



Preventing Vehicle Slips, Trips & Falls

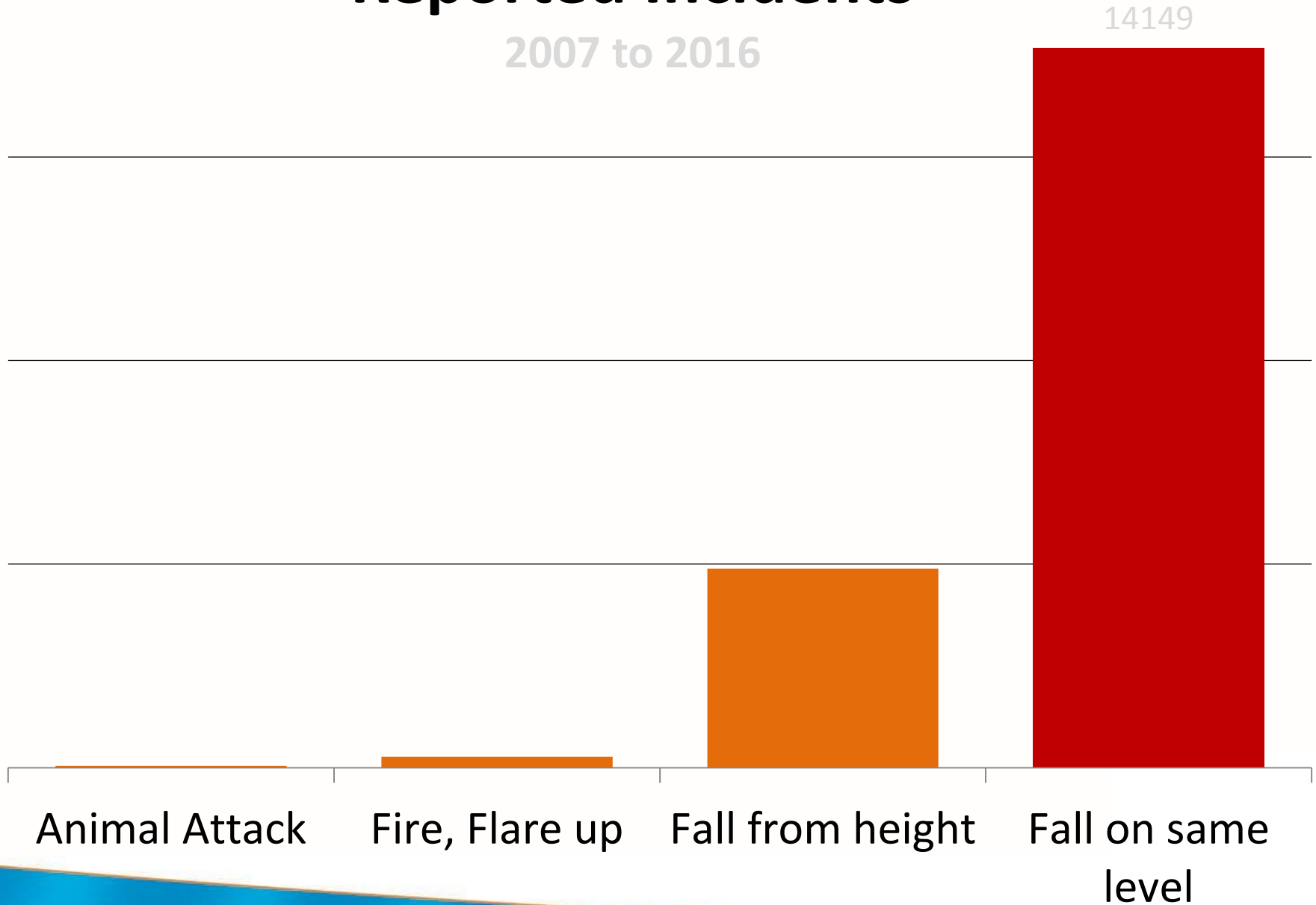
Eamonn O'Sullivan

23, 24 May 2018, 9.15 – 9.35



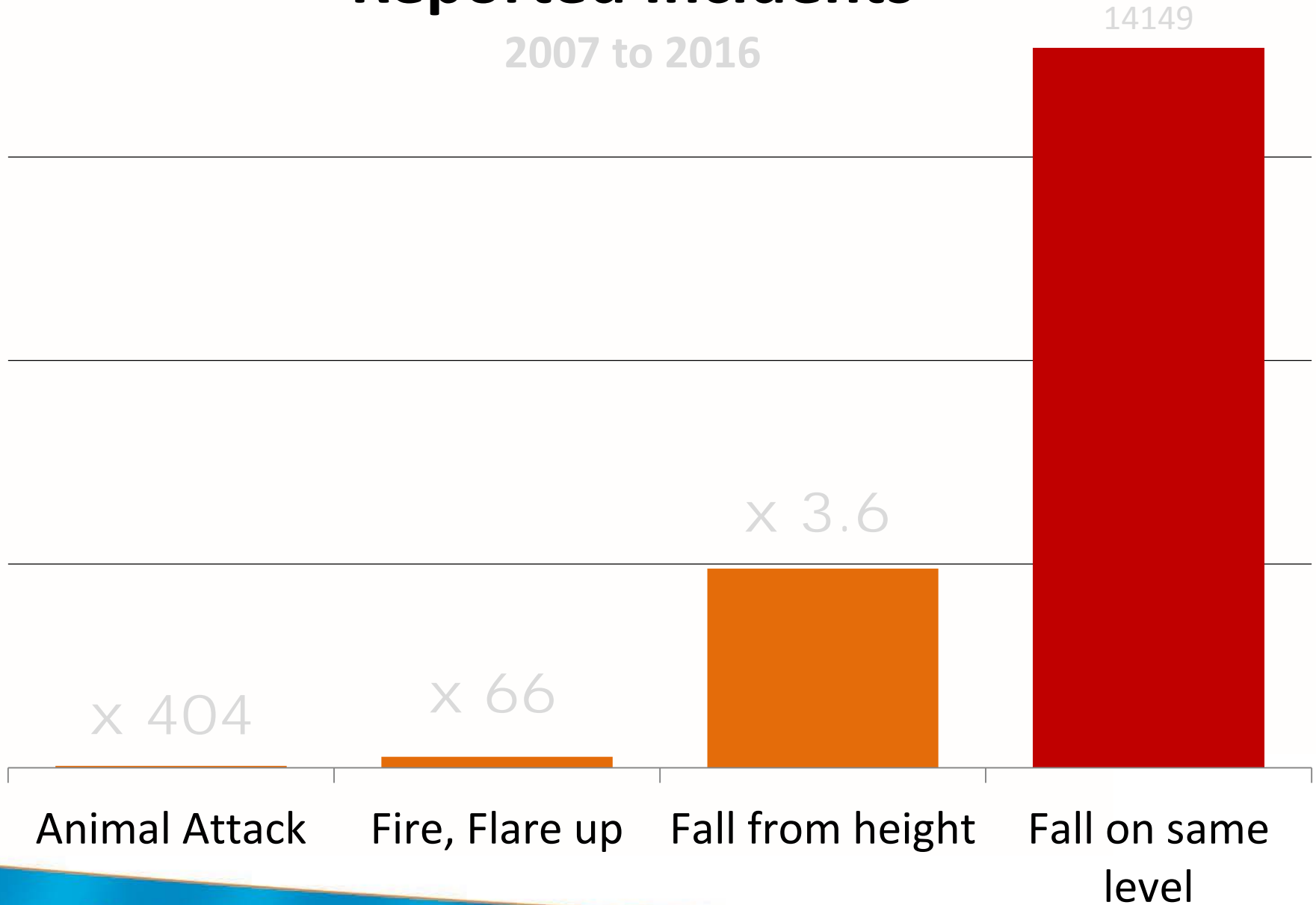
Reported Incidents

2007 to 2016



Reported Incidents

2007 to 2016



hsa.ie/Slips

Every working day seven people are hurt in work slips, trips and falls. See our Information Sheets on

- > [Choosing Slip-resistant Footwear](#)
- > [Preventing Slips, Trips and Falls at Work](#)
- > [Preventing Vehicles Slips, Trips and Falls](#)
- > [Safer Work Stairs and Steps](#)

Slips Trips Falls Info



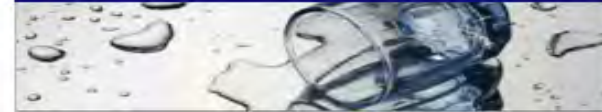
- > Importance
- > Causes
- > The Law
- > Sector Specific Advice
- > STF Online Course
- > Videos
- > Further Information

High-risk Areas



- > Mapping Hazards
- > Stairs and Steps
- > Slippery Surfaces
- > Vehicles
- > Damaged Surfaces
- > Mats and Rugs

Spills



- > Identify Risks
- > Prevent
- > Contain
- > Detect
- > Cordon
- > Remove

Pedestrian Surfaces



- > Measuring Slip Resistance
- > Selecting Surfaces
- > Information with Flooring
- > Metal and Profiled Surfaces

Environmental Cleanliness



- > Floor Wet Cleaning
- > Housekeeping

Shoes, Footwear



Snow and Ice



- > Weather
- > Activities
- > Locations
- > Communication
- > Sample Risk Assessment

Over-used Signs



“Watch Your Step”

Preventing Vehicle Related Slips, Trips and Falls

MAY 2016

Vehicle related slips, trips and falls (STFs) are a leading cause of worker injury in Ireland. Workers who drive or work with trucks and vans are most affected. Drivers and transport workers climb in and out of their cabs hundreds of times a week, and routinely access the rear and sides of their vehicles using platforms and tail lifts. Transport operations often involve substances that can lead to slippery surfaces. Oil, grease, diesel, rain, snow and ice can make the conditions even more dangerous.

This information sheet will help you understand the causes of vehicle STFs and what you can do to prevent them. It is aimed at employers, the self-employed, employees, suppliers, buyers, fleet managers and anyone who drives or works with vehicles.

