

Slips, trips and falls for general industry

Zurich 10-point program

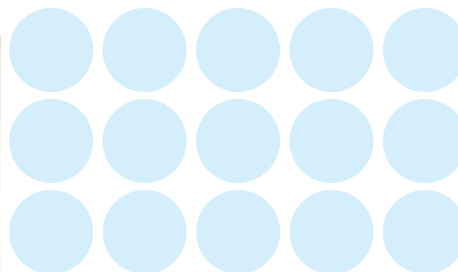
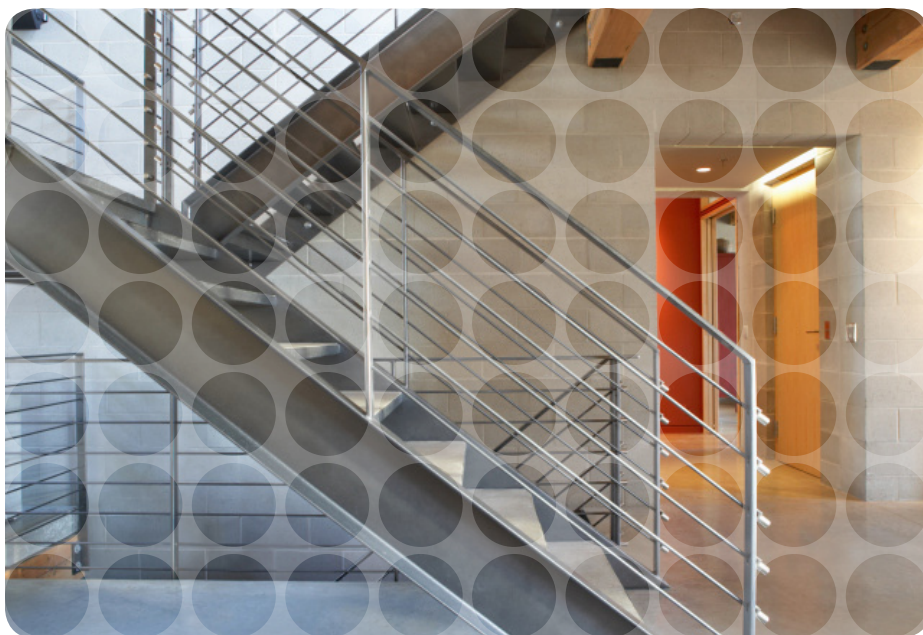


Table of contents

Introduction.....	3
Purpose.....	3
Terminology of contributing factor analysis:.....	4
Surface composition.....	4
Foreign substance potential.....	4
Surface conditions.....	4
Surface changes	4
Level changes.....	4
Obstructions.....	4
Visibility	5
Human factors.....	5
Stairs (including elevators and escalators).....	5
Unusual features.....	5
Contributing factor guide.....	6
Instructions for completing the slips, trips and falls evaluation form.....	8
Industry specific loss trends – Zurich enterprise (all industries)	10
Action plan:	13
Physical changes.....	13
Administrative changes	13
Contributing factor suggestions.....	14
Slip, trip and fall – Action plan worksheet.....	16
Glossary of terms.....	18
Resources.....	19



Introduction

How safe are your floors? How about your stairs? Have people fallen recently? You are not alone if you have had slips and falls.

In the U.S., there are more than eight million people injured from slip, trip and fall incidents every year, according to the National Center for Injury Prevention and Control. The most common injuries are joint injuries, typically to the wrist, elbow, shoulder and knee. Back injuries also occur often. These types of injuries affect every aspect of your business, from worker injuries to contractors, visitors and the public.

Purpose of this guide

Many factors contribute to slip, trip and fall incidents. This guide is designed to help you and your management teams become self-sufficient in better controlling these exposures. This workbook provides a logical process to identify areas at your location that have the greatest potential for slip, trip and fall occurrences. Then, it will show the user how to prioritize hazards and develop action plans to help control slip, trip and fall losses in those areas.

The Zurich 10-point method of evaluating areas for slip, trip and fall potential starts with understanding several contributing risk factors commonly converging to result in a slip, trip and fall event. We have outlined these contributing factors on an easy to use evaluation form, and we will take you through the use of this tool step-by-step, providing examples where appropriate.

Terminology for contributing factor analysis

Zurich completed a forensic review of a large number of slip, trip and fall injury cases and identified that the potential for incidents commonly depended on the convergence of ten risk factors that are defined below. These ten risk factors became the basis of our 10-point slip, trip and fall analysis methodology.

Surface composition

Surface composition refers to the type of floor or exterior walking surface installed and the coefficient of friction or slip resistance the surface provides. Surfaces such as natural stone, asphalt, brick, broom finished concrete and carpet normally provide adequate slip resistance due to the asperities or raised edges on the surface. Hard smooth surfaces such as vinyl composition tile, ceramic tile, terrazzo, marble and granite may appear slip resistant when dry but could be quite slippery when wet. Painted surfaces, to include in parking lots and sidewalks, should be reviewed to ensure abrasives were utilized to avoid creating a slippery surface exposure. The more slip resistant you find the walking surface in the area being assessed, the lower the exposure to a slip and fall incident.

Foreign substance potential

This potential is the likelihood that a foreign substance will be on the walking surface and adversely affect the slip resistance. Items to consider include ice, water, liquids, powders, and grease or any substances that could be tracked into the building or accumulate on a walking surface. Exposures created by maintenance or third party cleaning crews should be considered. Vestibule entrances and the area just inside the main entrance should be reviewed in detail. The higher the potential for foreign substance introduction, the higher the exposure for a slip and fall incident.

