

LEISURE EXPERT PANEL

BEST PRACTICE GUIDE TO MANAGING SLIP RISK IN WET AREAS

This guide has been developed to help leisure premises to prevent slips in wet areas. The information in this guide has been derived from research undertaken by members of the LEP Slips Working Group formed of representatives from Leisure Business, Insurance Liability, Environmental Health, Claims Defensibility and Slip Management Specialists.



Introduction

Slips are the largest cause of accidents in both public areas and workplaces and this issue is particularly relevant to the leisure industry with many foreseeably wet environments due to management.

Slip accidents consistently account for around 1 in 3 non-fatal major injuries and for over 1 in 5 over 3-day injuries in UK workplaces. Around 35,000 workplace injuries occur per year following a slip accident alone (that's around 1 accident at work every 15 minutes). 30%+ of accidents that happen to members of the public are slips. Further, slips cause around 33% of public liability claims both by volume and value. Almost all these accidents occur when floor surfaces are wet and/or contaminated.

In the leisure industry, it is foreseeable that some environments will be wet all or most of the time either through routine use, spillages or cleaning. Such areas include:

- Swimming pool areas
- Spa areas including steam and sauna rooms
- Showers
- Washrooms
- Changing rooms (even if there is no pool, changing rooms should be considered 'wet' areas due to the presence of showers and washrooms)
- Guest bathrooms in hotels

Equally, floors in these environments become contaminated from the depositing of body fats, shampoos, oils, talc, etc.; Ineffective cleaning can also lead to build-up of contamination (either by not removing contaminants or by leaving chemical residue behind). The combination of water and contamination in these foreseeably wet environments presents a significant safety challenge for the sector.

This guide will explain how to understand your slip risk in the above foreseeably wet environments focussing on each of the factors that the Health and Safety Executive (HSE) identify as contributors to slip potential. The guide will offer advice on practical methods to mitigate this risk.

The cost of slip accidents

The cost to society of slips is immense and rising. HSE figures estimate this cost at over £800 million.

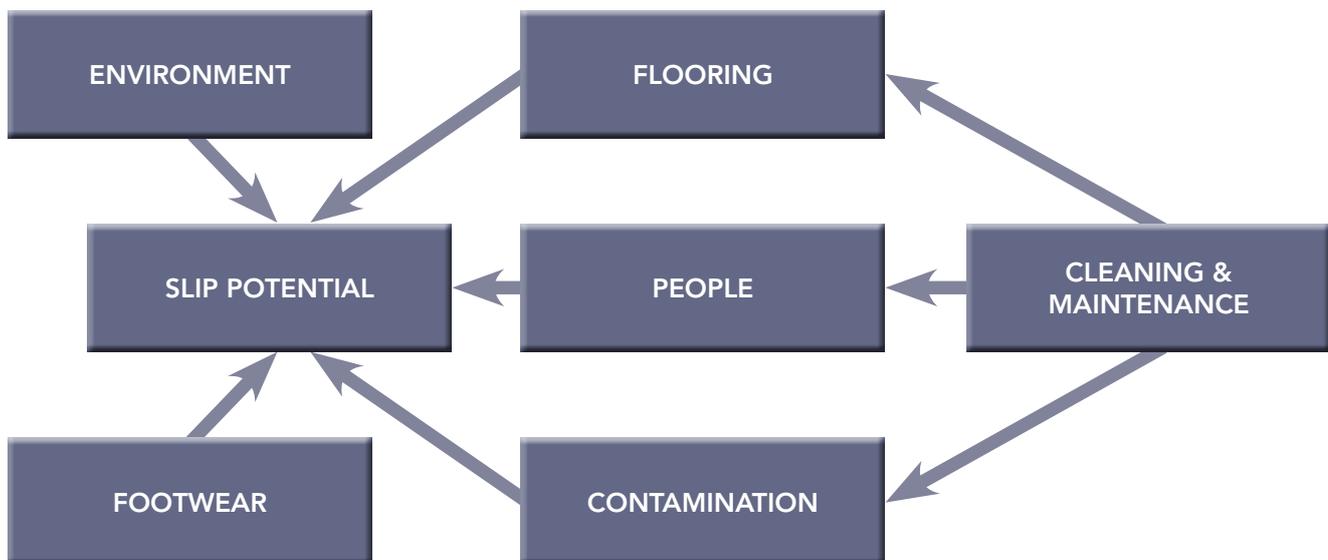
Individual slip claims in the UK can cost anything from a few hundred to millions of pounds in terms of settlement. A recent sector-specific analysis of the average cost of a civil personal injury claim following a slip accident put this figure at £6,613 (Reference: Hill Dickinson). In this particular data set, this amount has reduced from £8,800 following the introduction of the portal for claims valued under £25,000 in 2013.

