



# “Hot Spots” for Slip, Trip and Fall Injuries

Slips, trips and falls are a major cause of injury for employees and those visiting your facility. The National Safety Council estimates more than 15,000 people die each year as a result of slips, trips and falls, with billions of dollars in costs annually.

Slips, trips and falls can happen anywhere, including at your company location, while traveling on business and in public places. They can occur on a level walking surface, ramps or stairways. Where unsafe conditions are present, those entering your facility have an increased exposure to STF injuries. Certain conditions can increase the exposure, including slippery or damaged work surfaces, ice, snow and pooling water due to poorly designed drainage systems.

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Slippery floor conditions are sometimes created through improper floor cleaning procedures, such as incomplete removal of grease, over-buffing floors, improper use and application of floor cleaning chemicals and inadequate floor drying times. Other factors include damaged or curled floor mats, misplaced floor mats that create an uneven and inconsistent walk surface and soiled mats that reduce the effectiveness of slip-resistant shoes.

When evaluating slip, trip and fall exposures, there are several elements to consider, including type or design of the walking surface, maintenance, training and awareness. The primary sources of slip, trip and fall injuries include: flat flooring and aisles, stairways, ramps, sidewalks and parking lots.

Follow these helpful hints to reduce the exposures and prevent slip, trip and fall injuries.

#### **Flat Floors and Aisles**

Floors and aisles pose special concern due to high foot traffic. When design and/or upkeep is inadequate, the risk of a slip, trip or fall increases. To reduce the risk, floors and aisles need to be well-maintained and properly illuminated. The following are best practices associated with the proper design and upkeep of floors and aisles:

- If any floor or aisle is under repair, it needs to be blocked off or have warning signs posted at the entrance to warn others of the exposure.
  - Hallways, entrances and other passageways need to be illuminated when people are present.
  - Floors need to be kept clean, dry and in good walking condition. Loose carpeting, tiles or boards need to be repaired. Care should be taken to identify, remove or repair holes, protruding nails, splinters, etc. Where floors can get wet (kitchens, laundry and showering facilities), maintain good drainage and provide mats or other dry standing places where appropriate.
  - Carpeting needs to be kept in good condition. Worn or torn carpeting needs to be replaced and securely attached. Ensure the cushion, pad or backing is firm and trim is in place along the entire length of the exposed edge.
  - Aisles or passageways that have been identified and marked as such need to remain free of obstructions and storage.
  - Slip-resistant material that is appropriate for the area should be utilized, and the coefficient of friction (COF) of the floor should not be less than 0.50.
  - Waxes, polishes or floor treatments that reduce the coefficient of friction (slip-resistance) below 0.50 should not be utilized.
  - Non-hazardous spills should be cleaned up immediately, following government regulations if the spill involves hazardous material. Until a spill can be cleaned, entrance to the area should be blocked off and signs posted to warn others of the spill hazard.
  - The floor surfaces you choose may contribute to slips, trips and falls. Pay attention to finishes, matting and texture when selecting materials. Keep floors clean, dry and in good walking condition as well.
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### Stairway, Ramps or Changes in Elevation

Because a change in level can result in a more severe injury, stairway and ramp hazards are unique. People who are in a hurry and not paying attention to surroundings are particularly exposed in a stairwell or on a ramp. Improper design and/or upkeep of stairs, handrails or ramps is also a contributing factor. These conditions can reduce the likelihood of a person being able to stop a fall.

- Keep stairs and ramps clean, dry and in good walking condition. Clean up spills immediately, and use "Caution: Wet Floor" signs to warn of the spill hazard.
- Design exterior ramps or stairs so liquids cannot accumulate.
- Have a plan in place to remove snow and ice accumulation.
- Maintain proper illumination in stairways and ramps.
- Construct and maintain stairways and ramps with no obstructions. Exterior ramps should not be blocked by parked vehicles, landscaping, garbage containers, etc.
- Ensure stair riser and tread depth meets applicable standards (no less than 11 inches measured from nose to rear) and are uniform in design.
- Install a handrail if a ramp is more than six feet long. It should be mounted between 34 and 38 inches above the stair nosing, be present for the full length of the ramp and located on both sides.
- Securely fasten handrails with a 1.5 inch clearance between handrail and wall, and ensure grip surface is uninterrupted by any obstructions.
- Keep carpeting in good condition and immediately repair or replace loose, worn or torn carpeting.
- Securely attach carpet or tile used on a ground or floor surface. Ensure the cushion, pad or backing is firm. Trim should be in place along the entire length of the exposed edge.
- Conduct a safety assessment of each stairway or ramp in the facility at least monthly. Any deficiency identified should be corrected as soon as possible.
- Ensure stairway and ramp walking surfaces have a coefficient of friction of 0.50 or greater.

### Sidewalks and Parking Lots

Changes in weather conditions can significantly impact the exposure to injury while walking along sidewalks and in parking lots. Because of this, these areas need to be designed, constructed and maintained with slip-resistant characteristics, even if impacted by weather.

Snow removal and adequate drainage to prevent rainwater and ice accumulation will decrease the chances of slips, trips and falls occurring on parking lot and sidewalk surfaces. There should be a plan in place for snow and ice removal, and drainage should keep rain and ice from accumulating in critical areas.

- Inspect sidewalks and parking lots at least monthly to identify any deficiencies. A plan should be put in place to address any deficiencies.
- Ensure drainage prevents accumulation of rainwater and ice buildup.
- Ensure all sidewalks are free of obstructions, such as landscaping, signage, etc.
- Ensure sidewalks and parking lots are free of cracks, depressions, holes, openings or significant changes in elevation.

## STF Informational Resources

There are several agencies that offer guidance on slip, trip and fall prevention including:

- ANSI: [ANSI.org](http://ANSI.org)
- Americans with Disabilities Act (ADA): [ADA.gov](http://ADA.gov)
- OSHA: [OSHA.gov](http://OSHA.gov)
- National Fire Protection Association (NFPA): [NFPA.org](http://NFPA.org)

- Provide illumination for all parking lots, ramps and sidewalks.
- Indicate changes in elevation or level by using contrasting lighting, signage or surface colors, ensuring coatings do not decrease slip resistance.
- Monitor parking lots and sidewalks for the accumulation of snow and ice, and use ice-melting compounds and snow removal plans as needed.
- Wheel stops should be six feet or shorter in length and a minimum of three feet apart. Color contrasting should be used to highlight these wheel stops, as well as any speed bumps. Ensure color coatings do not decrease slip resistance.

### Slip, Trip and Fall Hazard Evaluation and Control

Hazards such as slippery surfaces, poor drainage, broken surfaces or the improper cleanup of spills or tracked-in ice or water needs to be identified and corrected. At least monthly, inspect your premises, paying special attention to:

- Entrances where water, snow and ice can be tracked in.
- Docks or loading areas that are exposed to weather elements.
- Changes in elevation (i.e. ramps, stairs).
- Work areas around equipment, machines, etc.

### Other things to keep in mind:

- Fully document and maintain safety assessments.
- Standardize floor maintenance and housekeeping procedures and assign maintenance or other personnel to specific areas to help ensure they perform their responsibilities effectively.
- Address housekeeping practices and procedures during new hire orientation. Procedures should include cleaning only one section of floor at a time so traffic can pass safely.
- Contact your floor covering vendor to determine the best material for the floor's planned use. Most vendors can and should provide a floor finish to your specifications, so be specific in what you are looking for.
- Use proper cleaning materials and methods to avoid deterioration in the flooring and increased slipperiness. You may need to compare, via testing, the various treatments to determine which one works best for your organization.