According to injury reports to the HSA, trucks, vans and trailers are most commonly associated with vehicle related STFs. 40% happen between the hours of 9am and 1pm. Victims are predominantly male and aged between 25 and 54. Exiting vehicles was a factor in 45% of vehicle STF injuries.

24% of vehicle related slips, trips and falls lead to an absence from work of over one month. This can have a profound impact on the individual concerned and also a negative impact on business operating costs. The average employer liability claim cost for a vehicle related STF is €25,000.

Where do vehicle STFs happen?

HSA analysis shows that the areas most associated with vehicle STFs are:

- entering and exiting vehicles, particularly HGVs and vans,
- load platforms and load area of trucks and vans,
- trailer platforms,
- 5th wheel area of HGVs,
- vehicle steps and ladders,
- vehicle tail lifts,
- road tanker platforms, and
- uneven ground and damaged surfaces where vehicles are parked.

“34 year old driver and father of two jumped from the lowest step of his HGV cab, landed on a small rock and completely blew out his knee. He wore a cast from thigh to ankle for six months, and had a chronic limp after that – all from a 3 foot jump from his cab that landed wrong.”

¹ EU OSHA

¹ European Agency for Safety and Health at Work. Extract from ‘A review of accidents and injuries to road transport drivers’

“Watch Your Step” Preventing Vehicle Related Slips, Trips and Falls

What causes vehicle STFs?

Most vehicle STFs are caused by:

- unsafe methods of exiting or entering vehicles and load platforms;
- unsuitable, damaged or missing steps to access vehicle areas;
- poor housekeeping leading to material lying around that is a trip hazard;
- using footwear that does not protect against injury or provide slip-resistance;
- poor vehicle and platform design and materials, in particular unsuitable steps, ladders and walk-on vehicle surfaces.



What does the law say?

