

PREVENT SLIPS, TRIPS, AND FALLS



IF YOU NOTICE A HAZARD, ACT.

SAIF Corporation is a not-for-profit, state-chartered workers' compensation company. We make workers' compensation insurance affordable and available to the employers of Oregon. And we strengthen the Oregon economy by helping to keep workers' compensation insurance costs low while keeping the workplace safe.

We are dedicated to the safety of Oregonians and strive to make Oregon the safest place to work.

To find more information and materials on preventing slips, trips, and falls visit:

www.saif.com > I am An Employer > Safety > Slips, trips, falls



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Same level slips, trips and falls are occupational hazards that can be found in almost every type of work setting. It is estimated that 3.8 million disabling work injuries are caused each year by slips, trips, and falls, accounting for 12 percent to 15 percent of all workers' compensation costs.

Many people are surprised to hear how serious falls can be. The average disabling claims cost of a slip, trip, and fall claim is \$22,000.* However, the most sobering fact is that slips, trips, and falls cause 15 percent of all accidental deaths, second only to motor vehicle accidents.**

This guide is designed to help employers identify potential slip, trip, and fall hazards found in the workplace and at home and prevent these type of injuries from occurring. Preventing slips, trips, and falls requires a combination of hazard identification and correction, as well as personal responsibility. The information and tools in this guide can help you in all these areas.

* SAIF corporation 2004-2008 data

** Occupational Safety and Health Administration 2007

Definitions

Slips

A slip occurs when there is too little friction or traction between your footwear and the floor surface. In most slip events where a worker is walking, the worker's heel on the front foot slips forward as the individual is transferring weight causing the worker to fall backwards. Common contributing causes for slips include:

- Wet or dry contamination on the floor
- Loose unsecured rugs or mats
- Walking surfaces that do not have the same degree of traction

Walking surfaces that do not have the same degree of traction can occur when the floor wears unevenly or at transitions from a floor with high friction, such as carpet, to a floor with lower friction, such as polished marble.

Floor contamination can also contribute to slips and falls. Wet sources of contamination include water, oils, grease, and soap from cleaning solutions. Dry contamination includes dusts, powders, granules, and other small objects, such as metal nuts and bolts spilled on the floor.

Sawdust is dry contamination that can create a slip hazard.

Water on a hard floor can create a significant slip hazard.



Definitions on the next three pages have been adapted from the publication "Slips, Trips, and Falls: Residential Care Facilities" by the state of Illinois's Department of Commerce and Economic Opportunity.

Trips

A trip occurs when your foot strikes an object resulting in a loss of balance. In a trip, your momentum causes your body to continue forward. Common causes for trips include:

- Cords or clutter in walkways
- An obstructed view
- Taking a short cut instead of a proven path.
- Uneven stairs

As little as a 1/4-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. With only a slight difference in the height of subsequent steps, a person can trip and fall.

One strategy for reducing trip hazards caused by raised portions of sidewalks or other walkways is to grind down the raised edge.



Raised concrete, pavers, and bricks create a trip hazard. Tree roots can raise sidewalks and walkways when a tree is planted too close.

BEFORE: Raised sidewalks create a trip hazard.



AFTER: By grinding down the sidewalk, the risk of a trip and fall is greatly reduced.



Definitions

Stumbles

Another type of fall can occur when you unexpectedly step down to a lower surface. For example, when an individual thinks he is on the last step of a set of stairs, but he has one more step to go before reaching the landing. Stumbling can also occur if a person unexpectedly steps off of a curb or when she steps into a pothole.

Painting the edge of a single stair to increase visibility can reduce the risk of a stumble and fall.



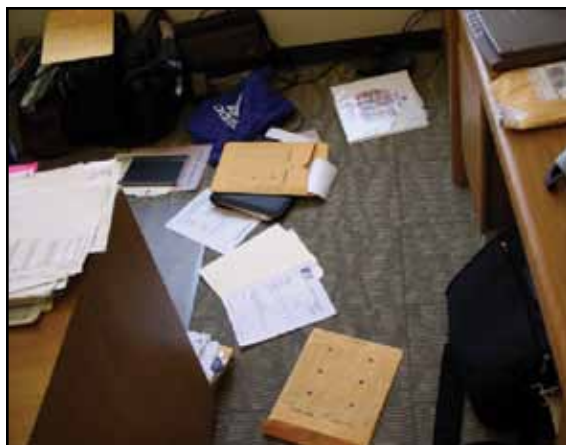
Work Areas and Housekeeping

Housekeeping practices

Establishing excellent housekeeping practices is the key to an effective program to prevent slips, trips, and fall injuries. For example, cluttered aisles can create a trip and fall injury. It is important to keep aisles clear and well lit for both your employees and your visitors.

Assessments

Each work area needs to be assessed for possible trip hazards. This would include boxes, files, raw materials, and other items stored on the floor. In many cases, these items can be removed from the floor. In other cases, the trip hazard can be greatly reduced by locating the items in a designated area and keeping the areas well organized.



Keep floors clean and free from stored materials to reduce slip and trip hazards.

Walkways and aisles need to be kept clear and free from trip hazards. One method organizations use to maintain clear walkways and work areas is to clearly define the

location of the walkway. While this may be easier in an office environment, in a production environment businesses may clearly define the location of walkways by using tape or painted lines to identify the aisle way. If employees are regularly placing items in a painted walkway, management needs to either consider changing the location of the walkway or holding staff accountable for keeping the walkway clear.

Avoid storing materials in aisles. When materials must be stored in an aisle and sufficient clearance can be maintained, keep all the materials on the same side of the walkway.



Work Areas and Housekeeping

Painting the location of aisles can make it easier for a business to maintain clear walkways.



Accountability

Businesses with poor housekeeping have successfully changed their work environment by training staff on the new expectations and holding staff accountable for following through on these expectations. Supervisors can encourage better housekeeping practices by providing positive feedback when observing an employee take time to keep a work area clean or mop up a spill.

Housekeeping and safety culture

By establishing a high standard in housekeeping, your organization will likely find more benefits than just preventing slip, trip, and fall injuries. It is very difficult for a company to establish a high performing safety culture in an organization when poor housekeeping practices are present in the work environment. While an employee may hear upper management comment on the importance of safety, the employee may not believe that management truly values safety if the employee regularly sees poor housekeeping in the workplace.



