

Safety Matters

March 2008

Preventing Injuries from Slips, Trips and Falls

In 1999, over one million people suffered a slip, trip or falling injury, and over 17,000 Americans died as a result. Of the estimated 3.8 million disabling injuries each year in the work force, **15 percent** are due to slips, trips, or falls, which account for 12 to 15 percent of all Workers' Compensation costs.

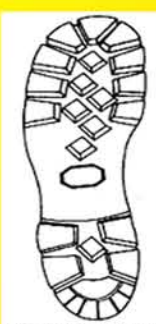
Types of Falls:

Same-Level Falls:
High Frequency -- Low Severity

Same-level falls are generally slips or trips. Injury results when the individual hits a surface while walking or working, or strikes some other object during the fall.

Slips and Falls

Slips are primarily caused by a slippery surface and compounded by wearing improper footwear. In normal walking, two types of slips occur. The first of these occurs when the heel of the front foot slips on the floor causing the person to fall backward. The second type of fall occurs when the rear foot slips backward causing the person to fall forward.



The force that allows you to walk without slipping is commonly referred to as "traction." Common experience shows that dry concrete sidewalks have good traction, while icy surfaces or freshly waxed floors have low traction. Technically, traction is measured as the "coefficient of friction." A higher coefficient of friction means more friction, and therefore more traction. The coefficient of friction depends on two things: the quality of both the walking surface and the soles of your shoes. Providing dry walking and working surfaces and slip-resistant footwear is the key to preventing injuries from slips and falls.

Shoes with soft rubber soles and heels with rubber cleats provide a high coefficient of friction (COF).

Diagram A

In work areas where the walking and working surface is likely to be slippery, non-skid strips or floor coatings should be used.

Trip and Falls

Trip and Falls occur when the front foot strikes an object and is suddenly stopped. The upper body is then thrust forward, and a fall occurs.

As little as a 3/8 inch rise in a walkway can cause a person to "stub" his toe resulting in a trip and fall. The same thing can happen going up a flight of stairs: only a slight difference in the height of subsequent steps and a person can trip and fall.

Contributing Factors

Proper housekeeping in work and walking areas can contribute to the prevention of falls. Not only is it important to maintain a safe working environment and walking surface, but these areas must also be kept free of obstacles which can cause slips and trips. One method which promotes good housekeeping in work environments is the painting of yellow lines to identify working and walking areas. These areas should never be obstructed by objects of any kind.

Adequate lighting to ensure proper vision is also important in the prevention of slips and falls. Moving from light to dark areas, or vice versa, can cause temporary vision problems that might be just enough to cause a person to slip on an oil spill or trip over a misplaced object.

Carrying an oversized object can also obstruct a person's vision and result in a slip or a trip. This is a particularly serious problem when stairs are involved.



Elevated Falls:
Lower Frequency -- High Severity

Generally, elevated falls are less frequent but more severe than same-level falls in the workplace. Over 60 percent of elevated falls are from less than 10 feet.

Falls from Ladders

A ladder should be long enough so that when it rests against the upper support the user can work with his waist no higher than the top rung of the ladder. This means that the top three rungs of a straight ladder, or the top two steps of a step-ladder, should never be used for the feet.

The lower ends of the siderails should be equipped with slip-resistant pads, particularly if the ladder is to be used on hard surfaces. The same is true for the upper ends of the siderails if they are to rest against a surface.

Ladders should be set at a 4:1 ratio angle. That is, for each three feet of rise from the base to the upper resting edge of the ladder, the base should be one foot away from a vertical line, as shown in Diagram B. Ladders should be inspected before each use: check for cracks, loose rungs, slivers, and sharp edges. The rungs and siderails of ladders must be kept free of oil, grease, and mud.

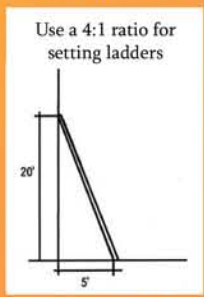


Diagram B

Another frequent cause of ladder-related injuries is attempting to reach too far left or right. When working on a ladder, a person's belt buckle should never extend beyond the siderails. Reaching further can cause the ladder to slide in the opposite direction. Tying the ladder to the structure supporting it can prevent this and is a recommended practice.

Workers should have both hands free to hold the ladder's siderails, not the rungs, when climbing or descending. Small tools may be carried in a tool belt, not in the hands. A better option is to raise tools and supplies to the working area with a rope.

Make-shift ladders, chairs, boxes, and barrels should never be used as substitutes for a ladder -- the risk is far too great.

Fall Protective Devices

Workers at high elevations, such as ladders, platforms, catwalks, or on top of equipment, should be protected from falling by some kind of fall protective device. This can be a protective cage, a lifeline, lanyard, safety belt or harness.

The system should provide maximum protection, but it also should be reasonably comfortable and not restrict a worker's necessary work activity.

There are numerous devices on the market. Suppliers of safety equipment can provide information on the correct system for your workplace and should provide instruction on its safe use.

Signs and Stripping

Safety signs to remind people of slip, trip and fall hazards are certainly always helpful, particularly where hazards cannot be removed or corrected. Such signs should be changed frequently.

Yellow stripping to identify walking and working areas are most effective if their meaning is enforced. Items or people should not enter areas that are striped.

Dropped and spilled materials should be removed immediately.

Remember... Safety Matters.

Comments and suggestions are always welcome and encouraged.

Email Jason at Jtippett@nstars.com