Surface conditions

These are the actual conditions at the time of the survey. Consider raised or recessed sidewalk edges or curbing, potholes in parking lot, painted surfaces, loose carpeting, loose or broken tiles, holes or pits on the surface, or unusual wear. Poor surface conditions should receive a high exposure rating.

Surface changes

These changes are from one type of material to another as someone walks through the area. This is especially critical when the surfaces have widely different slip resistance, such as carpet to tile, brick to epoxy floor, or wet to dry. Surface changes like these create a higher exposure for a slip and fall incident.

Level changes

Level changes are defined as floor or exterior walking surface height changes of three or fewer steps. Ramps are defined by the ADA as walking surfaces with a slope greater than 1:20 rise/run. Ramps used for persons with disabilities should have a slope no greater than 1:12 rise/run or 4.8 degrees with new construction or updates. Additional items to consider include non-uniform steps or stairs and curbing that is too high. Six inch curbs are the standard for most jurisdictions. Convergence issues, such as poor visibility and illumination, can impact level changes dramatically. Level changes that impact pedestrian safety should be considered a high level exposure. Additional information on ramps and slopes can be obtained in the 2010 ADA Standards at the following link: www.ada.gov/regs2010/2010ADAStandards/2010ADAStandards.pdf

Obstructions

Obstructions are items that can contribute to the likelihood of a trip and fall, which is anything that protrudes into the normal walking path. They include items such as extension cords, hoses, product storage, material handling equipment guards, concrete posts, parts of equipment, parking lot bumpers, speed bumps and temporary storage/holding areas. Factors to consider include the proximity to pedestrian traffic areas and the permanency of the item. Familiarity of the person walking to the area or obstruction is also a factor.

1 CDC National Center for Injury Prevention and Control, Web-based Injury Statistics Query and Reporting System, 10 Leading Causes of Nonfatal Unintentional Injury, United States, 2009, All Races, Both Sexes, Disposition: All Cases, <http://webappa.cdc.gov/cgi-bin/broker.exe>



Visibility

Visibility pertains to more than just lighting (how easy the surface is to see). Other considerations include glare, shadows, bright lights, and color contrasts. Environmental factors that can affect visibility need to be considered. These include mist, steam, condensation, dust clouds, etc. Poor visibility increases the adverse impact of surface changes, level changes and a pedestrian's ability to see potential obstructions. Areas with poor visibility should receive higher exposure ratings. Obtain additional illumination recommendations at:

www.naeg.com/cost-savings/foot-candles-chart.htm

Human factors

The assumption is that different people have different physical capabilities. Human factors are elements such as demographics (i.e., age), shoe types, familiarity with the areas traveled, and physically challenged persons. Carrying awkward packages/materials can also negatively affect the rating. Slip, trip and fall exposures increase where human factors play a critical negative role.

Stairs (including elevators and escalators)

Stairs are defined as more than three steps and are a major source of falls. Falls from stairs are more likely to result in serious injury and serious injury is more likely to occur while pedestrians are descending. Consider the frequency of use and give higher exposure ratings if the stairs are used on a regular basis. The more activity, the more likely an incident will occur. Step geometry must be uniform to prevent users from miss-stepping and falling or tripping and falling. Curved or spiral stairs would receive a higher exposure rating. Ensure handrails are uniform around stair corners and do not present an exposure in which users are searching for the next section of railing. Handrails should be secure and easily grasped. Stair treads should be slip resistant, well maintained and free of defects.

Escalators and elevators, if any, need to be considered. When not operating, escalator steps do not generally meet the standard step geometry for stairs, which would increase the exposure for a slip, trip or fall. Elevator thresholds should be level with elevator carriage at each level and be slip resistant.

Unusual features

Unusual features include anything out of the ordinary that might distract a person walking through the area. This reflects the impact of distractions or unusual features. Examples include distractions created by a particular process, alarms/buzzers, strobe lights or flashing lights, high pedestrian traffic, high vehicle traffic or unusually close proximity to material handling equipment, signs, information boards, displays, large windows, and decorative lighting. There typically will be a convergence of issues, such as level changes, obstructions or poor surface conditions associated with the unusual features. Areas where unusual features are a major distraction should receive a high exposure rating.

Contributing factor guide

When assessing an area, you will be evaluating each factor to determine whether it contributes to a very low, low, medium, or high potential for a slip, trip and fall. Based upon your observations, each contributing factor will be scored, as follows:

High potential = 4 Moderate potential = 3 Low potential = 2 Very low potential = 1

In order to assist you in scoring, we have developed the following guide. Although it would be impossible to develop an absolute definition for each level of contributing factor, we can give a range of examples to illustrate some of the more typical conditions that you might encounter. However, this is just a guide. You must use your judgment to determine the most appropriate score.