Cleanliness sends a message to employees about management's commitment to safety.

What message do you think each of these work areas communicate?

Work Areas and Housekeeping

There is an old saying: “What gets measured gets done.” Regular management inspections focusing on housekeeping can be one way to encourage better housekeeping and a higher performing safety culture. The management inspections might include:

- Walk-throughs of the work area focusing on general cleanliness
- Audits of spill response and spill response stations
- Examination of work area immediately after daily cleaning has been performed and after periodic deep cleaning has been performed

Regular management inspections can focus on general cleanliness, spill response, and the effectiveness of cleanings.



At the door to this walk-in freezer, ice regularly collects on the floor. A thorough assessment of the work area can identify potential problem areas and allow management to eliminate the issue or implement procedures to reduce the risk.



A thorough inspection of the work area can help management identify areas at high risk for slip, trip, and fall injuries. This guide includes checklists for managers to consider when conducting an assessment focused on slip, trip, and fall prevention.

Cords



It might seem obvious, but items running across walkways like electrical cords and hoses can and do cause countless falls in all types of work settings. The tendency is for someone's foot to become entangled in the cord, not only causing them to trip, but often bringing expensive equipment like computers crashing to the floor next to the injured employee.

Remove cords

The best strategy for preventing cord-related trips and falls is to avoid stretching a cord across a walkway or path where employees walk. To do this, businesses can add additional electrical outlets in areas where they are needed. Some electrical outlets can be recessed in the floor or dropped from the ceiling, either hanging over a work bench or by means of an electrical pole. The pole is basically a conduit for electrical wiring to be brought down from the ceiling and provides outlets into the middle of a room or work area.

An employee could entangle her foot in the pile of cords under this conference room table and trip when getting up.



Providing an additional permanent electrical outlet closer to the computer to avoid running the cord across the aisle would be the best solution. When this is not feasible, it may be appropriate to use a cord strip protector when the aisle has minimal traffic.



so



The hoses on this welder are neatly wrapped around the equipment and stored they remain out of the aisle.

Cover cords

If adding additional outlets is not possible and the cords must be stretched across the walkways, always tape or otherwise secure the cords to the floor. Securing the cord or hose will prevent employees from getting their feet under the cord and tripping. Several tools on the market can help to cover cords. Cord strips can protect the cords from damage and prevent tripping as long as the strip itself is lying flat or secured to the floor. For carpeted surfaces, a Velcro strip can be used to secure the cord tightly to the carpet. Unlike tape, these Velcro strips can be reused.

An effective method for preventing trips on a temporary cord is to lay a rug or piece of carpet over it. As long as the carpet lies flat, the likelihood of tripping on the cord is greatly reduced.

When a cord is temporarily used in a walkway, the risk of a trip hazard can be reduced by covering the cord with a mat or rug.



If you are working in an area where hoses or extension cords are being used periodically, make sure they are rolled up and stored after each use. Cord reels and hose reels that automatically retract can be useful tools for keeping cords and hoses out of the way when they are not being used.

In some circumstances, a self-coiling hose can be as effective as a retractable hose reel. For a self-coiling hose to work well, it needs to allow workers to easily reach the locations in their work areas where compressed air is needed while keeping the hose off the ground when not in use.

The use of a retractable air hose reel could reduce the risk of a trip hazard by making it easy for the worker to keep the extra hose away from his feet.



Cords

While the use of a self-coiling hose (pictured here) is better than just using a traditional hose, a retractable hose reel mounted on the ceiling may have been the better choice to reduce the risk of tripping on an unused hose.



Secure cords

It is also a good idea to take a tour of your office and work areas and see if the cords from computers are hanging into or adjacent to a walkway. If a person gets caught on these cords, not only will the individual fall, but the computer may also fall. To prevent this, don't set up computers with their backs facing a hallway or walkway. If this is not possible, gather up the cords from the floor and secure them using a zip tie or other means.



The cords for these computers protrude into an aisle and create a potential trip hazard.



The trip hazard has been reduced in this space by using zip ties to secured the cords and keep them away from the aisle.

Walking and Slip Hazards

A contributing cause for many slips, trips, and falls is the presence of contamination such as water or oil on the floor. This section provides a variety of practical prevention strategies and tactics to prevent these types of injuries.

Prevent surface contaminants and debris from reaching the floor

When possible, first try to prevent contamination from reaching the floor. In the restaurant industry, some contributing causes for slip and fall injuries have included leaking equipment, such as oil from a deep fryer or water from an ice machine. In school systems, a damaged garbage can may result in water dripping on the floor. In the automotive industry, an extremely slippery floor may be created when an automotive technician sprays a silicon-based chemical directly on the tires of the car, which can result in some of the overspray contacting the concrete floor. In this last example, the technician could significantly reduce the risk of a slip by either waiting to spray the tires of the car until it is moved out of the service bay and onto the asphalt lot or by applying the silicon spray to a rag and wiping it on to the tire.



Water dripping from clothes and umbrellas on rainy days can also cause slips and falls on some floor surfaces. By providing plastic bag umbrella covers for visitors and employees, an organization can help keep the floors dry.

In entryways with hard flooring, the use of umbrella covers can minimize the amount of water on the floor and reduce the risk of slip and fall injuries.



Floor selection

Different types of flooring materials have different properties. A carpeted floor will provide more friction or traction than a highly polished marble floor. Hard, shiny flooring is almost always slippery when it is wet. It is important to select the right flooring for the types of contaminants that will be present in a work area. It would be inappropriate to place a polished marble floor in a kitchen area, for example.

Walking and Slip Hazards

Replacing flooring can be an expensive proposition. It is always advisable in new construction or in remodeling to assess what the best floor surface will be given the activities performed in the work area. In some cases, it can be worthwhile to try out a small section of a new floor to see how it responds to the contaminants in the specific work environment.

Before the floor deteriorates, a business can consider its options for replacing a damaged floor, such as the laundry room floor in this picture.



