SLIPS, TRIPS AND FALLS AT LEVEL (STFAL)

MECHANISM OF INJURY

STFAL are commonly caused by slips, trips or misstepping. (missteps are most common on stairs). A STFAL is a sudden, high acceleration injury on the body and can result in many weeks off work for people who are injured. STFAL are the second highest injury mechanism across all industries and account for just over 12% of all accepted serious workers compensation claims.

Slips occur when there is not enough grip (friction) between the foot/shoe and the walking surface. Slips are most common during the heel strike resulting in lost balance.

Trips occur when your foot (or lower leg) hits an object and your upper body continues moving, throwing you off balance

Missteps commonly occur when you step down unexpectedly to a lower surface and lose your balance i.e. not seeing the bottom step (this often involves stairs)

STFAL near other hazards such as hot (deep fryer), sharp (knives), hard (edge of table), hazardous substance, at height (stairs) or adjacent to mobile plant, can result in greater consequences.

A loss of balance and no accompanying fall can still result in injuries (these are often not included in STFAL data).

SLIPS, TRIPS AND FALLS AT LEVEL (STFAL) - RISK MANAGEMENT

Identify hazards

Identifying hazards is the first step to determine exactly where slips, trips and falls (STF) can or have occurred in your workplace. You can find out this information by:

- talking to workers and supervisors, they can provide valuable information about potential STF hazards
- inspecting the premises for slip or trip hazards. Refer to the Slips, trips and falls at level checklist (attached) and supplementary information provided in the appendix.
- sketching or mapping a layout of the work area and marking on it where slip and trip incidents or hazards have been reported, and
- reviewing available records such as incident and injury reports as well as workers' compensation claims, previous inspection reports.

Assess the risk

The next step is to assess the slip or trip risks.

Usually it is a combination of factors that create the risk. These factors are presented below in the model.

Figure: Slip trip fall at level model

Like many other hazards, a STFAL usually involves a combination of factors rather than a single issue that contributes to an incident. The potential contributing risk factors will not all be evident in every case, but need to all be identified and assessed to more effectively control and prevent incidents occurring.

The above model is adapted from the Safe Work Australia's good work design principles which considers the work area, work activity, workers and way work is organised.

Traditionally the focus on STFAL incidents has been on the work area e.g. flooring and footwear, however the potential issues are clearly much broader. Getting the design right at the start is key to preventing STF incidents.

- The areas that have the highest injury rates from slips, trips and falls, and those that require particular attention are:
- entrances from outside and foyer areas
- wet areas or walking surfaces with high levels of contaminants
- steps, stairs and ramps
- thresholds between areas
- areas used by people who are at highest risk of slips, trips and falls given their age, health, mobility restrictions etc.

Some of the key design features that are causes of incidents in these high risk areas are provided below:

Poorly designed steps and stairs

- stair riser (height) and stair going (depth of tread) measurements are not consistent or sufficient
- step nosing (leading edge or front of step) hard to see, rounded, damaged or slippery
- insufficient or poor lighting
- lack of handrails or handrails that are hard to reach or use

Poorly designed ramps

- ramps that are too steep
- ramps with no handrails
- lighting that is insufficient to see edges clearly
- no edging or toe boards

Poor flooring/ground surface selection

- floor surfaces that lack slip resistance, especially if wet

(For information on good design as per Australian Standards refer to the supplementary guidance in Appendix 2).

Following on from design issues, other considerations for a thorough risk assessment of STFAL are outlined below. For more detail about the issues and controls measures specific to each, refer to the supplementary guidance that accompanies the STFAL checklist.

- ***How 'contaminants' affect surfaces*** - People rarely slip on a clean, dry floor. Whenever there is 'contamination' – such as water, oil, litter, dust, metal shavings, plastic bags, off-cuts or anything else that ends up on a floor - the chance of having a slip significantly increases. A study from the USA found walking on a contaminated floor increased the risk of slips by almost 14 times.