Further, the changes to the court sentencing guidelines in early 2016 have seen a large increase in fine levels across the board: £1m+ fines are now commonplace and such fines can even be levied without any actual injury taking place (for example, in late 2016 G4S was fined for ignoring expert advice on legionella control measures even though no one contracted the disease). One of the key considerations in determining the level of fine is the number of people exposed to a risk. As noted above, slip risk is arguably the largest risk (in terms of the frequency of accident) faced by staff and members of the public in leisure premises.

Risk Assessment

Employers and anyone else who are responsible for leisure premises have an obligation to assess and manage the risk of slips.

A risk assessment helps you to identify and understand what sensible precautions are required to control the hazards in your workplace. The HSE identifies the following factors that contribute to slip potential:



Reference: [HSE.gov.uk/slips](https://www.hse.gov.uk/slips)

You are probably already doing many things to protect your staff and visitors but a thorough risk assessment may highlight areas where further action is necessary. Equally, few workplaces stay the same so it makes sense to review what you are doing on a regular basis.

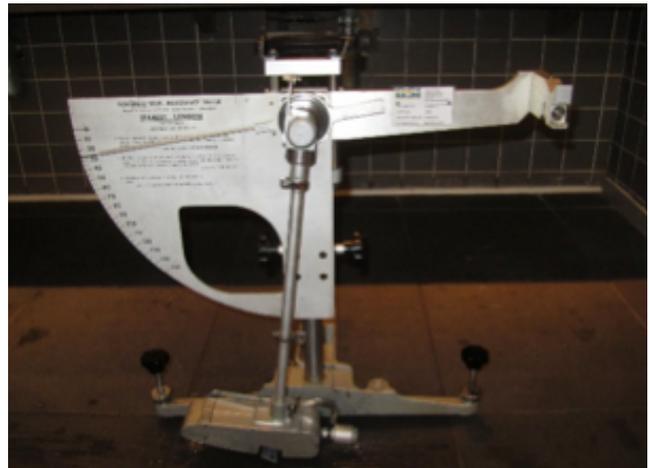
A robust risk assessment relies on obtaining accurate information and the correct interpretation of this information.

Flooring

If you have a correctly specified slip-resistant floor, you have a good chance of being able to maintain its slip-resistance. If you have a floor with poor inherent slip resistance, it is much more difficult to keep it consistently and sustainably slip-resistant.

Flooring can be easily controlled at the design and specification stage. A slip-resistant floor does not necessarily cost any more than a floor without suitable slip resistance. On existing floors with poor inherent slip resistance, the options are generally limited to replacement or treatment.

Slip resistance should be assessed with a pendulum test. This is the test that the HSE recommends and uses in investigation, enforcement and prosecution; it is also recommended by the UK Slip Resistance Group.



There are other testing methods available:

- Surface roughness (Rz) testing is recommended by the HSE as a guidance tool and to complement the pendulum, but not as a standalone testing method.
- R or ABC ratings (using the DIN ramp test) are sometimes quoted by flooring manufacturers but these ratings are determined on ex-factory products and may not relate to the installed floor. DIN is a European standard and should not be relied upon in the UK.
- A handful of other proprietary portable tests exist (e.g. Slip Alert), but should be used only for indicative guidance and/or monitoring of change over time. Whilst many of these tests claim to correlate to the pendulum, the HSE still relies on the pendulum itself for an absolute measurement of slip resistance; we advise you to do the same.