Because deciding on the right floor for a given space can be a time-consuming process, it is beneficial for businesses to decide ahead of time what type of floor to use when replacing existing flooring. When a flooring material unexpectedly becomes damaged, there can be pressure to quickly replace it. If a business has not gone through the process of selecting a flooring material, there is a risk the business may make fast decisions, only to discover later that the expensive new floor is very slippery when exposed to the contaminants in the work area.

Mats and runners

Ideally, the slip-resistant characteristics of the floor are such that you will not need mats or runners. However, in situations where it is not feasible to replace the flooring, mats and runners can be one method of reducing the risk of a slip and fall injury. Different mats serve different purposes. At an entryway, many companies will place a rough mat outside the doorway to remove debris, such as mud or leaves, from an individual's shoes. A slightly different type of mat designed to absorb moisture can be placed inside of the door. A person's shoes should not leave footprints once she walks off the last mat. Mats can also be located in high risk areas, such as near ice machines.

Mats can increase traction when replacing flooring is not an option. It is important for mats to lie flat and be in good condition.



Walking and Slip Hazards

Many mats are designed with a slip-resistant backing to prevent the entire mat from sliding. While this type of backing can be helpful, mats and runners should be assessed to determine if additional measures are necessary to secure them to the floor.

Mats and runners need to be kept in good condition. As they wear, they may develop holes or tears, and their edges can curl up. They should be regularly inspected and replaced when they show signs of wear.



In both work areas, two mats are being used. The outside mat is designed to remove large debris such as leaves and dirt, and the inside mat helps dry off employees' shoes.



Excessively worn mats or mats that don't lie flat can increase the risk of a trip and fall.

Walking and Slip Hazards

Transition areas

A transition area is any place where a person is moving from one walking surface to another. The most common transition areas in the workplace include:

- Entering a building, which often means transitioning from a concrete sidewalk to a wide variety of floor surfaces inside the building
- Moving from a carpeted surface to a noncarpeted surface, or vice versa
- Moving from even terrain to uneven terrain, or vice versa
- Moving through doorways or passageways

The transition area where a person enters a building is one of the most vulnerable. If the weather is rainy or snowy, the person will enter the building with wet shoes. If the floor surface is a hard floor like marble or tile, and the transition area does not have a mat or runner, the probability of a slip and fall is greatly increased.



In this photo the mat has been placed too far away from the door to help prevent a person with wet shoes from slipping.

However, simply having a rug, mat, or runner is not enough. Make sure the runner or mat reaches all the way to the edge of the doorway. Even a couple of feet of tiled flooring before the matting can contribute to a fall when the floor is hard and the conditions are wet.

If you are entering an area where surface contaminants are common (oil in a maintenance shop, sawdust in a cabinet shop, or water at a swimming pool), highly visible signage can help increase awareness as people enter that area.

Walking and Slip Hazards

Doorways and pathways should be kept clear and unobstructed at all times. This is important from a slip, trip, and fall standpoint, as well as for emergency evacuation. Remind employees that being distracted when moving through these transition areas makes an accident more likely. Train staff to minimize rushing, carrying bulky items, even cell phone use, when entering a transition area.

With so many falls occurring in transition areas, make sure to provide adequate lighting. If people can clearly see the upcoming change in walking surface, they are more likely to adjust their gait accordingly and successfully make the transition.

Spill response

When a spill occurs, immediate action needs to be taken to eliminate the hazard. In most cases, employees should respond by cleaning up the spill. If the employee is working in a position he cannot leave unattended (such as the only cashier in a fast food restaurant), the employee needs to isolate the hazard and notify other employees to clean it up quickly.



Staff needs to be trained to respond promptly in the event of a spill.

In many cases, the employee will first place a warning sign to indicate the presence of a spill and then get the mop or other spill clean-up equipment. In a high traffic area, the employee might ask a second employee to stand by the spill to warn people of the hazard while the first employee gets the spill clean-up equipment.

When cleaning up spills, staff should be encouraged to dry the floor whenever possible. If the spill has been cleaned up but the floor is still wet from the mopping, a warning sign should be displayed. If the wet floor signs are stored near where they will be needed, it will increase the chance that employees use the signs when they mop the floor or discover a spill.

Walking and Slip Hazards

There are a variety of wet floor signs on the market, and a business should assess what type of sign is best for its area. The following warning signs are examples of some of the different products that are available:

- A standard, fold-up wet floor sign
- Two wet floor barriers with caution tape stretched between them
- A device with a built-in blower to dry the floor quickly while warning people of a wet floor
- A sign that will fold up into a small tube for easy storage in an area where spills may occur

While many businesses do an excellent job of initially placing a warning sign, it is also important for staff to promptly remove the wet floor sign once the floor is completely dry. If wet floor signs are regularly left out when the floors are dry, staff may begin to disregard them. By having the signs put away as soon as the floor is dry, employees will be more likely to exercise caution and walk slowly when they see a wet floor sign.



Spill kits need to be appropriate for the materials in the work area and be readily accessible.

Spill kits are great tools and should be placed near areas where you can anticipate a spill occurring. The kits come in a variety of sizes and types. Obtain a spill kit that will accommodate your worst-case spill scenario.



Choosing cleaning products carefully

Effective floor cleaning can greatly reduce the risk of slip and fall injuries. A regular schedule for cleaning should be established. In addition, it is often helpful to schedule periodic deep cleanings that are more thorough than the daily or weekly regular cleanings.

Businesses need to evaluate the chemicals they use for cleaning to ensure the chemicals are designed to remove the type of contaminants that are present on their floors. Manufacturers of cleaning agents will provide recommendations for how their chemical should be used. It is important for staff to follow these recommendations. In conducting an accident analysis at one health care facility, a manager discovered that adding too much of a chemical cleaner to the mop water was a contributing cause. The employee thought adding more chemical would result in a cleaner floor. The more concentrated cleaning solution reduced the amount of traction the floor provided, creating a significant slip hazard.



Daily cleanings should be scheduled to minimize the risk of creating a potential hazard for other employees. For example, in a healthcare setting, it is advisable to have regular mopping of the hallways and common areas conducted during the evening or night shift as opposed to during the day shift because there are fewer staff in the building and less chance staff will need to walk on the floor to reach a client while the floor is still wet.