- ***Cleaning practices*** - While good cleaning reduces contamination, bad cleaning increases contamination. Check your workplace for any of the signs that indicate a poor cleaning system. check whether:
  - floors are not fully dry and can be accessed
  - spills and contaminants are left unattended
  - a build-up of cleaning product residues (reduces slip resistance)
  - cleaning equipment and cords left across walkways
  - cleaning is ad hoc, unplanned and reactive
  - poor, inappropriate or dirty cleaning equipment used
  - incorrect cleaning products and procedures

- ***Floor surfaces*** - For safe walking, workers need sufficient grip between the floor/ground surface and feet and, smooth even level surfaces.
  There is a high risk of slips, trips and falls when the choice of flooring material and design does not suit the tasks and/ or there are possible contaminants combined with people using the area. Examples of issues to consider when assessing the suitability of the flooring are:
  - smooth hard surfaces increase risk of slips
  - trips can occur when there is as little as 1cm change in the height of the flooring.
  - slips, trips and falls also occur between areas with different types of flooring material
  - a floor that is slip resistant when dry may not be slip resistant when wet
  - floor roughness is more effective than slip resistant footwear in reducing slips

- ***Maintenance*** - As well as having flooring materials correctly installed or laid, ongoing maintenance is important. This may include repairing or replacing the surface.
  Key factors for looking after flooring:
  - maintain the slip resistance with the right cleaning method
  - fix any changes in heights
  - repair torn carpet, curling mats, uneven or broken concrete, chipped/cracked tiles
  - where floor/surface cannot be fixed immediately, highlight any height or surface changes with contrast colours or strips (e.g. yellow paint or reflective tape)
  - remove any loose matting
  - improve slip resistance with surface treatments if required (see www.worksafe.qld.gov.au for more information)

- ***Outside areas*** - Identify the outside areas used by workers or visitors at your workplace. Workplaces often forget to consider their grounds and external areas in workplace surveys.

- ***Obstacles*** - Obstacles on walkways may be a sign of poor workplace design or poor housekeeping, and these are often the cause of accidents.
  Hazards may be:
  - temporary - rubbish, boxes, cables, tools, bags, pallets and temporary storage
  - permanent - poorly located machines, furniture, shelving, ground fittings/fixtures, tree roots affecting a path, areas of uneven ground or flooring.

  At some workplaces the ‘obstacles’ and trip hazards may be small children or small animals.

- ***Visibility/ detectability of the hazard*** - The most hazardous obstacles are those that:
  - are unexpected
  - cannot be easily seen or detected
  - blend into the background

When people can't see the hazard, they can't avoid it. Check your workplace for areas with:

- low light levels
- dark shadows
- changes in lighting (e.g. moving from brightness to darkness)
- glare or reflections
- substantial amount of dust/particles in the air
- 'blind' corners

Some occupational groups work with restricted vision or hearing, and these people may be at a higher risk of having a slip, trip or fall accident.
When people can't hear clearly, they can also miss warnings. At your workplace, consider peoples' ability to hear:

- other people or plant coming around a hidden corner
- things splashing or falling on the floor
- things coming up from behind
- verbal or auditory signals or instructions

The use of headphones or ear buds will reduce perception of these potential hazards. Loud noises can also be a distraction, by taking people's attention away from where they are walking.

In more extreme environments, ice and water or condensation will add to slips accidents and are not always easily detectable.

- ***The Work activity*** may increase the likelihood of a STF occurring - for example consider work that requires load handling, has time pressures and high pace, attentional demands and involves interactions with other workers/ people.

- ***Organisational factors/ system of work*** - The way work is organised directly influences the physical and cognitive/mental demands of the task. It can increase the pace of work/time pressure/scheduling and attentional demands required to perform the tasks. For example, staffing levels and early hazard reporting systems are critical so incidents can be avoided.

- ***Footwear*** - Slip resistant footwear reduces slips, while other footwear can increase risk. To assess shoes, you need to check that they suit the tasks and the flooring or ground surfaces, providing adequate friction between the footwear and the surface.
  Signs that shoes are placing wearers at risk of slips, trips and falls include shoes with:
  - treads that are regularly clogged with contaminants (tread not suited to the contaminant)
  - soles that are very smooth, but tasks and environment require moving across smooth, polished floors that may have contaminants.
  - high heels with small contact areas when tasks require walking over uneven ground, sloped surfaces, handling heavy loads or rapid movements on contaminated floors
  - loose fittings such as sandals or rubber thongs that are not well fastened around the foot
  - worn out treads or soles that no longer provide grip

Slip-resistant' footwear for workers more exposed to slip risks have these additional features:

- specifically chosen to suit the workplace and tasks ('trial before you buy' recommended for larger orders)
- non-slip performance on both wet and dry floors if required – they may differ
- well-defined tread pattern – the more edges, the firmer the grip
- bevelled or rounded heel edge
- rubber soles offer more slip resistance on wet floors than polyurethane soles
- tread patterns suited to the size and type of likely contaminants (e.g. indoor work on smooth floors with thin liquid contaminants may have very flexible soles with fine tread, while shoes used in rough outdoor areas require deeper, larger treads, and/or the addition of special cleats or studs to provide extra traction)

- ***Housekeeping*** - Many slips and trips are the results of poor housekeeping, and this is often a sign of a lack of clear systems and responsibilities for storage, maintenance and cleaning. For example:
  - things spilt and left on the floor
  - items left out or extending onto walkways or work areas
  - ground surface, flooring, carpet or mats in a poor state of repair or uneven
  - poor or broken lighting in work areas and accessways

EXTERNAL FACTORS (THAT IMPACT ON STFAL RISKS)

There are many other parties who interact with the workplace and can directly influence STFAL risks:

- landlords are often responsible for fittings, fixtures and plant at the workplace e.g. flooring, cold room, refrigeration. Check lease agreements
- other tenants can create hazards e.g. leakage onto common area
- body corporate - responsible for common area e.g. lighting, cleaning
- designers/specifiers - specifying flooring or designing out trip hazards
- manufacturers/suppliers/installers e.g. through flooring that meets slip resistance criteria, products/equipment that do not contaminant
- supply chain/customers can contribute to STFAL e.g. timeframes for work to be completed can increase, STFAL hazards when working at customer site
- project managers/principal contractors eg e.g. having high number of workers present on site at same time, insufficient waste bins
- sub-contractors' activities can create STFAL hazards e.g. truck washing sub-contractor floods access areas

Within their role, each party has a duty or responsibility in working with employers to ensure the workplace and work activities does not contribute to injury to workers.

To get started in preventing STFAL, use the information gathered above (i.e. from injury reports, checklist etc.) and consider:

- how many people are exposed
- the consequences of the slip or trip – a slip or trip with or without a fall can be more serious if it occurs near hot, sharp or moving objects, or at a height, such as near stairs
- how often the situation/ task occurs

It is important to have a look at all the risk factors so that the solution properly addresses the risks.

FIX THE PROBLEM

Look at the assessed risks and decide what needs to be done to eliminate or reduce the risks and how quickly these control measures need to be implemented.

Importantly, use the hierarchy of control to guide you to choose a solution that most effectively eliminates or minimise the risk. There are different types of control strategies to eliminate or reduce the risks. These are listed blow in order of their effectiveness.

It may involve a single control measure or a combination of two or more different controls to best address the risk. Aim to include an elimination or design type of control when considering solutions.

Examples of control measures	
Elimination	• install a canopy over front entrance of building to eliminate rain • replace flooring • relocating power sources to avoid cables across access ways
Redesign of the environment, activity, work process or equipment	Substitute e.g. resurface pathways
	Isolate e.g. limit access to high risk areas
	Engineering e.g.: • apply floor treatments to increase slip resistance • improve lighting • stop leaks from equipment or pipes • extend piping directly into drain • clearly mark edges or steps
Administrative	• implement spill management procedures • implement suitable footwear policy • carry out cleaning outside of operational hours • provide training on slips, trips and falls risk management
Personal protective equipment	• use of suitable footwear

To implement the most effective controls you should:

- start at the top of the hierarchy of control
- consult with workers and allow workers to trial controls and get their feedback before decisions are made to make them permanent
- develop work procedures to ensure that controls are understood and responsibilities are clear
- communicate the reasons for the change to workers and others
- ensure that any equipment used is properly maintained
- provide training to ensure workers can competently implement the risk controls

Monitor and review

Control measures that have been put in place must be monitored and reviewed, and if necessary, revised to make sure they work as planned. Check that no new hazards are introduced.

You should review control measures:

- when the control measure is no longer effective
- before a change that is likely to create a new or different risk
- if a new hazard is identified
- if consultation indicates a review is necessary
- if a health and safety representative requests a review.

Version	Date	Author
1	30/06/2018	WHSQ