Workplace health and safety law² says that:

- ✓ a vehicle is a workplace and, like all other workplaces, requires a written risk assessment to identify the relevant hazards and associated controls to achieve safe systems of work. Safe systems of work must include safe ways of entering and exiting a vehicle;
- ✓ designers, manufacturers, importers or suppliers of vehicles, tankers and trailers must make sure they are designed and constructed safely and provide relevant information to customers;
- ✓ suitable instruction and training must be provided to those who work in, on and around vehicles; and
- ✓ where the risk assessment identifies a need for Personal Protective Equipment (PPE) such as safety footwear then it must be provided by the employer.

There are also additional specific legal requirements for certain classes of vehicles, such as specific slip-resistant surfaces for small and large public service vehicles.

Entering and exiting vehicles

“Never jump from a vehicle”

Entering and exiting vehicles and equipment safely is important but often overlooked. When parking you should try to avoid uneven ground, potholes, kerbs, drains, puddles and ice.

Other precautions may include:

- ✓ checking the ground conditions on approach and again before stepping out of the vehicle,
- ✓ reminding passengers to take care on entry and exit,
- ✓ changing footwear if necessary, for example slip-resistant footwear or ice grips,
- ✓ finding a space with adequate lighting, or using a torch where necessary,
- ✓ taking care to make sure you are not snagged on controls or seat belt,
- ✓ avoiding distractions from handheld devices such as phones, data loggers and scanners,
- ✓ if cab steps are not accessible, for example where vehicles have to park in tight spaces, take great care and follow a safe system to safely enter and exit the cab.

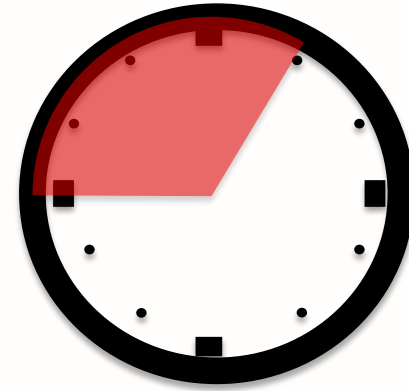


² Safety Health and Welfare at Work Act 2005 and associated regulations

Vehicle STF



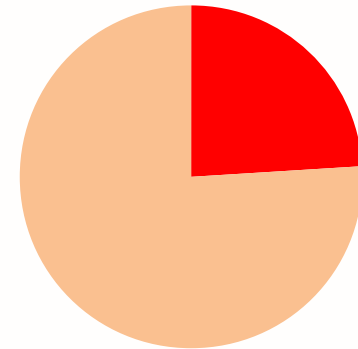
Trucks, Vans, Trailers



9am to 1pm (40%)



Exiting vehicles (45%)



Over one month off (24%)

Exiting & entering



45% Vehicle STF - **exiting**

- Never jump from a vehicle
- Find lighting or use torch
- Check not snagged



Exiting & entering



45% Vehicle STF - exiting

- Never jump from a vehicle
- Find lighting or use torch
- Check not snagged
- **Avoid distractions**
- **If cab steps not accessible, safe system**





Exiting & entering



45% Vehicle STF - exiting

- Never jump from a vehicle
- Find lighting or use torch
- Check not snagged
- Avoid distractions
- If cab steps not accessible, safe system
- Avoid uneven ground
- Check before stepping out







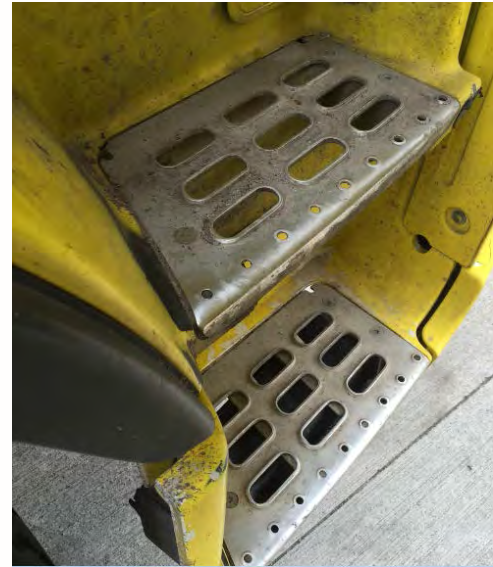




Open the Door,
Check the Floor

Vehicle steps

- Should be clean & good condition



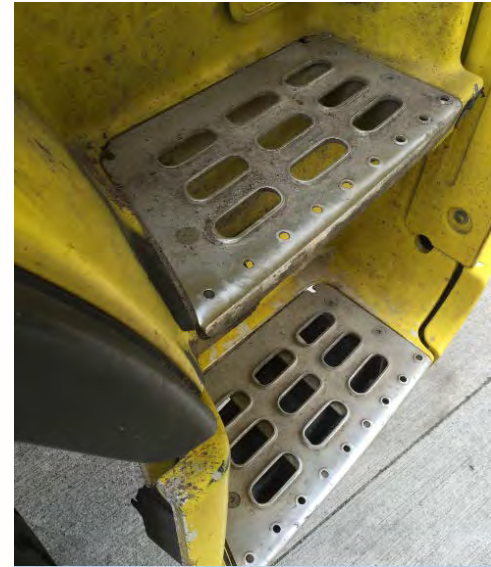






Vehicle steps

- Should be clean & good condition
- Should be slip resistant



hsa.ie/Slips

Every working day seven people are hurt in work slips, trips and falls. See our Information Sheets on


- > [Choosing Slip-resistant Footwear](#)
- > [Preventing Slips, Trips and Falls at Work](#)
- > [Preventing Vehicles Slips, Trips and Falls](#)
- > [Safer Work Stairs and Steps](#)

Slips Trips Falls Info



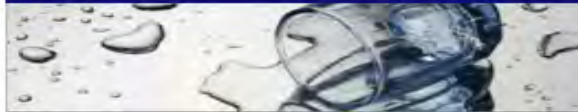
- > Importance
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High-risk Areas



