward into the nose of a trailer. Or a trailer may tip to the side, causing the lift truck inside it to be thrown against the wall of the trailer.

If the trailer is shorter than average, its landing wheels are located closer to the rear of the trailer. As a result, the trailer can be spotted outside the building. Once the forklift has unloaded products from the trailer, the weight of the forklift and product will cause the back of the trailer to raise up and its nose to tip down and forward. This would propel the forklift and operator toward the trailer's nose.

Reducing Hazards

Safety awareness is not enough to reduce dock hazards. You must have systematic inspections and auditing, and you must have safeguards in place.

Identify the source and types of injuries occurring in your dock area. You can do this by reviewing past mishap reports and evaluating past workers' compensation losses.

Management must take steps to organize product movement, control traffic patterns and secure racking. Other issues include lighting, extendable conveyors, PPE, chemical handling, training, fire safety, and equipment maintenance.

Good visibility is essential. Lighting must be bright enough to ensure the safe loading of a product and to help forklift operators see pedestrians. Lights mounted on forklifts aid entry into trailers and ease operations on ramps or in remote areas.

Heat strips or climate curtains can help control temperature throughout the building. However, pedestrians must use caution when passing through these hanging plastic strips to avoid forklift traffic. Where possible, have a separate doorway for people to pass through. Also, replace strips as they become discolored or scratched.

To prevent falls, coat walkways, stairs, walking surfaces of ramps, and dock plates with non-skid paint. Mark all walkways with yellow lines to control traffic.

Spills may affect how quickly powered equipment can stop and make a slick walking surface for pedestrians. Correct sources of leaks, and clean up oil and grease spots immediately.

Chemical spills can happen if a forklift operator drops or penetrates (with a fork) a chemical container. Dock workers must be aware of procedures to contain spills, be trained to recognize chemical hazards, and know what PPE to wear when handling chemicals.

Management must place spill cleanup kits in the dock area and train employees in their use. Dock workers must also understand the features of labels on standard chemical containers, such as HIMS or NFPA 704, material safety data sheets must be available for any chemicals that are handled.

Fire extinguishers should be readily accessible. Train employees on how to use them. Display signs identifying fire-safety equipment. Equip forklifts that operate outside or in remote areas with fire extinguishers as well.

Protect sprinklers, extinguishers and other emergency equipment to prevent damage. A damaged

sprinkler head or broken pipe can cause significant water damage to stored goods and will also affect traction in the dock area (for both equipment and pedestrians). Identify pipes by hanging caution signs or streamers on them for greater visibility. Place barriers in strategic locations to prevent damage by forklifts or loads.

Loading and unloading flatbed trucks poses some unique risks. The typical trailer contains walls and a roof, which prevent the forklift operator from driving off the side of the trailer. Most flatbeds have no sidebars to prevent this. Therefore, if possible, load and unload flatbed trailers from the dock well or other flat or lower surface.

Some docks are equipped with **fixed or extendable conveyors**, which move products inside the trailer. Consider these safeguards:

- guards on moving parts and nip points
- power disconnects (if applicable)
- lighting
- height adjustments to make it easier for workers.

Basic **PPE**—hard hats, gloves, steel-toe boots and eye protection—is a must. Provide task-specific gear, such as face shields, rubber gloves, ear plugs or muffs, rubber boots, and dust masks as necessary.

Safety **inspections** are essential. Depending on dock activity, the product being handled and past safety performance, weekly inspections may be necessary. Informal daily inspections are also an important component. Use a concise, easy-to-read checklist.

Operator training is critical. Each forklift operator must receive training specific to the type of truck that is being used.

Because workers are manually handling lots of heavy material at docks, **back injuries** are common. Where possible, use powered equipment. Shelves, tables and conveyers must be placed at the correct height for employees. Management must also make sure that employees use proper lifting techniques.

Many docks are serviced by **ramps**, which can present these hazards: slippery surfaces, poor lighting and visibility, and vehicle traffic. If a ramp is the only means of access to an area, provide pedestrian walkways. If this is not possible, ban pedestrians from ramps. Handrails, mirrors and signs can help prevent mishaps.

Carbon monoxide (CO) can be a problem as well, particularly if lift trucks are not properly maintained. OSHA has established a time-weighted average of 50 ppm, ACGIH recommends a 35-ppm limit, NIOSH has established a level of 1,200 ppm as immediately dangerous to life and health. If you are lax on maintaining forklifts, CO levels could easily exceed these limits.

To safeguard against such problems, maintain forklifts, sweepers or other powered equipment that use propane, diesel or gasoline as a fuel according to manufacturers' guidelines. Management should also install CO detectors. These can be mounted at the dock or on powered equipment and should be set to alarm if 25 ppm of CO is detected. **A**

Information for this article came from Safety Center reports and *Professional Safety*, a publication of the American Society of Safety Engineers.



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