Clearly communicate where spill response supplies are kept and work with staff to ensure the clean-up tools are returned to the correct location after a spill.

Footwear

Footwear

Proper footwear is a critical component in preventing slips, trips and falls. Footwear needs to be appropriate for the task. For example, the design of a shoe sole that provides good slip resistance in an office or restaurant may not work well for landscaping. The landscaper will benefit from wearing a shoe or boot with deeper tread and larger cleats. In many work environments, wearing high-heeled shoes or dress shoes with smooth leather soles significantly increases an employee's risk of being involved in a slip and fall injury.

Slip-resistant footwear

Many different companies sell footwear marketed as having slip-resistant soles, so it can be difficult to determine which shoes will perform well. While the American National Standards Institute (ANSI) provides clear guidance to help safety professionals know that employees are receiving good impact protection from a steel-toed shoe, it is more challenging to ensure employees are wearing high-performing, slip-resistant footwear.

While many shoe manufacturers provide excellent slip-resistant products, three brands to consider include Shoes-for-Crews, Lehigh Safety Shoes with the Spider Grip outsole, and Red Wing Shoes with the StarGrip outsole.



Shoe replacement

It is important to replace footwear when it becomes worn or damaged. Since most slips occur when the heel slides forward, it is especially important to have traction on the heel of the shoe. David Natalizia, principal of Dynamic Safety Incorporated and member of the American Society of Testing and Materials (ASTM) Committee on Pedestrian/Walkway Safety and Footwear, suggests replacing shoes when two pennies can be placed on an area of the shoe's sole that has been worn smooth.



Almost new shoe: no signs of wear on the tread



Replace this shoe: smooth tread on an area larger than two pennies



A good-but-worn shoe: signs of wear, but not yet the size of two pennies

Footwear

Footwear programs

There are a variety of ways to get employees to wear slip-resistant footwear. Some companies require it, especially in the health care and hospitality industries, and other companies have found it cost-effective to purchase slip-resistant footwear for their employees. A business can help employees purchase slip-resistant footwear by contributing half the cost of the footwear. Companies can also make it easier for employees to obtain slip-resistant footwear by providing a payroll deduction option. Even if a company chooses not to purchase slip-resistant footwear for employees, managers can take other steps:

- Educate employees on the importance of slip-resistant footwear
- Inform employees on when to replace footwear
- Conduct inspections of footwear
- Set clear guidelines on what types of footwear are acceptable in work environments

Parking lots and grounds

With so much focus being given to an operation's main facility, an area that is often overlooked until an accident occurs is the company's parking lot and adjacent grounds. Slips, trips, and falls can occur in this area any time of year, but the winter months tend to have the highest frequency of these injuries because of rain, ice, and snow. In addition, it may often be dark when employees arrive and leave during the winter, and reduced visibility can increase risk.



Bumpers and curbs

If your parking lot has tire bumpers, it's worth doing an assessment to see if the bumpers extend out beyond the edge of the car parked in that space. It is common for individuals to walk between the cars, and if the bumpers extend into this space, or no car is parked in the adjacent space, you have a prime opportunity for a tripping incident. Combine this with darkness, snow, leaves, or other obstructions, and it's easy for someone to trip and fall. Bumpers should never be wider than the average car. If they are too long, we recommend you shorten them.

Bumpers and curbs tend to blend into the parking lot, especially if they are the same color as the parking lot. Making bumpers and curbs more visible is a good strategy for preventing trips and falls. This can be done by painting all bumpers and curbs a high visibility color.



Painting curbs or tire bumpers a bright yellow can make them easier for people to see and avoid.



In the photograph on the left, the tire bumpers protect structural supports to an awning. In the photograph on the right, the tire bumper may be able to be removed.

Parking lots and grounds

In some cases, it may be possible to remove bumpers without risking damage to people or property. Evaluate whether or not the tire bumpers serve a purpose.

A low curb might be enough to prevent people from driving their vehicle too far forward onto the walkway. In most parking lots, tire bumpers are not needed in a parking space when two cars will be parked facing each other.

It can be difficult for people to see the trip hazard created by the curbed planting area when they are walking between two cars. Bright yellow paint could increase the visibility.



Uneven surfaces

Regular inspection and maintenance of your operation's parking lot is needed. As uneven surfaces like raised sidewalks, tree roots, or pot holes appear, they need to be addressed immediately. Damage from growing tree roots can be minimized by not planting trees too close to the sidewalk.

Keep walkways clear. As fallen leaves become wet, they can contribute to a slip and fall injury.



Weather

Your operation should have an inclement weather procedure that addresses who will be responsible for clearing snow and ice from sidewalks, steps, and pathways and how this will be done. Depending on what is appropriate for your operation, the plan should include easy access to such equipment as shovels, de-icer, kitty litter, sand, a tractor, and other tools staff will need to deal with inclement weather.

Some businesses use sand or small gravel to increase traction when snow and ice are on sidewalks or in parking areas. While this can be effective in these conditions, it is important to promptly sweep up the sand and gravel once warmer weather arrives, and the snow or ice melts. Sand and small rocks on dry sidewalks can increase the risk of a slip and fall injury.

In the late fall, businesses should ensure appropriate supplies, like de-icer, for inclement weather are readily available.

Because icy conditions can be difficult to see before a person starts walking towards the facility, some companies are using warning devices like “Ice Alert,” a sign located at the entrance of the parking lot. This device starts turning blue when the temperature gets below 33 degrees and is completely blue at 30 degrees. This visual reminder is a great tool for increasing overall safety awareness.

When responding to inclement weather, pay special attention to stairs as well as sloped areas.



An example of a product that changes color in freezing temperatures, warning employees of the potential for ice in the parking areas.

Stairs



Falls on stairways can result in serious injuries. This section provides suggestions on the design of stairways as well as suggestions for employee training. Employees should use extra caution on stairs as rushing or hurrying can be a major contributing factor for slip, trip and falls on stairs. Employees need to take one step at a time. Materials should never be stored on stairs.

Rise and run

Stair steps need to be uniform. OR-OSHA has detailed rules regarding stairways, including the uniformity of rise and run of the steps and the presence of handrails (OR-OSHA's General Industry regulations on stairs can be found at http://www.orosha.org/pdf/rules/division_2/div2_d.pdf). Stairs must be kept uniform in the rise and run of each step. A small change or inconsistency in stair pattern can cause a trip and fall.