- > Mapping Hazards
- > Stairs and Steps
- > Slippery Surfaces
- > Vehicles
- > Entrances
- > Damaged Surfaces
- > Mats and Rugs

Spills



- > Identify Risks
- > Prevent
- > Contain
- > Detect
- > Cordon
- > Remove

Pedestrian Surfaces



- > Measuring Slip Resistance
- > Information with Flooring
- > Metal and Profiled Surfaces

Environmental Cleanliness




- > Floor Wet Cleaning
- > Housekeeping

Shoes, Footwear



Snow and Ice



- > Weather
- > Activities
- > Locations
- > Communication
- > Sample Risk Assessment

Over-used Signs



Consider specification of **wet** Pendulum Test Value (PTV) of 36+ in final use conditions

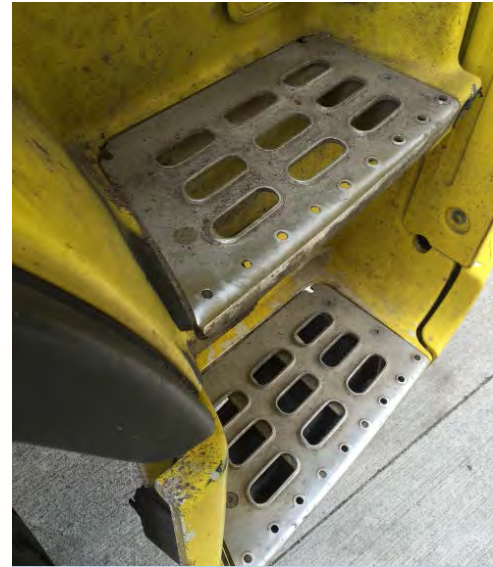
Slip Potential ¹	Pendulum Test Value (PTV) ²	SlipAlert Test Value (STV) ³
High Slip Potential ¹		
Moderate Slip Potential ¹		
Low Slip Potential ¹	36+	





Vehicle steps

- Should be clean & good condition
- Should be slip resistant
- Allow ball of foot on each step



“Watch Your Step” Safer Work Stairs and Steps Information Sheet

May 2017

Every working day in Ireland one person is hurt in a slip, trip and fall (STF) on stairs and steps at work. Slips are more common than STF accidents occur while descending stairs and steps. This information sheet will help employers, the self-employed, employees, suppliers, designers, installers and facility managers understand how to control slip, trip and fall on stairs and steps at work.

What the Law Requires

The Building Regulations specify structural requirements for stairs and steps and are written in technical language. Regulation specifies general requirements for stairs and steps in the workplace. The Safety, Health and Welfare at Work Act 2005 requires safe access and also requires safe systems of work and training. Work stairs and steps should comply with the relevant Building Regulations and occupational safety legislation. Any structural changes to stairs and steps must comply design consultation and must comply with the relevant laws.

There are four interdependent elements of work stairs and steps where the new element should be considered in isolation. The first element is shown here.

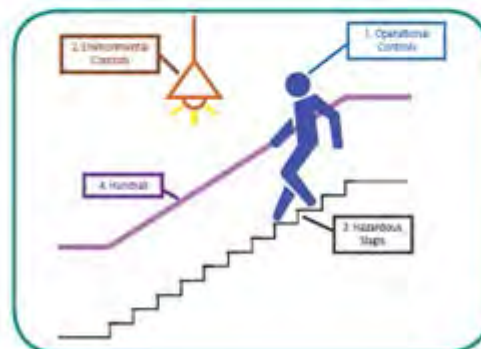
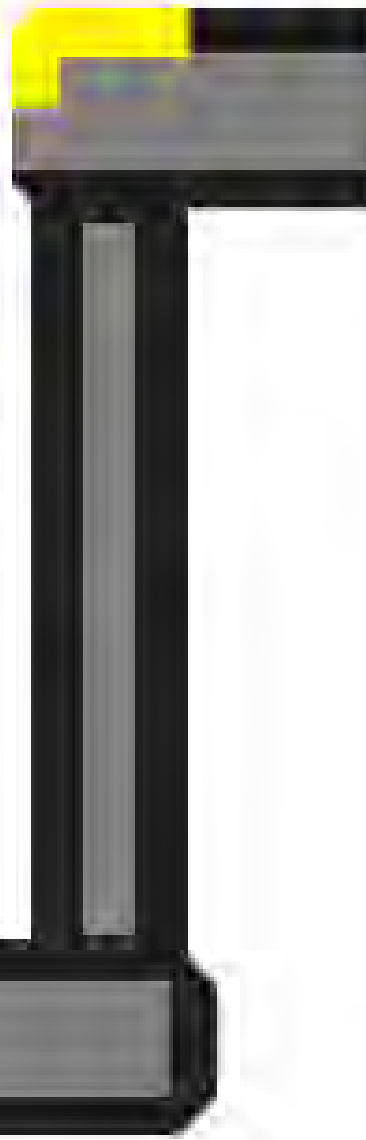