Contributing factor	High potential (Score = 4)	Medium potential (Score = 3)	Low potential (Score = 2)	Very low potential (Score = 1)
Surface composition	Highly polished and smooth surface (e.g., glazed tile, etc.). Any surface with slip resistance below 0.50 (below 0.65 if a ramp) under its "normal conditions".	Adequate traction when dry, but reduced slip resistance when wet (e.g., Linoleum, Vinyl, etc.). Any surface with a slip resistance of 0.45 to 0.55 (0.65 – 0.75 if a ramp) under its "normal conditions".	Adequate traction when dry, only slightly reduced slip resistance when wet (e.g., untreated wood, textured epoxy, etc.). Any surface with a slip resistance of 0.55 - 0.60, (0.75 - 0.80 if a ramp) under its "normal conditions".	Adequate traction under all conditions (e.g., carpet, rough concrete, etc.). Any surface with a slip resistance greater than 0.60 (greater than 0.80 if a ramp) under its "normal conditions".
Foreign substance potential	Walking surface contaminants are likely present (e.g., water, oil, wood dust, chemicals, etc.). This could be a result of a process, or a spill.	Walking surface contaminants are occasionally present due to non-routine conditions (e.g., spills, leaks, tracking, etc.)	Walking surface contaminants are rare. Area is remote to tracking and leak sources, with most likely hazard due to beverage spills.	Walking surfaces have virtually no potential for contaminants to be present or to impact slip resistance of surface.
Surface condition	Holes in floor, ruts, missing floor material, unrepaired tears in carpeting.	Worn flooring, patched surfaces, and cracked flooring.	Initial indications of wear – traffic areas appear "polished" reducing traction.	No observable deterioration in surface conditions.
Surface changes	Carpet to glazed tile, Brick to epoxy, Dry to wet.	Linoleum to vinyl, wood to linoleum, etc.	Carpet to rough concrete, wood to rough concrete, etc.	No change in surface.
Level changes	Any walking surface with a slope > 1:8.	Any walking surface with a slope > 1:12, but < 1:8.	Any walking surface with a slope < 1:20, but < 1:12.	Any walking surface with a slope < 1:20.
Obstructions	Poor housekeeping, obstacles located in walkway creating the need to step around or over objects.	Obstacles in walkway, but arranged, guarded, or protected to minimize tripping hazard.	No obstacles in walkway, but potential for objects to fall/drift unexpectedly into walkway.	No obstacles or potential for obstacles to be present in walkway.
Visibility <i>Note: foot candle (fc) information listed here is for general guidance only. For specifics please see link to illumination recommendations listed in the terminology section above or refer to your local requirements.</i>	No contrast in level changes, very low light level (interior < 2 fc / exterior < 0.2 fc). Visibility is obscured by vapor cloud or storage.	Level contrasts are indicated, but not obvious. Light levels are low (interior > 2fc, but < 5fc, exterior >0.2 fc, but <0.9 fc). Visibility is restricted by vapor cloud, or storage.	Level contrasts are obvious, but not indicated. Light levels meet activity minimum requirements (public spaces 3 fc, basic orientation 5 fc, working spaces 10 fc. Visibility may be impacted by shadows and/or glare.	Level contrasts are obvious through visual markings and indications. Light levels exceed activity minimum requirements (public spaces 3 fc, basic orientation 5 fc, working spaces 10 fc. Visibility is not obstructed or restricted.

Contributing factor	High potential (Score = 4)	Medium potential (Score = 3)	Low potential (Score = 2)	Very low potential (Score = 1)
Human factors	High volume of pedestrians unfamiliar with walkway, no control of footwear, high frequency of infirm population using ambulation aides, individuals constantly carrying awkward packages.	Some individuals unfamiliar with walkway, persons permitted access without slip resistant soles, several pedestrians using ambulation aides. Individuals frequently carrying awkward packages.	Most pedestrians familiar with walkway, limited number of persons permitted without slip resistant soles, rare use of ambulation aides by pedestrians. Individuals intermittently carrying awkward packages.	All pedestrians familiar with walkway, slip resistant footwear in use, no individuals using ambulation aides.
Stairs (includes any elevators and escalators)	<p>Stairs – not constructed to standard (e.g., treads and/or risers inconsistent, uneven, or inadequate; handrails missing or at improper height, etc.). Treads and/or landings have high potential for contaminants.</p> <p>Elevator – does not level at floor, excessive gap, and significant change in floor surface. High potential for contaminants on walking surface. No inspection/maintenance records.</p> <p>Escalator – Visual cues inadequate at entrance and exit, system operating erratic, no inspection and/or maintenance records.</p>	<p>Stairs – tread and landing surfaces show visible signs of wear, potential for contaminants (liquids, dust and dirt accumulation).</p> <p>Elevator – Floor surface shows sign of wear, potential for contaminants. Inspection and/or maintenance practices not to standard.</p> <p>Escalator – Inspection and/or maintenance practices not to standard.</p>	<p>Stairs – tread and landing surfaces show beginning signs of wear, low potential for contaminants (liquids, dust and dirt accumulation).</p> <p>Elevator – Floor surface shows initial sign of wear, low potential for contaminants. Inspection and/or maintenance practices meet minimum standard.</p> <p>Escalator – Inspection and/or maintenance practices meet minimum standard.</p>	<p>All standard and code requirements met. Inspection and maintenance requirements exceed minimum requirements and documented. In addition:</p> <p>Stairs – slip resistant treads and landings. Very Low potential for contaminants.</p> <p>Elevators – similar floor surface, flooring in good condition.</p> <p>Escalator – all components in good condition and working properly.</p>
Unusual features	Convergence of multiple factors – High volume of forklift traffic with no marked traffic lanes, painted floors without slip resistant additive, visual and/or auditory distractions (e.g., signs, displays, warning signals, etc.), tire stops, smooth metal or diamond plate panels over utility access or drainage troughs.	Forklift traffic with marked traffic lanes, painted floor with slip resistant additive showing signs of wear, drainage grates, speed bumps, building expansion joint not level, recessed metal grating over floor drains. Multiple visual distractions exist (e.g., displays, noise, alarms, etc.)	Unusual features exist, but are controlled. Visual distractions exist (e.g., displays, noise, alarms, etc.)	Unusual features exist, but are controlled – Forklift traffic with guarded traffic lanes, approved slip resistant additive integrated into floor markings, gratings are level with openings half-inch in predominant direction of travel and slip resistant. No other visual distractions.

Note: There may be times when a specific contributing factor does not apply. When this occurs, the contributing factor is to be omitted from the scoring process.

Instructions for completing the slips, trips and falls evaluation form



The slips, trips, and falls evaluation form was developed to provide an efficient method for you to assess a site and then, using the area score and overall score, help you prioritize your resources to focus on those areas/sites posing the greatest slip, trip, and fall potential.