Handrail

Employees should be trained on the importance of using the handrail. This step alone can greatly reduce the severity of a trip or slip on a stairway. Traditionally, people hold the handrail with their hand on top of the rail and face directly up or down the stairway.



Train staff on the importance of using the handrail when using stairs.

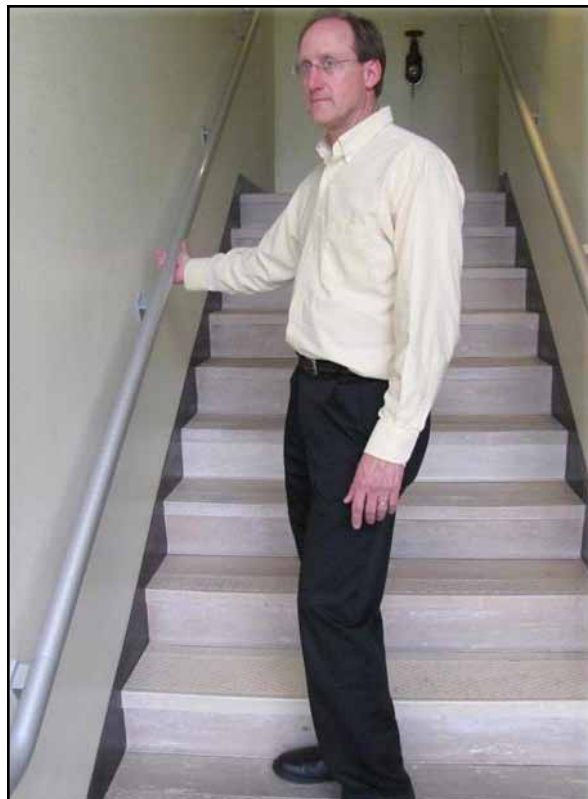
Stairs

Individuals can gain an additional measure of safety when going down stairs by using the following techniques. Instead of facing directly down the stairway, turn 30 degrees toward the rail. In the event of a trip and fall, most people will fall in the direction they are facing. As a result, an individual will fall toward the rail and the wall, giving him an additional opportunity to catch himself and prevent the fall. Instead of running your hand on top of the rail, turn your palm up and run it along the bottom of the rail and trail your hand slightly behind your body as you descend. In this position, your grip is stronger. In the event of a fall in this position, the strain on your shoulder is less than it would be if you were holding the top of the handrail. This technique of turning 30 degrees and placing your palm up along the bottom of the handrail is especially helpful when:

- Walking down very steep stairs
- Walking on outdoor stairs covered with snow and ice
- Carrying a load with one hand on a stairway, such as a baby or small child
- Using stairs in low light conditions where it is difficult to see clearly

The design of some handrails can make it difficult to run your hand along the bottom of the rail due to the way the rail is attached to the wall. In this case, turn 30 degrees and place your hand on top of the rail.

Turn 30 degrees toward the rail when descending and trail your hand behind your body gripping the bottom of the rail with your palm up.



Stairs

Turn your palm up and run it along the bottom of the rail when descending stairs.



Carrying items

When possible, employees should use the elevator and avoid carrying boxes or other large items on stairs. If items do need to be carried on stairs, workers should limit their loads, keeping a free hand with which to grip the handrail. To keep a hand free, employees may be able to make multiple trips instead of trying to carry all of the items in a single trip.

Use the elevator to avoid carrying large items on stairs. If you have to use stairs, make multiple trips.



Maintenance

Stairs need to be maintained in good condition. The stair nosings are a critical component of the stairs. On carpeted stairs, these can become loose and on cement stairs they can become chipped or broken. Repair of damaged stairs needs to be a top priority for maintenance departments.



The repair of damaged stairs needs to be a top priority.

Maintaining adequate lighting is especially important in stairways. This stair needs additional lighting to help staff see each stair clearly.



While good lighting is important in any area, it is especially important for stairways. Some companies have painted the edges of stairs and curbs with a bright yellow paint in order to increase the contrast of the steps with the surrounding areas.

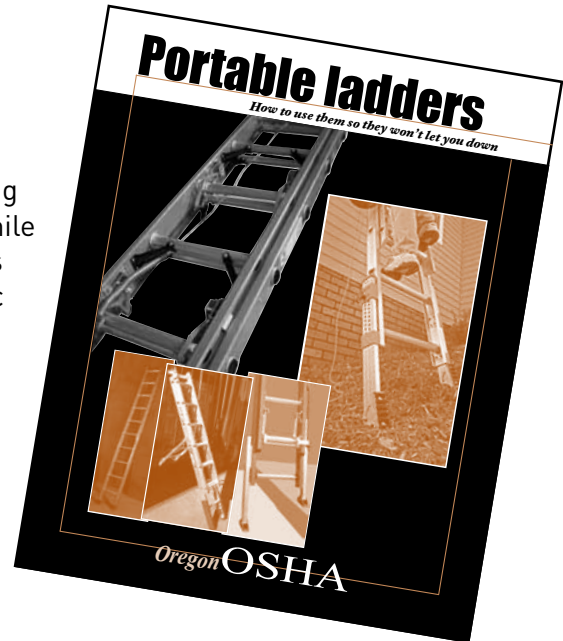


If stairs in your facility don't have good slip resistant properties, it may be possible to retrofit the stairs to achieve significant improvements. "SlipGrip Stair Tread Covers" is one example of a product that provides a rough surface on each stair tread to give people more traction.

Ladders



This guide has focused on preventing same level slips, trips, and falls. While falls from ladders do not fit into this category, this section includes basic information about ladder safety because a majority of businesses have employees who use ladders. For more detailed assistance on ladder safety, review the OR-OSHA publication on ladder safety.



A few basic ladder safety tips

Use a ladder when it is needed. It is not uncommon for people to grab a chair, table, box, or bucket to stand on in order to reach something stored in a high place. Since none of these items is designed for this use, it increases the risk an injury. The simple rule is: "If you can't reach it without standing on something, get a ladder."



Rather than standing on an upside down garbage can or a chair, get a proper ladder or stepstool when items are stored on high shelves.