Figure 1. Key elements of work stairs and steps safety

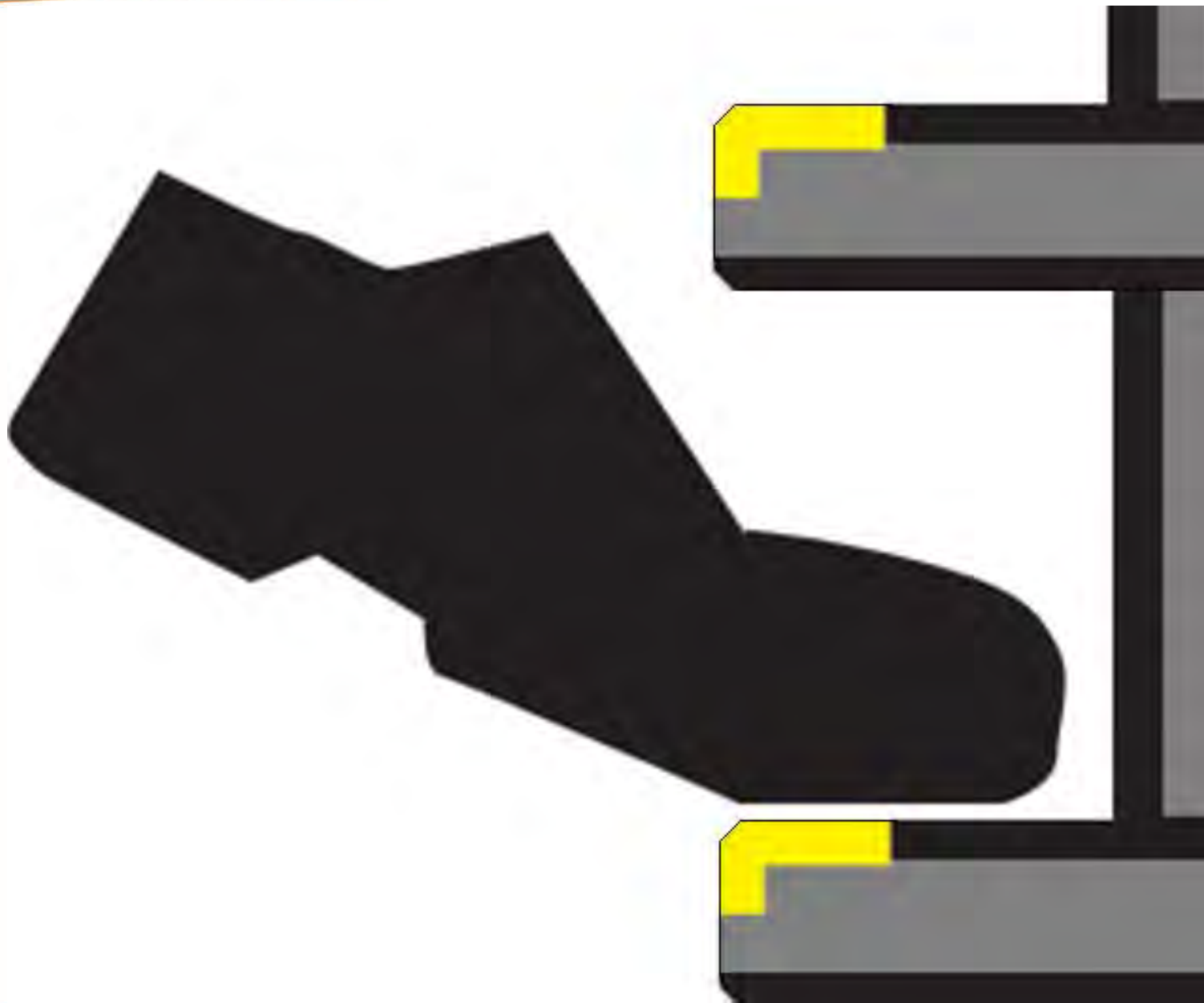


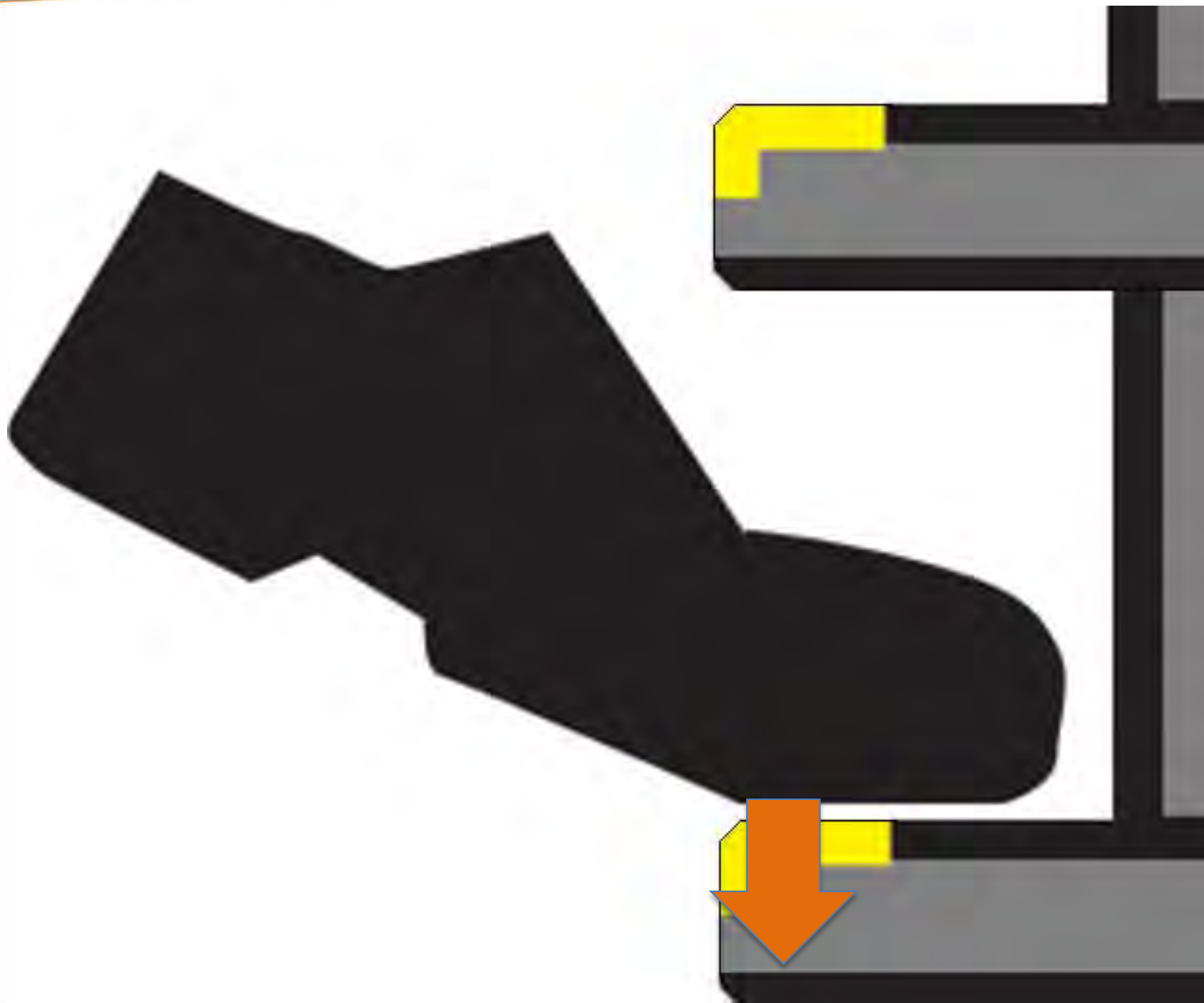






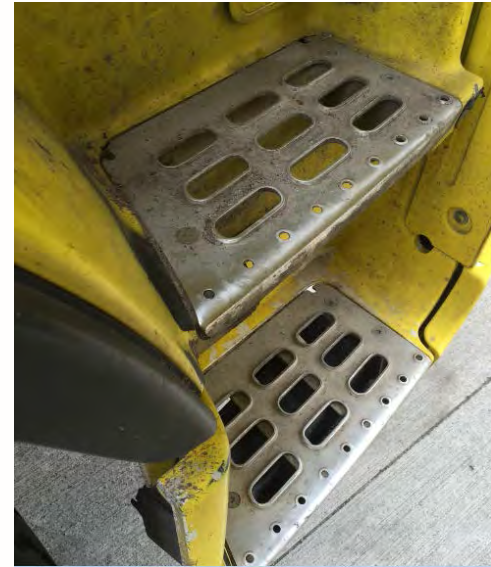


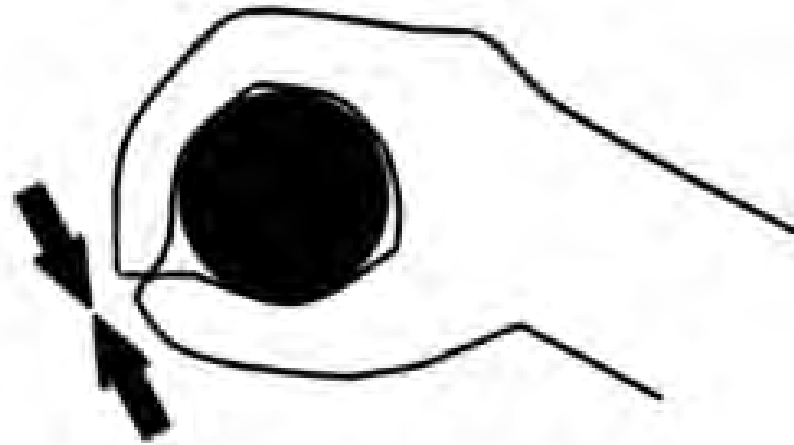




Vehicle steps

- Should be clean & good condition
- Should be slip resistant
- Allow ball of foot on each step
- Handholds allow proper access & full grip

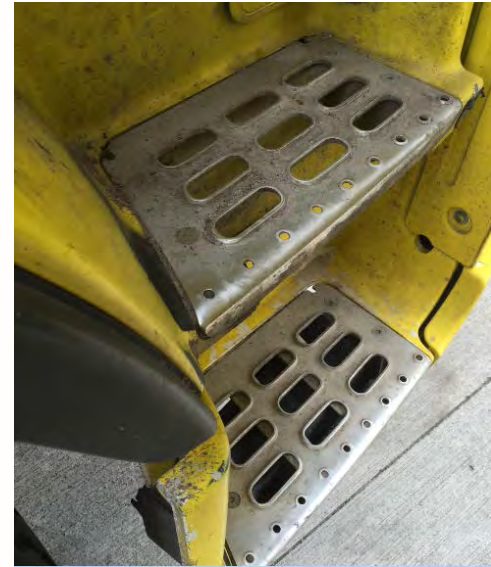




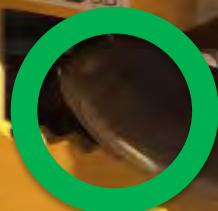
Power Grip

Vehicle steps

- Should be clean & good condition
- Should be slip resistant
- Allow ball of foot on each step
- Handholds allow proper access & full grip
- **Keep both hands free**
- **Face the vehicle if safer**
- **Three points of contact**



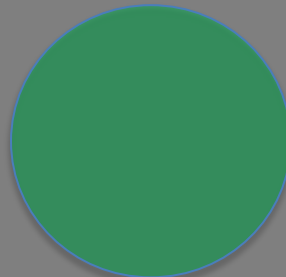
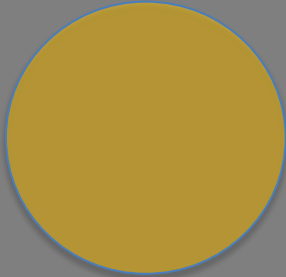




106 dB

Slip Risk

High











**Slip-resistant footwear
must be worn**

Safety footwear

- $\frac{3}{4}$ transport workplaces need slip-resistance
- Oil resistant soles may not be slip-resistant



SAFETY SHOES

GB

With steel toe cap and midsole for total protection

Upper made from water-resistant, heavy-duty

leather with synthetic fabric

Inner lining and insole made from breathable fabric

Moulded, anti-static sole

Material: combined with synthetic

In compliance with all the requirements of Safety
Class S3 according to EN ISO

Care instructions:

This high-quality safety shoe is particularly durable and features great functional properties. The right care will ensure the long life of the shoe. Please follow these basic rules to ensure your shoes retain their quality and long life.