Identify pertinent survey information by filling out the organization name, site surveyed/address, surveyed by, and date fields. Next, identify the areas you will be evaluating. The best case scenario is to evaluate every area that has foot traffic, but, if this is not possible, you should prioritize by those areas that have the most foot traffic. List the areas you will evaluate.

Assess each area in relation to each contributing factor. (See "Contributing factor analysis and Contributing factor guide"). As indicated before, you will score each contributing factor as follows:

High potential = 4

Moderate potential = 3

Low potential = 2

Very low potential = 1

When evaluating an area, you will likely find that most of the contributing factors are present and pose a potential contribution to a slip, trip, and fall incident. However, there may be a situation where a contributing factor does not exist (e.g., stairs – elevator/escalator, or unusual features). If this is the case, then do not score this factor, leave the entry blank.

To calculate the area score, total up the actual score for the row and divide by the total possible score for the row. List your finding under the "Area Score". (If all contributing factors are scored for a given row, a total of 100 percent would be the possible score for that row. If only 9 of 10 contributing factors were scored, the possible score for that row would still be 100 percent.)

Once you have completed surveying all the areas at the site, you can calculate an overall score by totaling up the area scores and dividing by the number of areas evaluated. List that number as the "Overall Score".

To consider which areas pose the greatest STF potential and need to be addressed first, rank the area scores in descending order focusing improvement efforts on areas with the highest exposure scores.

When reviewing each area's contributing factor score, the goal would be to have all contributing factors rated a "1" (Very low potential). If any contributing factor is rated a "4" (High potential), improvements need to be considered.

If you have evaluated multiple sites, you can use the same ranking approach to prioritize which sites you would focus improvement efforts on first by ranking each site's overall score.

Slips, trips and falls evaluation form

Organization name:

Site surveyed/address:

Surveyed by: Date:

Calculate Area Score:

- Add up actual score and divide by total possible score.
- Convert to a percentage.

Score contributing factor in each column:

- 4 = High potential
- 3 = Medium potential
- 2 = Low potential
- 1 = Very low potential

Areas evaluated

	Foreign substance potential	Surface composition	Surface conditions	Surface changes	Level changes	Obstructions	Stairs - elevators/escalators	Human factors	Unusual features	Area score
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
Calculate OVERALL SCORE by totaling area scores, and then dividing by number of areas surveyed.										Overall score:

To consider which areas pose the greatest STF potential and need to be addressed first, rank the area scores in DESCENDING order focusing improvement efforts on areas with the HIGHEST scores. While the goal would be to have all contributing factors rated a "1" (Very low potential), any contributing factor rated a "4" (High potential) needs to be improved.

Industry specific loss trends – Zurich enterprise (all industries)

An analysis of slip, trip and fall claims for the Zurich enterprise was completed using a five year history. A total of 148,728 claims were reviewed. Data utilized for the study included workers' compensation lost time claims and premises/general liability claims with a posted reserve.

It should be noted that slip, trip and fall claims are historically under reported. A number of large claims, for example, indicate strains or sprains and injury to the lower back. When looking at the accident detail, the back injury was the result of slipping and falling, from a truck for example. In many cases the injury type is recorded and not the causal information. Likewise, many premises or general liability claims are not reported due to large deductible or self-insured reserve (SIR) programs.

It is with this in mind that we provide the following recap.

Detailed loss location description - Premises/general liability claims

50,430 Premises/general liability slip and fall incidents reviewed. Top premises/general liability slip, trip or fall loss locations:

- 5,871 - Selling floor
- 4,264 - Parking lot
- 3,625 - Outside building
- 5,228 - In building
- 4,054 - Sidewalk
- 2,943 - Stairs or stairwells

Premises slips and falls are representative of the environment customers and visitors encounter. All businesses have interior and exterior walking surfaces that could be safe one minute and unsafe the next. Business owners or managers must work continuously to maintain safe walking surfaces for customers and visitors. Weather and vehicle traffic also contribute to raised sidewalks, recessed curbs, potholes, debris, etc. This makes for significant challenges to keep exterior walking surfaces safe and to locate funding to make repairs, remove snow 24/7, and in some cases replace defective sidewalks, steps/stairs or repave parking lots.

Premises/general liability agent of loss

50,430 Premises/general liability slip and fall incidents reviewed. Top premises/general liability slip, trip or fall agent of loss:

- 9,372 - Change in surface texture
- 3,712 - Ice, rain, snow-weather conditions
- 3,435 - Cleaning solution, wax, wet floor
- 3,356 - Liquid, food or grease spills
- 2,702 - Furniture, fixtures, furnishings

In looking at the agent of loss for premises slip, trip and fall incidents, change in surface texture was identified as the leading contributing factor. Examples of changes in surface texture could involve pedestrians walking from carpet to a tiled floor or from an entrance mat to a tiled floor. The change in surface texture in which a slip occurs is normally the result of a loss of friction between the pedestrian's shoe or foot and the walking surface.

Approximately 80% of floors in the United States are Vinyl Composition Tile (VCT). This particular walking surface as well as other smooth hard surfaces such as marble, granite, terrazzo, etc. lack asperities or surface roughness. Due to this factor, many slips and falls occur unexpectedly on level surfaces that become wet and lack proper slip resistance. A lubricant on the shoe or walking surface is a contributing factor in many cases when smooth hard walking surfaces are utilized. Please see Zurich Risktopic, Understanding slip resistance: Walking and working surfaces for further details.