Use the right ladder for the job. If the job requires the staff to change a light bulb in the middle of the conference room, a six-foot step ladder is a better choice than an extension ladder. Cleaning a clogged gutter would work better with an extension ladder than a step ladder. Use a fiberglass ladder as opposed to an aluminum ladder when employees are working in proximity to electrical wiring. A worker needs to have access to a ladder that is tall enough to do the job safely, otherwise, he may be tempted to take an unsafe short cut and stand on the top step of the ladder.

Rules for using ladders

NEVER:

- Stand on the top platform of a step ladder.
- Place a ladder on anything other than the ground.
- Use a ladder without visually inspecting it first.
- Use an orchard ladder on a smooth concrete surface.

ALWAYS:

- Make sure an extension ladder is three feet above the roof line before moving from ladder to roof.
- Use three points of contact when climbing or descending a ladder: one foot and two hands or two feet and one hand.
- Keep your belt buckle inside the ladder side rails (for example, no reaching to the sides).
- Set-up extension ladders at a four-to-one ratio (for every four feet of height a ladder gains, set the ladder one foot further away from the building or object the ladder is resting against). A diagram of this proper angle is often included on the sides of extension ladders.

Training

It is important to provide staff with training on a variety of topics related to slip, trip, and fall prevention. Other sections of this guide briefly describe some training topics:

- Proper cleaning procedures, including amount of chemical cleaners to use
- Use of the handrail on stairs
- Safety considerations when using ladders
- Appropriate slip-resistant footwear for the job and when to replace worn footwear
- Slip response expectations and general housekeeping expectations

In addition to these topics, businesses are encouraged to provide staff with additional training.

General awareness training can help employees appreciate the frequency of slip and fall injuries and the impact it can have on individuals and businesses.



Encourage employees to avoid creating hazards for other employees. In this photograph, it would not have required much extra work for the employee to keep the hose off the sidewalk. Also, train employees to address hazards if they do not create them.

When employees temporarily create a potential tripping hazards, they should be trained to reduce the risk to other employees. For example, they can place a warning sign in busy walkway to alert other staff when a hose is temporarily used to water plants.



Using material handling aids such as a cart can reduce an employee's risk of a slip, trip, and fall injury.

If an employee is going to carry a box, he can maintain a better view if the box is held off to the side. During training, employees can be encouraged to "look where they are going and go where they are looking."



Stepping over obstacles.

Train staff to turn sideways when stepping over obstacles that are higher than mid-calf or in slippery conditions. This reduces the risk of a fall from a slip or a trip. This technique can be used more often than people think such as when stepping over logs, conduit, pipes, or when stepping out of a bathtub. When stepping over an obstacle while facing forward, the heel of the shoe touches the ground first before the individual rolls on to rest of the shoe. With just the heel striking the ground, there is only a small area of traction, increasing the chance the front foot will slip. In addition to the limited traction on the front foot, the individual is typically raising the heel on their back foot further reducing their traction. When facing forward it is difficult for the individual to see their back foot. Since it is difficult to see, the individual may not raise their back foot high enough causing it to strike the object as she steps forward. If the back foot touches the obstacle, it may trigger the hop reflex. When the back foot strikes an object as a person faces forward, most people will tend to take a small hop forward which increases the chance the individual will lose her balance and fall.

Training



By turning sideways and stepping over an obstacle, the entire foot can more easily be placed on the ground. This increases the traction over facing forward and reduces the risk of a slip. In addition, it is easier to see the obstacle reducing the risk of the individual striking it accidentally. In many cases, turning sideways can make it easier for the individual to use his or her hands to hold on to an object for balance when stepping over the obstacle. In the event the foot accidentally strikes the object when facing sideways, the 'hop reflex' is reduced making it easier for the individual to keep his or her balance.

Turn sideways when stepping over obstacles. This allows the entire foot to be placed on the ground improving traction as well as making it easier to see the obstacle.

Facing forward when stepping over obstacles increases the risk of a fall due to the heel striking first, the difficulty in seeing the back foot and the 'hop reflex.'



Walking on steep slopes

Train staff to turn sideways when walking on steep slopes. Turn 90 degrees from the fall line of the slope so your left or right hip is turned toward the hill. Take short steps and keep your uphill foot from crossing in front of your downhill foot. This position improves traction. In addition, in the event of a fall, the individual will land on his hip or leg instead of on his more injury prone back or neck. When possible, keep your hands free when walking on steep slopes to improve your balance.

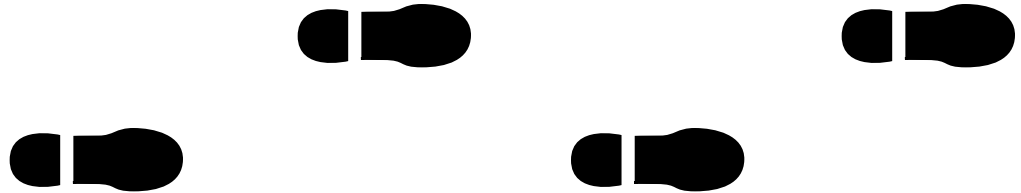
Turn sideways and take short steps when walking on steep slopes.



Walking speed

In addition to training staff on how to carry a box to maintain maximum vision of the ground, it is beneficial to train staff on what is an appropriate walking speed. A contributing cause of many slip and trip injuries is an employee who is in a hurry and moving too quickly. One of your rules should be that no running is allowed.

Training



Standard stride



Safer-shorter stride when hazards are present



Safest stride when walking on slippery surfaces

Gait

While employees are encouraged to avoid walking on slippery surfaces such as ice or a recently mopped floor, they can be trained on how to adjust their gait if they must walk on these areas. When walking on a slippery floor, the risk of a fall is reduced if the person shortens her stride, walks more slowly, and places her feet flat on the ground as opposed to letting only the heel of the shoe initially contact the floor surface. On an extremely slippery surface, it can also be helpful to point the toes slightly to the sides, walking like a penguin with a short stride.

Incident analysis: more than “pay attention next time”

For slips, trips, and falls, it is all too common to place blame for an injury on the worker. If we do a comprehensive analysis, we tend to find out that the root causes of the incident go well beyond the injured worker’s attentiveness. Below are two examples of how digging a little deeper can lead to a safer workplace.