Pendulum testing should be carried out in accordance with the UK Slip Resistance Group Guidelines, using the appropriate rubber slider. Slider '96' is used for shod areas only; slider '55' is used for barefoot areas; both sliders should be used in dual-use areas e.g. changing rooms.

The pendulum gives a Pendulum Test Value (PTV). The HSE state three slip potential categories established by the PTV (this is based on a level floor surface):

| PTV | SLIP POTENTIAL |
|-------|----------------|
| 0-24 | High |
| 25-35 | Moderate |
| 36+ | Low |

PTV results can also be equated to risk (again the below is based on a level floor surface). As you will see, there is an exponential reduction in risk as the PTV increases – one is 50,000 times less likely to slip on a floor with a PTV of 36 than on a floor with a PTV of 24:

| PTV | RISK |
|-----|----------------|
| 19 | 1 in 2 |
| 24 | 1 in 20 |
| 27 | 1 in 200 |
| 29 | 1 in 10,000 |
| 34 | 1 in 100,000 |
| 36 | 1 in 1,000,000 |

Leisure premises rarely just have level floor surfaces though typically on a poolside surround or in showers there is a 2 degree slope to allow water to fall to a drain. A higher PTV is required on sloping surfaces (when descending) to achieve the same level of friction. With a 2 degree slope, the PTV requirement increases as shown below:

| PTV (2 degree slope) | Slip potential (2 degree slope) |
|----------------------|---------------------------------|
| 0-28 | High |
| 29-39 | Moderate |
| 40+ | Low |

Given the likelihood of contamination and the foreseeability of floors being wet, (level) floors in the foreseeably wet environments listed above should be both specified to and maintained at a wet PTV of 36+.

Floors should be periodically checked to ensure that the PTV levels are being maintained. Simply specifying a slip resistant surface is not enough and a floor will need to be maintained in order to offer sustainable long-term slip resistance. The frequency for this monitoring will vary but consideration should be given to:

- Do you suspect there is a problem?
- Has a slip accident recently occurred?
- Have there been near misses?
- Have staff or visitors raised concerns?
- Has there been a change in the cleaning method?
- Has it been some time since the last test? Even if none of the above occurs, floors will wear over time?

Environment

The environment in which a floor is used can influence slip risk. For example, as mentioned above, if a slope is present the friction requirement of users is higher. Environmental factors are important to consider in both existing buildings as well as new developments. The design and specification phase of any new build or refurbishment project gives an opportunity to implement control measures. In existing buildings, it may be that certain environmental factors are outside of the operator's control (for example if you are managing a building but do not own the freehold); therefore, emphasis should be placed on other contributing factors to slip risk.

The environmental issues most likely to have a direct impact on the risk of slips include:

- If the surface is level, where needed, ramps increase the requirement for friction
- If users are required to turn corners
- If there is an interface between two areas of different use e.g. an entrance from exterior to interior, wet to dry etc. or between two floors surfaces of different slip resistance
- If lighting is inadequate
- If underlying causes such as condensation or poor drainage are leading to a floor being regularly or routinely wet

Footwear

Footwear can be an effective control measure but in the leisure industry, visitors either wear their own choice of footwear or are barefoot meaning that footwear cannot be controlled. Wearing blue over shoes (though helpful from a hygiene perspective) may increase the risk of slipping.

Choosing the right footwear for staff can be complex and not all 'safety footwear' will necessarily offer good wet slip resistance to lifeguards walking around a poolside, for example. Expert advice should be sought.

The Health and Safety Laboratory (HSL) has recently launched an online tool called 'GRIP' which assesses the effectiveness of safety footwear. We recommend you consult this: www.hsl.gov.uk/products/grip

Use and behaviour (people factors)

How people behave can contribute significantly to the risk of a slip occurring, for example:

- Running will increase the requirement for friction and is likely to lead to more accidents.
- Work activities such as pushing, pulling and turning also increase the requirement for friction and are likely to lead to more accidents.

Warning signs can help to identify a wet floor but in a foreseeably wet environment it is to be expected that the floors are wet. You therefore cannot rely on signage and should work to make the floors in these environments safe even when wet.

Signs can, though, be used on foreseeably dry floors at times when these floors become wet e.g. through spillages or cleaning.