Ice, rain, snow-weather conditions could involve exterior or interior walking surfaces. Conditions in the parking lot, sidewalks, steps, stairs or ramps could be unsafe due to a lack of proper snow removal or refreezing, creating black ice. Customers or visitors tracking snow or water into the building could slip on slush or water when transitioning from entrance mats to a tiled floor.

Slips and falls related to cleaning solution, wax or wet floors are predominantly related to wet floor conditions. Very few claims indicate slips on newly waxed floors. A significant number of claims reviewed indicated the floor had just been mopped, however.

Falls in liquid, food or grease spills involve many customers or visitors slipping and falling in water. However, polymerization may be a factor. Polymerization is a condition in which grease and minerals, say in a restaurant or kitchen, adhere to the floor surface, due to lack proper cleaning standards. This creates unsafe floors, especially when wet. A polymerized floor will have a sheen and appear clean. This grease build up can sometimes be noted as being tracked from the kitchen to other areas of the business, to include the exits. To avoid polymerization, restaurant and kitchen management must ensure proper cleaning methods are utilized. Those methods



would involve use of a degreaser, hot water, (or sometimes cold water depending on the degreaser vendor), aggressive bristle brushing and 100% removal of the dirty water to prevent the residue from reattaching to the floor.

Furniture, fixtures and furnishings involved numerous customers or visitors tripping over entrance mats, mats in produce areas or throughout a building. Claims indicate rippled, wrinkled, folded over or bunched up mats. The quality of mats is often ignored and is a significant opportunity for most businesses that buy or lease poor quality mats that are actually a trip hazard and not a tool to prevent slips, trips and falls.

Numerous claims indicate the chair or furniture collapsed and the customer or visitor fell to the floor.

Workers' compensation detailed loss location description

98,298 workers' compensation claims reviewed.

Top workers' compensation slip, trip or fall loss location:

- 14,242 – Job site
- 7,102 – In building
- 3,523 – Stairs or stairwells
- 3,347 – Outside building
- 2,945 – Parking lot
- 1,867 – Kitchen
- 1,238 – Warehouse
- 1,220 – Workstation
- 934 – Sidewalk

The industry that employees work in will determine the types of slip, trip and fall exposures they encounter. Employees who work in construction for example will have slip, trip and fall exposures at their "job site," both on the ground and in many cases, above the ground. Employees who drive trucks or rigs will encounter a variety of slip, trip and fall exposures depending on the type of industry and customers they serve. Their slip, trip and fall exposures also include climbing their truck, trailer, tanker and truck beds. Many drivers also must deal with the process of applying or removing tarps and accessing catwalks, gangways and other access areas.

Employees who work "in buildings" such as warehouses, manufacturing plants, retail establishments, hospitals and other businesses will encounter a variety of slip, trip and fall exposures also created by their work environment.

Slips, trips and falls on stairs have similar causes as customer or visitor incidents. Many incidents indicate the employee missed a step and fell or tripped going up or down stairs. Many incidents indicate slips on stairs due to water, grease, oil, ice, snow or other liquids associated with their working environment.

Employees must also negotiate exterior walking surfaces outside their building or work facility. They too encounter problems with parking lots and sidewalks.

Slips and falls in kitchens indicate many slips while mopping or handling heavy or awkward materials. Many incidents indicate slips occurred on floors that had been freshly mopped. Lax cleaning methods that permit polymerization could be a factor.

The larger valued claims in warehouses indicate employees fell a significant distance, from 5 to 20 feet. The largest claim indicates an employee fell as he was performing maintenance on lighting in the warehouse. The employee was standing on something other than a ladder.

Unsafe practices appear to be prevalent for approximately 18 of the significant fall claims. One employee was being lifted in the air on the forks of a forklift and fell. Another employee disconnected his fall protection and fell approximately 20 feet.

Many claims were the result of changes in surface texture. A significant number of incidents involved falls from ladders. Slips, trips or falls as a result of walking on pallets or pallet debris were significant. Many claims indicate falls involving furniture, fixtures or furnishings.

Sidewalk incidents indicate that ice and snow were the most significant contributing factors. Many incidents indicate the employee tripped on the sidewalk. Many claims describe uneven, raised or cracked sections of the sidewalk or debris on the sidewalk. Some claims indicate problems negotiating curbing.



Agent of Loss

98,298 Workers' compensation claims reviewed. Top workers' compensation slip, trip or fall agent of loss:

- 7,328 - Change in surface texture
- 5,124 - Ice, rain, snow-weather conditions
- 4,738 - Ladder or scaffolding
- 3,707 - Cleaning solution, wax, wet floor
- 2,632 - Liquid, food or grease spills
- 2,433 - Furniture, fixtures, furnishings
- 895 - Wire, metal, boxes, containers, packages, carts, etc.

Just as with premises liability incidents, slips, trips and falls related to changes in surface texture lead all other categories. Ice, rain and snow-weather related conditions also rank second. Falls from ladders or scaffolds rank third. Approximately 486 incidents involve scaffolding. Many incidents indicate serious falls from scaffolding due to planks breaking, scaffolding collapsing, loss of balance, slips on scaffolding or ladders utilized.

Approximately, 1200 claims indicate the employee fell from a ladder. One of the most significant losses involved a manager overreaching and falling, versus moving the ladder to reach the item needed. Some claims indicate chairs or stools being used versus a ladder.

When looking at cleaning solution, wax and wet floor agent of loss, many of the claims involve slips on wet floors and possibly polymerization. A significant number of incidents are related to mopping. Many claims indicate the employee doing the mopping slipped when physically mopping or trying to negotiate the wet floor. Several injured workers indicated there was no "wet floor" sign posted where they slipped and fell.

Most of the liquid, food or grease spills indicate workers slipping in liquid. Several of the largest claims indicate slips on grease when climbing stairs, machinery, trucks or when unloading trucks.