Water in the hallway

It was late in the school day, all the students had gone home except for a few attending an after-school program. One of the teachers was heading for the exit, hands full of paperwork, walking right down the middle of the hallway, when she was suddenly on the floor, her leg badly broken.

During the analysis, it was clear that a significant amount of water was in the middle of the hallway, and with the items in her hands, the teacher did not see the water and fell. The analysis could have ended here, with the assumption that one of the students spilled some water, and the teacher failed to see it. “Pay attention next time.” However, there was more to the story.

The big question was: “How did the water get in the middle of the hallway?” There was a drinking fountain six feet from the spill area, but it did not appear to be leaking. The after-school teachers were questioned about students possibly being allowed to use the drinking fountain to fill up water bottles; maybe water was spilled when a student was heading back to the classroom. But that was not the practice.

Finally, while interviewing an aide in the after-school program, it was learned that the students knew the spout portion of the drinking fountain could turn. This allowed them to direct the water in various directions, including on the floor, but how did water pool six feet away?

With the school empty, an experiment was done and the water from the drinking fountain directed onto the floor. The slope of the floor took the water right to the middle of the hallway where the accident occurred.

Case Studies

As a result of the analysis, the school's safety director made the following recommendations:

1. Repair the drinking fountain faucet and inspect all schools with similar drinking fountains to make sure this is not happening elsewhere.
2. Install a mat under the drinking fountain to help contain even minor water splashes and spills.
3. Don't allow students to use the drinking fountain unsupervised.
4. Make teachers and students aware of the hazards associated with water on the floor. Encourage all involved to report hazards and clean up spills immediately.
5. And yes, pay attention next time.



A hospital's journey to slip and fall prevention

It is often helpful to review the process an organization has taken to identify a problem and implement solutions.

As is the case with many health care facilities, a large hospital determined that slips and falls were occurring at an increasing rate, and this issue needed to be addressed. A subcommittee was formed and an assessment completed. The assessment identified that the hospital's housekeeping staff needed to be the focal point of the prevention effort. This was not because the housekeeping staff was being injured the most, but because the majority of the falls occurred during or after a floor had been mopped. And with all hallways and patient rooms being mopped every day, mopping was a significant daily slip and fall hazard.

The initial focus was on procedures:

- Are the housekeepers putting out wet floor signs?
- Are the other staff members heeding those signs?
- Can they mop one side of a hallway and then the other to allow through traffic?
- Are staff members using proper footwear?
- How much water do the mops need to clean the floors, and how long does it take for the floors to dry?

These were all valid questions, and it was determined that given the nature of the hospital, it was almost impossible to keep staff off of wet floors because of patient needs.

The committee then explored ways to reduce the amount of time the floors are wet. They looked into different cleaning solutions with quick-drying agents, making sure the products still cleaned adequately while reducing the time the floor is wet. This did help, but it wasn't until the hospital, working with their infection control experts, determined that they did not need to wet mop patient rooms each day but only after discharge. Instead, on a daily basis, staff could simply disinfect only the high touch areas like bed rails, door knobs, faucet handles, and tables in the patient rooms.

This change in process has reduced the hospital's slip and fall exposures. They continue to work on ways to reduce slips and falls, but this example shows that issues are not always solved during a single accident analysis, but instead can be an ongoing journey.

Check Your Knowledge



Q: Is the above photograph an example of a potential trip and fall hazard?

If so, what could be done to address it?

A: The sidewalk is raised higher than 1/4 of an inch and does create a trip hazard. Especially if it is in a high traffic area, a business should strongly consider having the raised edge ground down so it is flush with the other slab.



Q: Is it recommended that the shoe be replaced at this time given the amount of wear visible on the heel?

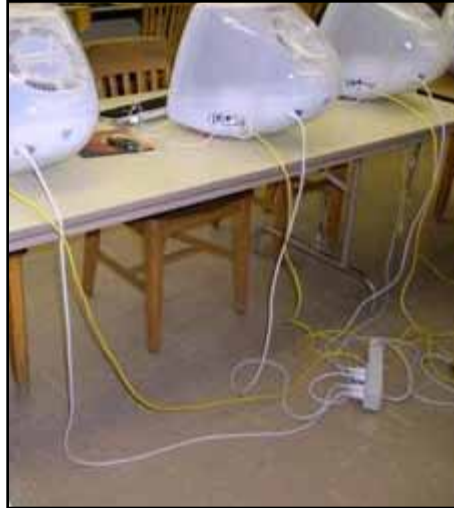
A: No. The rule of thumb for footwear is to replace it when the tread area is worn away from an area as large as two pennies. While the edge of this heel is starting to show signs of wear, it still has an acceptable amount of tread and does not need to be replaced immediately.

Check Your Knowledge

Q: If there is an aisle in the space behind these computers, list three actions that could be taken to reduce the risk of someone tripping on the cords.

A: Tie the cords together with zip ties to keep the cords under better control and out of the aisle.

Move the computers to a location where the backs of the computers no longer face an aisle, such as against a wall.



Relocate the electrical supply so the cords don't need to go by the aisle.



Safest stride when walking on slippery surfaces

Q: If you must walk on a slippery surface, what can you do to reduce your risk of falling?

A: Change your gait so you take shorter steps with your toes pointed to the sides. Place your entire foot down on the ground at the same time and walk slowly.

Check Your Knowledge



Q: List three issues regarding slip, trip, and fall hazards in the above photograph.

A: There are many more than three:

- The electrical cord for the saw creates a tripping hazard.
- The hose in the front right corner of the photograph also creates a tripping hazard.
- The poor housekeeping makes it difficult for the organization to have a high-performing safety culture that encourages employees to care for their own safety.