Encouraging a 'clean as you go' mind-set is essential if you are to ensure that spillages are promptly reported and dealt with (most relevant to foreseeably dry environments).

Contamination and cleaning

In a foreseeable dry environment, keeping the floor clean and dry is probably the most important factor in helping to prevent a slip. People rarely slip on a clean and dry floor; contamination and/or water are present in almost all slip accidents.

However, this guide deals with foreseeable wet environments where it is not practicable to keep floors clean and dry with any certainty. A poolside floor will always be wet; a changing room floor is always likely to get wet through dripping clothes, towels and drying down, etc.

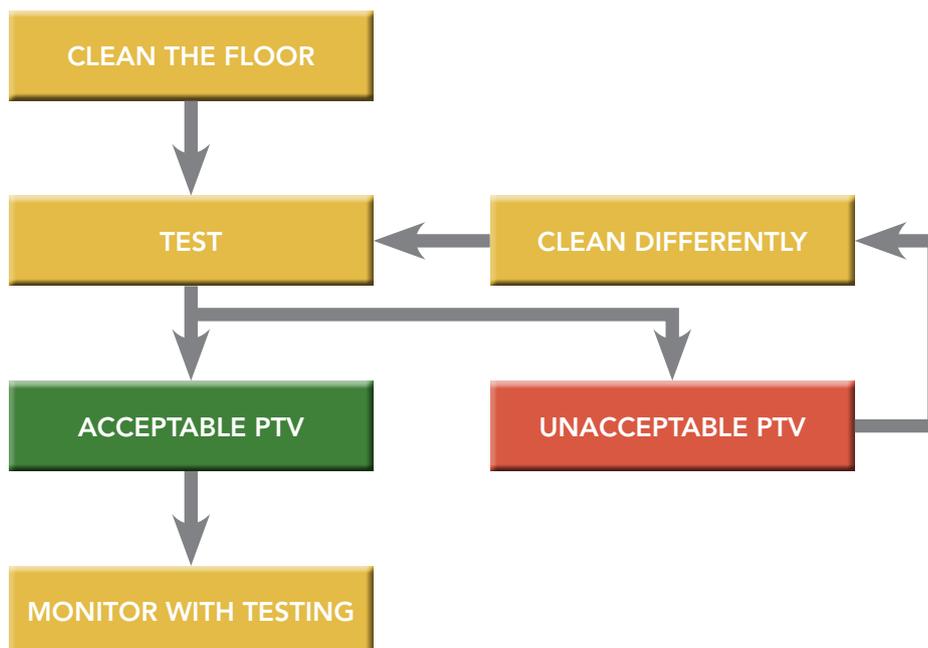
Managing contamination through effective cleaning is therefore one of the best control measures available to reduce slip risk in these foreseeable wet environments. A recent study by a Leisure Expert Panel member showed that of circa 400 floors pendulum tested in foreseeable wet environments in the leisure industry, only 20% achieved low slip potential "as found" in wet conditions but when cleaned effectively, 75% achieved low slip potential in wet conditions. Effective cleaning therefore achieved a 100x reduction in slip risk on average: from an average wet PTV 28.9 (1 in 10,000 risk) to an average wet PTV 37.7 (less than 1 in 1,000,000 risk) (Reference: Bonasystems).

This is a good example of the effect of cleanliness on slip resistance. Before cleaning, the wet PTV was 20. After cleaning the PTV achieved was 38. A significant reduction in slip risk.



Flooring manufacturers, cleaning contractors and suppliers of chemicals or equipment can offer advice on methodologies for cleaning floors. However, do not assume that the advice offered will necessarily give you the results you need: use a pendulum to assess the effectiveness of any cleaning regime. Further, you can have a floor that looks aesthetically clean, but does not achieve the required slip resistance (not all contamination is clearly visible).

To illustrate this point, if you specify a floor with a wet PTV of 45 but in-situ slip testing shows an "as found" wet PTV of 20, the cause of this is almost certainly a build-up of contamination (i.e. your cleaning regime is not effective). Clean the floor and retest. If the PTV does not meet the requirement (in this case returning the floor to a wet PTV of approx. 45) then try a different cleaning method until you achieve success.