- ▶ Clean the shoes with a brush or a damp cloth
- ▶ Remove the dirt from the soles
- ▶ Allow the shoes to dry at room temperature
- ▶ Do not use heaters

Safety footwear

- ¾ transport workplaces need slip-resistance
- Oil resistant soles may not be slip-resistant
- Trial before selection



Choosing Slip-resistant Footwear

Footwear Information Sheet

December 2017

Every working day in Ireland six people are hurt in work-related **Slips, Trips and Falls (STF)**. STF are the second greatest single cause of workplace injuries. Slips account for almost half of all STF. In almost 6,000 workplace visits, HSA Inspectors found that 70% needed slip-resistant footwear. This information sheet will help you choose the most suitable slip-resistant footwear.

Every effort should be made to eliminate the risk from slippery pedestrian surfaces in workplaces. Slip-resistant footwear is vital in preventing accidents where a slippery surface cannot be "fixed" or kept dry. Yet proper footwear is often not considered, even after a slip accident. Footwear was only mentioned in 2% of STF accidents reported to the Authority.

- ensure structural changes to remove slippery areas,
- ensure operational controls where structural changes do not remove the risk, and
- identify slippery areas where a risk still remains and slip-resistant footwear is required.

2. Consult staff

Consult staff throughout the process of choosing slip-resistant footwear where possible.

When consulting workers remember:

- wherever possible test footwear in the workplace where it is to be used,
- ask wearers if footwear feels slippery underfoot,
- involve users in choosing footwear to increase its acceptability, and
- choose footwear that is comfortable, fits well and staff have agreed to and will wear.



Figure 1. Slip-resistant footwear sign

1. Identify and remove risks

General Application Regulations state an employer shall provide at the employer's cost Personal Protective Equipment (PPE) for employees where risks cannot be avoided or limited.

The Safety, Health and Welfare at Work Act 2005 (2005 Act) requires employers to have a written risk assessment.

The risk assessment should:

- identify all slippery surfaces that may be wet or contaminated (including stairs and steps, vehicle, walkways, entrance exits and third-party premises).

3. Check the sole

Not all "safety" footwear is slip-resistant. Slip-resistance comes from the sole (and heel) of the shoe. A smooth sole may offer little slip resistance – like a smooth tyre on a car.

When checking slip resistance for:

- Fluids - footwear typically should have a close-packed well-defined tread pattern in softer material with deep cleats on a flexible flat sole
- Loose solids - footwear typically should have a more open well-defined tread pattern with wider channels, deep cleats and a flexible sole
- Ice - footwear typically should have spikes or studs that will "bite" into the ice (but may be slippery on other hard surfaces)



Figure 3. Typical sole properties of slip-resistant footwear by contaminant

Ensure overshoes, if used, provide the required slip resistance.



Check any information on slip-resistance for the footwear.

Check if footwear indicates that it has been tested to a standard for slip-resistance.



Figure 4. Label attached to footwear indicating slip resistance test results

On fluid contamination, for example:

- footwear tested to EN ISO 20344:2004 (A1: 2007) may be marked:
 - "SRA" (tested on ceramic tile with diluted soap),
 - "SRB" (tested on smooth steel with glycerol), or
 - "SRC" (tested under both conditions).
- footwear tested to the UK GRIP rating scheme may be marked one to five stars (3 star, 4 star or 5 star footwear is recommended where there's a slip risk).

If required consider having footwear specifically tested on the actual working surface with the expected contaminant.

5. Check other safety requirements

The 2005 Act requires designers, manufacturers, importers and suppliers to provide information on use, maintenance and cleaning of footwear.

Check that footwear:

- is reasonably easy to clean, maintain,
- should last a reasonable time (Durability can be tested, for example, using the SATRA Pedestrian Test),
- has an ankle strap if needed,
- is CE marked, and
- meets requirements for penetration resistance, toe protection, electrical properties, water resistance, oil resistance, heat resistance, ankle protection.

6. Provide for training, maintenance and storage

Section 10 of the 2005 Act says employers must provide information, instruction and training and ensure PPE is properly maintained and replaced as necessary.

Employers must:

- provide training and communicate requirements to wearers, and
- specify measures and provide facilities to store, clean, maintain, assess and replace slip-resistant footwear.



Figure 5. Clogged channels in slip-resistant footwear

Further information

Further information is available in the following publications.

All are available for free download from the Health and Safety Authority at www.hsa.ie/slip.

1. "Safer Work Stairs and Steps Information Sheet"
2. "Preventing Vehicles Slips, Trips and Falls Information Sheet"
3. "Preventing Slips, Trips and Falls at Work Information Sheet"

Use www.bezmat.ie – the HSA's free online risk assessment tool

Visit our online portal for health and safety courses at <https://hsalearning.ie>

Contact the Health and Safety Authority at wcu@hsa.ie or LoCall 1890 289 389



Safety footwear

- ¾ transport workplaces need slip-resistance
- Oil resistant soles may not be slip-resistant
- Trial before selection
- Check markings for SRA, SRB, SRC or UK Grip





A young look, influenced by the 80's sports lines and high quality materials perfectly combine comfort and style.

Un look giovane, influenzato dalle linee sportive anni '80 e materiali di ottima qualità coniugano perfettamente comfort e stile.

Jugendlicher Look mit sportlichem Design aus den 80er Jahren und hochwertige Materialien stellen Style und Komfort zusammen.

Un look jeune, qui rappelle le style sportif des années '80 et des matériaux de très haute qualité conjuguent style et confort.

Un diseño joven, inspirado en las líneas deportivas de los 80's y materiales de óptima calidad se conjugan perfectamente con confort y estilo.