- _____

- _____

- _____

Slip, trip, and fall hazard assessment checklists

Work areas and housekeeping

- Do your current housekeeping practices support a high-performing safety culture?
- Perform a walk-through of your facility, targeting slip, trip, and fall prevention. Conduct a thorough assessment your organization's housekeeping practices.
- Are there clear expectations concerning housekeeping standards, and are employees held accountable for meeting those expectations?
- Are managers providing staff with positive feedback for maintaining tidy work areas?
- Do you have clearly identified walkways and aisles?
- Are your walkways kept clear of stored materials or other obstructions?
- Are all exits and exit pathways kept clear at all times?
- Is your immediate work area clear of trip hazards (hoses, tools, boxes, etc.)? If not, can these items be stored off the floor or in a low traffic area?
- Have you provided staff with training on slip, trip, and fall prevention topics, such as housekeeping expectations, appropriate walking speed, and hazard identification?
- Does management measure the effectiveness of the slip, trip, and fall prevention efforts?

Assessment Checklists

Cords

- Are walkways free from cords?
 - If not, can the cords be moved or covered to reduce the risk of a trip happening?
 - Could the electrical supply or hose be dropped down from the ceiling to reduce the risk of trips and falls?
- Are hoses and cords rolled up when not in use?
- Have you considered installing a hose reel or cord reel where appropriate? Have you considered a self-coiling hose where appropriate?
- Are there computer cords hanging into walkways that need to be tied up?
- Are there areas where your organization could install permanent wiring to eliminate the use of extension cords or other cords?
- In places where cords must cross a walkway, are the cords covered and secured?
- Are any cords damaged or missing ground plugs? If so, they need to be repaired or replaced.

Walking and slip hazards

- Does every employee know that they need to take immediate action if they discover a spill?
- Are spill response kits readily available? Do spill kits contain supplies that are appropriate for the type of contamination likely to be spilled?
- Is floor care equipment, such as mops and mop buckets, readily available and accessible?
- Are wet floor signs available and used?
- Are wet floor signs removed when the floor is dry?
- Are there areas in your facility where surface contamination (such as water, oil, sawdust, etc.) regularly contacts the floor? If so, has your organization taken steps to reduce or eliminate this contamination from reaching the floor?

- Are there some floor surfaces in your facility where there is a high risk of a slip, trip, or fall? What is being done to reduce slips, trips and falls in these areas? For example, some high risk areas may include entry areas, transition areas, stairs, as well as areas near sinks, ice machines, and water fountains.
- If the floor surface in a work area needs to be replaced, has your organization explored types of a floor surfaces that will minimize the risk of slip, trip, and fall injuries based on the activities that occur in the area?
- If a new floor is not feasible, have other options like floor treatments, and floor mats or rugs been considered for high risk areas?
- If your organization is using mats, are they in good condition with the edges lying flat, and are they prevented from sliding on the floor?
- Have transition areas been evaluated? Are transition areas adequately protected? Is the lighting good in transition areas?
- Do you have a cleaning log or schedule?
- Have appropriate staff been trained on how to use the cleaning products? Have staff been trained on cleaning procedures? Have the cleaning practices been audited and feedback been provided to employees?
- Have the cleaning products been assessed to ensure they are effective against the typical contaminants in the work area?
- Is the routine cleaning (for example, mopping) of areas scheduled at a time to minimize the risk to other workers?
- At the entryway to the building, have you considered providing a mat designed to get mud or other debris off of a person's shoe before the material is tracked into the facility?
- In the winter months, do you have a plan for minimizing slip and fall hazards when water or snow is tracked into the building?
 - If you have flooring with a hard surface such as tile, stone, or linoleum, have you considered providing umbrella covers by the entryways to reduce the amount of water contacting the floor?
 - If you have a hard surface and it is wet outside, does a person walking into the building leave wet footprints on the floor after walking off the entryway mats?

Assessment Checklists

Footwear

- Do you have a policy defining appropriate footwear? If so, are staff held accountable for following the policy?
- Has your organization trained employees on the importance of wearing proper footwear as a way to reduce risk of slip, trip, and fall injuries. Has staff been trained on when to replace footwear?
- Do you conduct footwear inspections? What do you do if you find an employee not complying with your policy?
- Has your organization considered options for getting employees to wear slip-resistant footwear, for example, helping staff purchase the footwear through a payroll deduction?
- Is specialty footwear needed (overshoes to provide traction on ice and snow appropriate or shoes designed for a specific task such as landscaping)?

Parking lot and grounds

- Have you inspected your grounds and parking lot for slip, trip, and fall hazards?
- Are edges of curbs and bumpers highly visible?
- Are your parking lots well lit, especially during the winter months?
- Do you have an inclement weather plan? Do you review this plan in the fall prior to the arrival of cold weather to ensure key staff members understand their responsibilities, such as who will clear key walkways or apply de-icer?
- Are inclement weather supplies readily available during winter weather?
- Have you inspected sidewalks and parking areas for segments that are partially raised because of tree roots or other damage? If raised sidewalk sections are found, are these areas promptly ground down or repaired?
- If you have trees growing near sidewalks, have you considered removing or replanting these trees to avoid having the tree roots cause damage to the sidewalk?
- Does your organization have tire bumpers in locations where they are not serving an important purpose? Do the tire bumpers stick out past the wheels of a parked vehicle creating a trip hazard for pedestrians walking between cars?

Stairs

- Do stairs in your facility meet OR-OSHA requirements?
- Have you trained staff to use the handrails and to carry materials safely on stairs when this is necessary?
- Do stairs have handrails and are they used?
- Are the steps and stair nosings in good repair?
- Have you considering painting the edges of the steps to increase visibility?
- Is the lightening adequate in the stairways?
- What do you do if you notice someone using the stairway in an unsafe manner, such as carrying too much down a set of stairs or taking more than one step at a time?

Ladders

- Does staff use a ladder when necessary instead of a chair, bucket, or other item?
- Do you have the appropriate ladders available for the given job?
- Is staff trained on how to use and inspect ladders? This would include the four-to-one set-up ratio.
- Are ladders well maintained?
- Have the appropriate staff members been trained on the more detailed OSHA rules governing ladder safety? See the following OR-OSHA publication for more information: <http://www.cbs.state.or.us/external/osh/pdf/pubs/3083.pdf>

Training

- Has staff been trained on rules such as “no running” and “look where you are going and go where you are looking.”
- Has staff been trained on how to carry a box slightly off to the side of the body to maintain better visibility?
- Has staff been trained on the benefits changing gait and ankle movements when walking on slippery surfaces?