Other things to consider in your risk assessment

Areas of high footfall and potentially high risk areas (listed above) should be given priority.

Your risk assessment process might include drawing up a 'heat map' by plotting all slip incidents by location to identify where slip accidents are occurring and therefore where resource should be targeted.

Understanding and managing your slip risk: practical steps to prevent slips

There are many simple ways to control slips and prevent accidents in your workplace. Here are a few examples. HSE has some general guidance available (Reference: [hse.gov.uk/slips](https://www.hse.gov.uk/slips)); the below focuses more specifically on dealing with foreseeably wet environments in the leisure industry.

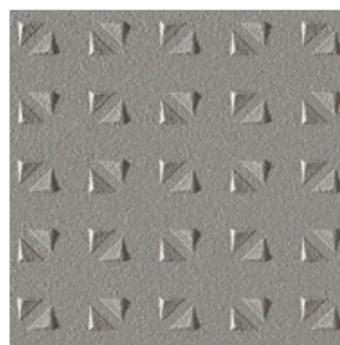
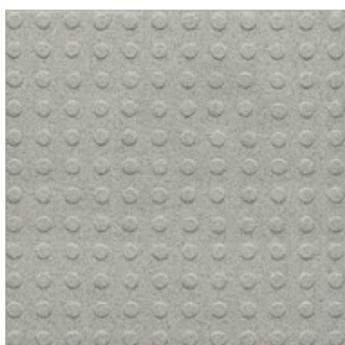
Many of the most effective control measures, e.g. staff training and implementing an effective cleaning regime, are not costly. With the typical claim costing £6,613, a monthly investment of £50 in staff training time, for example, would pay for itself if it only prevented one claim every 132 months. If you invested £50 on training and £50 on effective cleaning, i.e. £100 per month, this would pay for itself if it prevented only one claim every 5 years.

Flooring

Specify the slip resistance of flooring correctly for any new build or refurbishment projects (see above advice).

However, be wary of over-specifying slip-resistance because a "super anti-slip" surface is likely to be very textured and therefore challenging to keep clean. If this type of floor becomes contaminated it is likely to become slippery. Specification of overly slip-resistant finishes can promote a cleaning problem without solving a slipping problem.

Similarly, do not assume that a textured, riven or profiled surface will necessarily give you better slip resistance. It may not, but it is likely to be more difficult to clean.



The above are all textured tiles but all have different wet slip resistance.

Get your existing floors slip tested using the pendulum test method (as per the UK Slip Resistance Group Guidelines) to understand your current slip risk. If the floor does not achieve the required slip resistance, consider options to improve it (this could include a review of the current cleaning regime, a deep clean, a floor treatment, or replacement of the floor).

Environment

Ensure that environmental factors are considered at design stage as part of your wider slip risk assessment. This should also be revisited following any changes in use or new activities that may introduce different movements on the floor.

Provide adequate slip resistance on ramped surfaces, e.g. pool surrounds; and consider whether handrails should be provided for ramped walkways.

Consideration should be given as to whether lighting is adequate. Guidance is available from the Society of Light and Lighting.

Stairs can also be the site of accidents. Expert advice should be sought.

Footwear

Consider a footwear policy for your staff, bearing in mind that different footwear may be required for different environments, particularly if different contamination is likely to be encountered (e.g. a kitchen vs a poolside). It is important that any footwear is comfortable, well-maintained and replaced when the grip on the sole wears. The sole of the shoes should be kept clean and clear of any contamination.

For transient visitors to wet areas the use of blue shoe covers is accepted practice for hygiene reasons, but they are not designed to protect the wearer from slip accidents.

Use and behaviour (people factors)

Look at your work practices and try to limit the requirement for movements such as running in environments where floors may become contaminated or wet.

Ensure that staff are trained on all aspects of your own slip prevention standards and that this training is recorded. For example, staff should endeavour to prevent children running on a poolside.

Contamination and cleaning

Where possible, prevent sources of contamination. If you can keep the floor in a clean condition, then the risk of a slip is likely to be reduced.