The two largest falls from furniture, fixtures and furnishings indicate the chairs the employees were sitting on collapsed resulting in serious back injuries.

Approximately 655 incidents involved chairs. Many of these claims indicate chairs on wheels rolled out from under the employee as they were reaching, resulting in the employee falling to the floor. Numerous claims indicate chairs being used as ladders and the employee fell. Over 200 claims indicate trips over mats, rugs or runners. Some claims indicate the person was not watching where they were walking or carrying something that blocked their view, resulting in a trip over chair legs or other fixturing.

Wire, metal, boxes, etc. indicate specific items that employees may trip over in the industry they work in that probably should not be on the walking surface. Many trip and fall incidents occurred due to employees tripping on wires or cables under their desk. Single containers, boxes, packages and carts left in the walking area contributed to many serious trip and fall incidents.

The chart below recaps the premises liability and workers' compensation claims discussed. It shows that the majority of worker falls are on the same level and that falls from different levels, to include ladders and scaffolding, have significantly higher claim costs. Please consider this loss data when formulating your action plan.

Accident Description	#Cims	%Cims	%Op	%Net	\$Avg_Net
Premises: Slip/Fall Miscellaneous, Not Highway/Municipality	49,494	33.3%	24.2%	21.8%	\$20,129
Fall/Trip/Slip: On Same Level	26,735	18.0%	20.2%	18.2%	\$30,976
Fall/Trip/Slip: Cause Not Otherwise Listed	17,526	11.8%	18.6%	11.6%	\$30,319
Fall/Trip/Slip: From Different Level	14,752	9.9%	21.0%	16.8%	\$52,087
Fall/Trip/Slip: Slippery Conditions-Ice/Snow/Water/Etc	10,101	6.8%	20.3%	7.2%	\$32,702
Fall/Trip/Slip: Slippery Conditions-Food/Liquid/Grease Spill	8,480	5.7%	20.7%	5.4%	\$29,190
Fall/Trip/Slip: From Ladder Or Scaffolding	7,770	5.2%	20.3%	9.2%	\$53,843
Fall/Trip/Slip: On Stairs	6,551	4.4%	19.5%	4.0%	\$28,135
Fall/Trip/Slip: Slipped, Did Not Fall	4,104	2.8%	19.0%	2.7%	\$29,656
Fall/Trip/Slip: Into Openings	2,198	1.5%	19.8%	2.2%	\$45,837
Premises: Slip/Fall On Insured Elevator/Escalator	936	0.6%	25.6%	0.6%	\$31,161
Fall/Trip/Slip: From Pole	50	0.0%	24.0%	0.1%	\$93,072
Fall/Trip/Slip: From Fence	31	0.0%	19.4%	0.0%	\$15,008
Grand Total	148,728	100.0%	21.4%	100.0%	\$30,670

Action plan

Our final step is to determine how to control the problems we have identified. We have determined our priorities and know which issue to work on first, but each issue is unique and requires special thought about what level of control is desirable, what resources are available and what is technically feasible. Because of these differences, action plans to control each different exposure will likely be unique also. You will probably find that in most cases, more than one change is needed to affect a long-term solution to the problem. To assist you in this process, a Slip, Trip, and Fall – Action Plan Worksheet has been provided at the end of this section.

There are, however, some basic similarities that can serve as a guide to help you through the process of developing an action plan. Each of these considerations is listed in the action plan table on the next page. Also, because assignment of responsibility is a key factor in making sure suggested changes are actually implemented, management decisions about each issue should also be documented. You should complete the table for each significant problem identified in the previous steps.

Here are some suggestions for possible controls to get you started:

Physical changes

- Repair deficiencies in floor surfaces.
- Replace slippery floor material with surfaces having a higher coefficient of friction or slip-resistance. New construction or remodel activity presents the best opportunity to eliminate unsafe walking surfaces.
- Engineer out slip, trip and fall exposures at entrances. Provide permanent matting or recessed gridding in vestibules and provide at least 15 feet of quality entrance matting. Ensure back up matting is stored properly. When possible, mats should be stored in a manner in which they lay flat and are ready for use. Not rolled or stored on end.
- Explore floor treatments that enhance slip resistance. Test on tile samples, when possible. (Some floor dressings or treatments may damage vinyl, linoleum, marble or other sensitive floor surfaces. These products are normally made for durable floor surfaces.)
- Install handrails where appropriate. Add signs, "Please Use Handrail", to promote use.
- Avoid furnishings or display fixtures that might slip or roll when leaned upon.
- Use color contrasts or lighting to make steps or level changes more visible.
- Verify lighting is adequate inside and outside the building.
- Install spill stations or spill cleanup products throughout the facility to provide associates with the proper tools to clean up spills. Provide training and reminders.
- Purchase wet floor signs that are at least 36 inches high to avoid creating a trip hazard with those signs.