Use an effective and proven cleaning methodology:

- Assess the effectiveness of different cleaning methodologies using the pendulum.
- Be mindful that just because a cleaning contractor, machine, system, chemical, pad etc. says that it will clean your floor, it does not necessarily mean that it has cleaned it effectively – even if aesthetically the floor looks acceptably clean, it might still be slippery in wet conditions.
- Whether a floor looks clean or dirty is subjective; whether it is slip-resistant or not is quantifiable through use of the pendulum.
- Due to the challenging contamination and high footfall found in the leisure industry, your cleaning process needs to incorporate a robust daily cleaning methodology; and, we suggest, a periodic deep clean. The frequency of deep cleaning should be assessed with the pendulum: how long does the daily cleaning process maintain the floor above the required PTV benchmark?

Whilst this guidance deals with foreseeably wet environments, in environments that are foreseeably dry, your focus should be on keeping the floor free from contamination and dry.

The end game: achieving sustainable slip resistance

Your aim should be to have 100% confidence, through your risk assessment and slip prevention strategy, that your floors fall into one of two categories:

1. The floor is in a foreseeably wet environment (refer to the list above) but it doesn't matter that the floor is wet because you know, and can prove, that the floor is safe as far as is reasonably practicable due to your slip prevention strategy;
2. The floor is in a foreseeably dry environment and you know, and can prove, that you have robust systems in place to mitigate the risk of a slip (cleaning and spillage control will be key to keeping the floor clean and dry).

Based on the above, you will have achieved a 1 in 1,000,000 or less risk and complied with the HSE's benchmarks in your foreseeably wet environments: you will have therefore taken all reasonably practicable steps to prevent an accident.

Claims defensibility

Even when you have used this guide and reduced risk to 1 in 1,000,000, you will not prevent 100% of slip accidents. As such, it's important to consider claims defensibility steps to ensure that you have the best chance of defending a claim.

Insurers, as a rule, want to defend claims. What they need from operators and other stakeholders is the proof to enable this.

The keeping of records such as your overall slip prevention strategy, the specification of flooring, the risk assessment, flooring inspections and perhaps most importantly cleaning procedures (including check sheet type records to back this up) may prove decisive in defending compensation claims.

It is critical that when carrying out an accident investigation you establish the cause, the circumstances and the validity of the version of events presented. Included in this should be the condition of the floor at the time of the slip and if footwear was being worn, what was it and was it in your view, suitable. Wherever possible, take photographs to use as evidence.

Were there any contractual arrangements with cleaning contractors, if so who is responsible and if a claim is received can it be subrogated?

Staff training records and any other relevant documentation should also be stored.

All the above documentation should be retained for at least 3 years and 4 months following an accident, or if the person who had the accident was a minor, until their 18th birthday. These are the timeframes in which a personal injury claim may be lodged.

The above advice is also useful in the event of enforcement action.

Key action steps – summary

1. Complete a risk assessment based on factors listed above and these should certainly include the following:
 - a. Understand the slip resistance of your floors. If this information is not available, it can be achieved by conducting a pendulum test. You require PTV 36+ in your foreseeably wet environments;
 - b. Review your current cleaning methodology to ensure it helps you to achieve and maintain PTV36+ in your foreseeably wet environments.
2. Develop a plan in place on how to mitigate the slip risk, bearing in mind all of the factors that HSE considers relevant.
3. Implement the plan, including full staff training.
4. Periodically monitor the performance of your floors. Monitoring will help you identify if the surface is changing through wear, poor cleaning methods or a combination of both.
5. Review, monitor and update the plan and this should include periodic retesting of the floor particularly after accidents take place. Minor incidents, near misses and staff/customer feedback should be treated as your early warning system.
6. Record all significant findings to assist should any claims or enforcement action follow.

Further information

More information can be found on the following websites:

<http://www.hse.gov.uk/slips/>

<http://www.hsl.gov.uk/products/grip>

<http://www.hse.gov.uk/statistics/causinj/slips-trips-and-falls.pdf>

<http://www.hse.gov.uk/pubns/indg225.pdf>

<http://www.hse.gov.uk/pubns/geis2.pdf>

www.ukslipresistance.org.uk

http://www.ciria.org/Resources/Free_publications/Update_of_safer_surfaces.aspx

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