Administrative changes

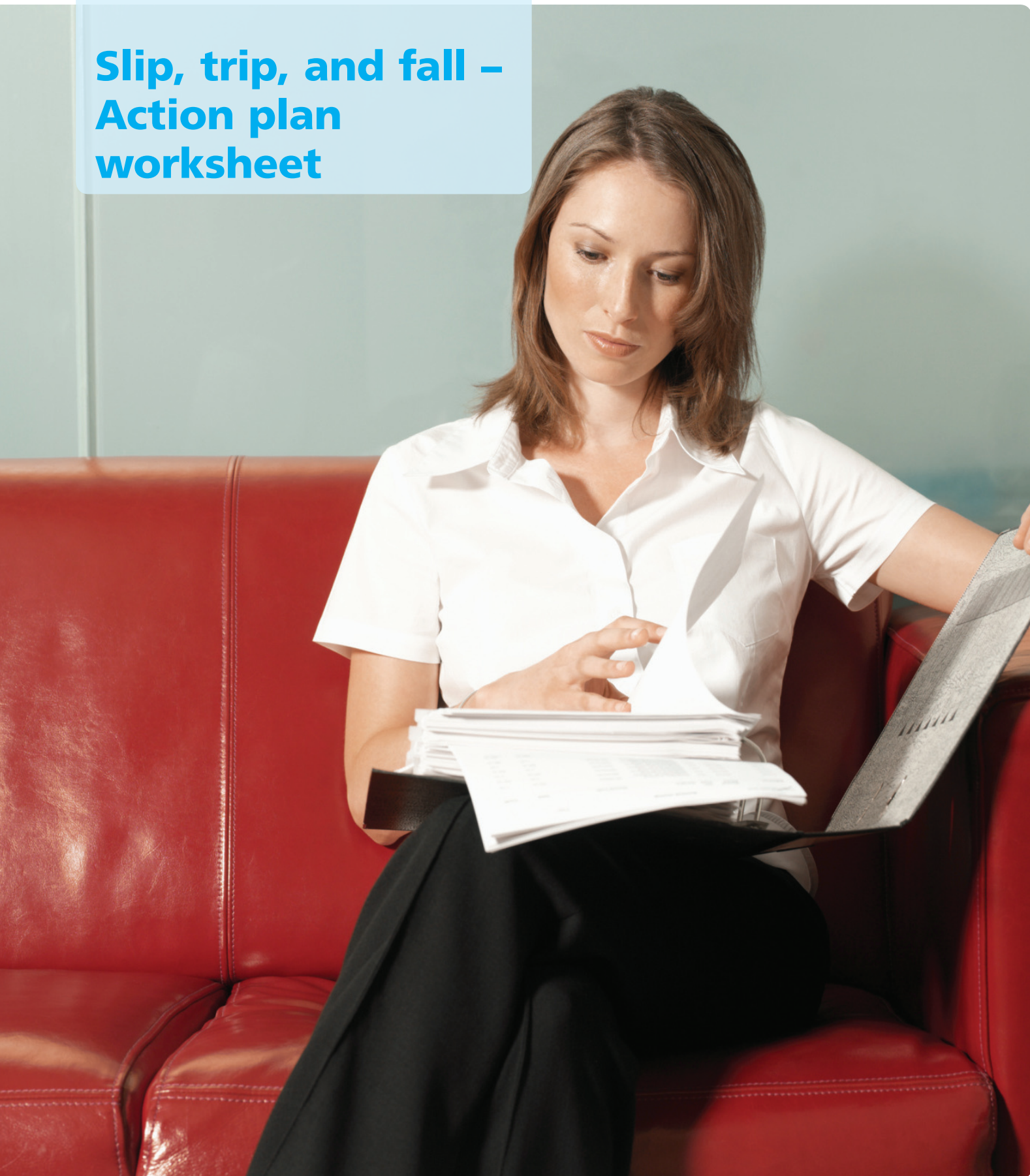
- Ensure managers/associates are aware of their responsibilities to prevent slips, trips, and falls.
- Create appraisal or performance management objectives related to maintaining slip, trip and fall prevention standards.
- Train management and associates not to use chairs, stools, counters, stockroom racking, boxes, etc., as a ladder.
- Address slip, trip, and fall prevention in daily morning meetings and safety committee meetings.
- Include slip, trip, and fall prevention information in self-inspection forms. Ask hourly associates safety awareness questions in regards to slip, trip and fall prevention during the self-inspection.
- Ensure managers set the example and never walk by an unsafe act or unsafe condition that could result in a visitor, customer or employee slip, trip or fall.
- Introduce a shoe program requiring that only slip resistant shoes be worn.

Contributing factor suggestions

Contributing factor	Suggested improvements
Composition	<ul style="list-style-type: none"> • Install new flooring material with higher slip resistance • Install permanent matting system • Increase traction through shoe program • Apply slip resistant coating (if appropriate for floor material)
Foreign substance potential	<ul style="list-style-type: none"> • Eliminate source of contaminant • Avoid polymerization/use proper cleaning methods • Install permanent matting system or inlaid carpet at entrances • Install slip resistant gridding in vestibules • Implement non-slip shoe program • Investigate/improve cleaning/housekeeping practices • Apply slip resistant coating (if appropriate for floor material) • Ensure proper signage/warnings and barricades are used • Provide absorbent materials for spill clean up • Use clean mop heads only for spill clean-up to avoid contaminating walking surfaces • Redirect traffic, as appropriate
Surface condition	<ul style="list-style-type: none"> • Repair with material having similar walking surface characteristics • Minimize "patch" repair
Surface changes	<ul style="list-style-type: none"> • Install matting system • Provide transitional cues
Level changes	<ul style="list-style-type: none"> • Provide adequate visual cues • Install alternate means to transition elevation change
Obstructions	<ul style="list-style-type: none"> • Improve housekeeping • Mark and protect walkways • Redirect power cords • Remove temporary obstacles • Review/modify walkways with permanent obstructions • Use barricades to prevent striking into obstructions • Redirect traffic flow

Contributing factor	Suggested improvements
Visibility	<ul style="list-style-type: none"> • Improve lighting • Remove obstructions • Reduce glare
Human factors	<ul style="list-style-type: none"> • Provide transport assistance (carts, wheelchairs, etc.) • Install visual and/or auditory cues • Work to provide safe, slip resistant walking surfaces for elderly/aging population • Provide walking surfaces free of defects • Reduce or eliminate trip exposures
Stairs (Includes elevators and escalators)	<ul style="list-style-type: none"> • Ensure railing is continuous around corners to prevent falls • Ensure handrails are graspable and of the appropriate height • “Please use handrail” signs posted • Install slip resistant nosing/treads • Provide visual cues • Increase maintenance activities • Minimize surface and level changes on stair landings • Install sturdy handrails • Ensure elevator thresholds are even with elevator carriage • Ensure elevator thresholds are slip resistant
Unusual features	<ul style="list-style-type: none"> • Ensure walking lanes are marked and protected • Reduce noise levels • Avoid creating distractions where multiple risk factors are converging

Slip, trip, and fall – Action plan worksheet



Action plan worksheet

Organization name:

Site surveyed/address:

Created by:

Date:

Title:

Slip, trip, and fall prevention item number:

Describe issue needing corrective action:

Describe physical changes needed to improve the condition:

Describe administrative changes needed to improve the condition:

Management/team member/property manager responsible for corrective actions

Name:

Title:

Target date for completion:

Date completed:

Miscellaneous comments/information:

Glossary of terms

Asperities:

Raised edges or abrasives on a walking surface. Some products such as asphalt or broom finished concrete will exhibit asperities when hardened. Asperities can also be applied onto surfaces, such as adding sand or glass beads to paint or applying floor treatments with glass beads to a slippery surface. Sand paper is a good example of a surface with asperities.

Coefficient of friction:

Represents the amount of friction provided on a dry surface when tested with a slip meter. The term “slip resistance” should be utilized when talking about the measurement of wet surfaces. Coefficient of friction or slip resistance can be measured by a properly trained or certified individual using the appropriate slip meter. Slip meters used for testing of both wet and dry surfaces must exhibit horizontal and vertical (normal) movement, similar to human ambulation, in order to be utilized. This reduces the residence time or slip activation time that normally disqualifies other slip meters from being utilized.

Contributing factors:

Those conditions that may affect slip, trip, and fall potential.

Foreign substance potential:

Likelihood that other substances (e.g., water, coffee, oil, etc.) will be found on the walking surface.

Human factors:

The assumption that different individuals have different physical capabilities.

Level changes:

Floor height/surface elevation variations, adjoining surfaces not “flush”. Walking surface height changes of three or fewer steps.

Obstructions:

Anything protruding into the normal walking path.

Riser:

Vertical part of a stair or step often referred to as the vertical face.

Slip resistance:

The term used to explain a loss of traction due to multiple variables (e.g., the introduction of a contaminant, along with surface composition, shoe/sole material, etc.). See its reference above under coefficient of friction.

Slope:

Refers to an inclined walking surface, calculated by measuring the vertical distance and then dividing it by the horizontal distance expressed from top to bottom. Also referred to as rise over run, what a 1:20 slope would mean for every foot of rise, you must travel a distance of 20 feet (run).

Stairs:

A series of steps, normally more than three steps going from one level to another.

Surface changes:

An immediate transition from one type of material to another type of material (e.g., linoleum to carpet, etc.).

Surface composition:

Type of material that makes up the floor surface.

Surface conditions:

Actual conditions at time of survey.

Tread:

Horizontal part of a stair step. The part of the stair surface where the foot/shoe normally comes into contact with when climbing.

Unusual features:

Anything out of the ordinary that might distract a person walking through the area.

Visibility:

The relative ability to view one’s surroundings, given ambient conditions.

Resources

1. Di Pilla, Steven. *Slip, Trip, and Fall Prevention: A Practical Handbook*, Revised Second Edition, Boca Raton, FL, CRC Press; 2010.
2. English, William. *Pedestrian Slip Resistance: How to Measure It, How to Improve it*, Second Edition, published by William English, Inc.; 2003.
3. Standard Practice for Safe Walking Surfaces, ASTM F-1637-10, ASTM International, 100 Bar Harbor Drive, P. O. Box C700, West Conshohocken, PA 19428, Published 2007.
4. 2010 ADA Standards for Accessible Design, U. S. Department of Justice, 950 Pennsylvania Avenue, NW, Washington, DC 20530.
http://www.ada.gov/2010ADASTandards_index.htm
5. Understanding slip resistance: Walking and working surfaces, Zurich Services Corporation *Risktopic*, April 1, 2011.
6. Ladder safety, Retail Safety Solutions Newsletter, Zurich Services Corporation, October 15, 2010.
7. Centers for Disease Control and Prevention, National Center for Injury Prevention and control. Web-based Injury Statistics Query and Reporting System (WISQARS) [online]. Accessed November 1, 2010. <http://webappa.cdc.gov/cgi-bin/broker.exe>
8. CDC: U.S. senior-citizen population to double by 2030. USA Today.com, Health and Behavior, February 3, 2003.

Zurich Services Corporation

Risk Engineering
1400 American Lane, Schaumburg, Illinois 60196-1056
800 982 5964 www.zurichna.com

The information in this publication was compiled by Zurich Services Corporation from sources believed to be reliable for informational purposes only. All sample policies and procedures herein should serve as a guideline, which you can use to create your own policies and procedures. We trust that you will customize these samples to reflect your own operations and believe that these samples may serve as a helpful platform for this endeavor. Any and all information contained herein is not intended to constitute legal advice and accordingly, you should consult with your own attorneys when developing programs and policies. We do not guarantee the accuracy of this information or any results and further assume no liability in connection with this publication and sample policies and procedures, including any information, methods or safety suggestions contained herein. Moreover, Zurich Services Corporation reminds you that this cannot be assumed to contain every acceptable safety and compliance procedure or that additional procedures might not be appropriate under the circumstances. The subject matter of this publication is not tied to any specific insurance product nor will adopting these policies and procedures ensure coverage under any insurance policy.

©2011 Zurich American Insurance Company