Wellness



SOLE
SUOLA
SOHLE
SEMELLE
SUELA

PU/TPU

EXCELLENT SLIP RESISTANCE
ECCELLENTI RESISTENZA ALLO SCIVOLAMENTO
AUSGEZEICHNETE RUTSCHFESTIGKEIT
EXCELLENTE RESISTANCE AU GLISSEMENT
EXCELENTE RESISTENCIA AL DESLIZAMIENTO

EN ISO 20345:2011



SRC
(SRA+SRB)

SRA

ceramic
+
detergent
solution

FLAT
≥ 0,32

0,56

HEEL
(contact angle 7°)
≥ 0,28

0,52

SRB

steel
+
glycerol

FLAT
≥ 0,18

0,25

HEEL
(contact angle 7°)
≥ 0,13

0,19

SRC

(SRA+SRB)



SRA

ceramic
+
detergent
solution

FLAT
 $\geq 0,32$

0,56

HEEL
(contact angle 7°)
 $\geq 0,28$

0,52

SRB

steel
+
glycerol

FLAT
 $\geq 0,18$

0,25

HEEL
(contact angle 7°)
 $\geq 0,13$

0,19

Safety footwear

- ¾ transport workplaces need slip-resistance
- Oil resistant soles may not be slip-resistant
- Trial before selection
- Check markings for SRA, SRB, SRC or UK Grip
- Check the sole



“Watch Your Step” Choosing Slip-resistant Footwear Information Sheet

December 2017



Every working day in Ireland six people are hurt in work-related [Slips, Trips and Falls \(STF\)](#). STF are the second greatest single cause of workplace injuries. Slips account for almost half of all STF.

“Watch Your Step” - Choosing Slip-resistant Footwear Information Sheet

4. Check slip-resistance information

Check any information on slip-resistance for the footwear. Check if footwear indicates that it has been tested to a standard for slip-resistance.

On fluid contamination, for example:

- footwear tested to EN ISO 20344:2004 (A1: 2007) may be marked:



Liquid



Typically

- Close-packed tread pattern
- Flexible sole, softer material

Loose Solids



Typically

- More open tread pattern
- Wider channels

Ice



Typically

- Spikes or studs that “bite” into ice

more open well-defined tread pattern with wider channels, deep cleats and a flexible sole
 • Ice-footwear typically should have spikes or studs that will “bite” into the ice (but may be slippery on other hard surfaces)

Figure 3. Typical sole properties of slip-resistant footwear by contaminant

Ensure overshoes, if used, provide the required slip-resistance.

3. Preventing Slips, Trips and Falls at Work Information Sheet

Use www.bestmat.ie – the HSA’s free online risk assessment tool

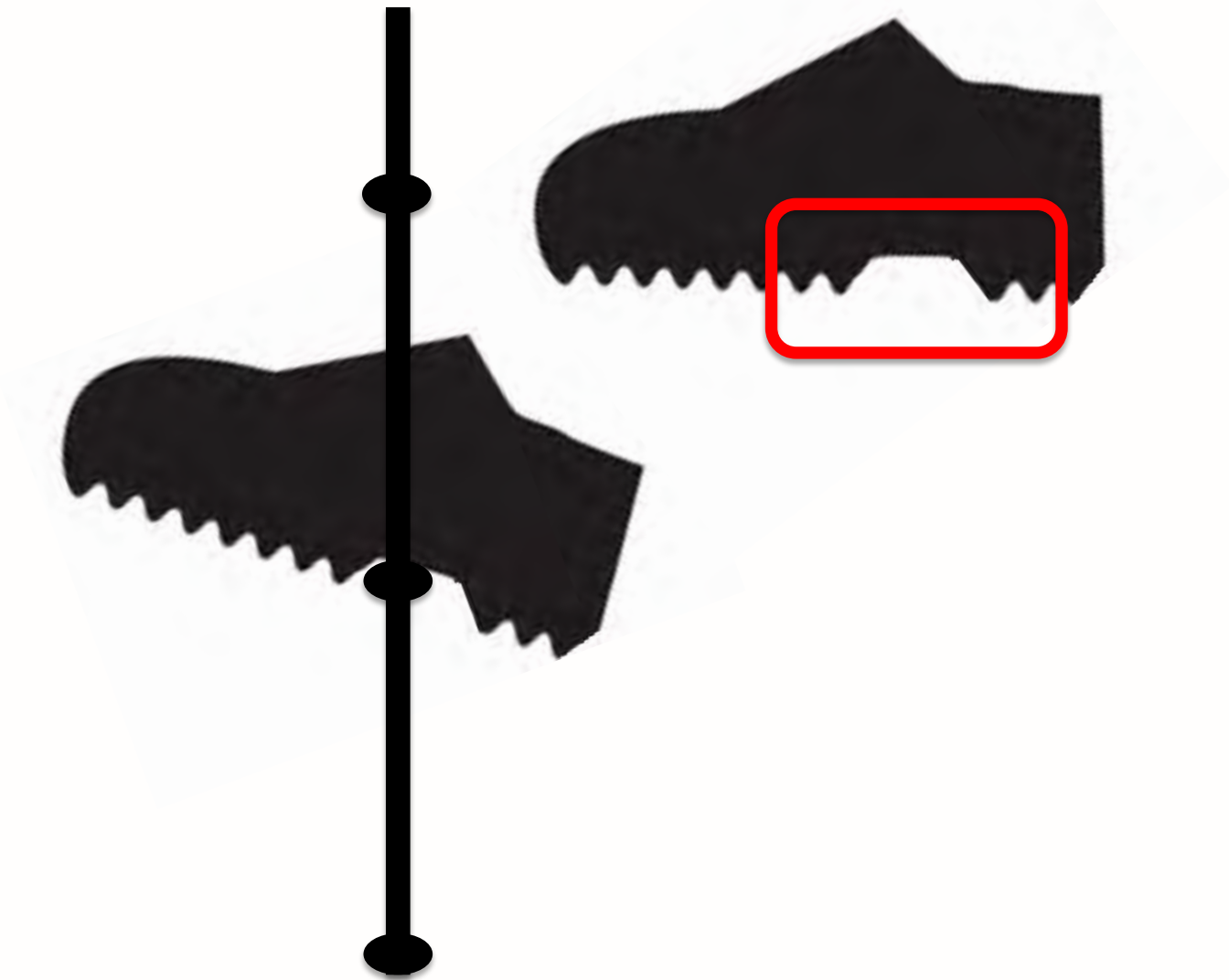
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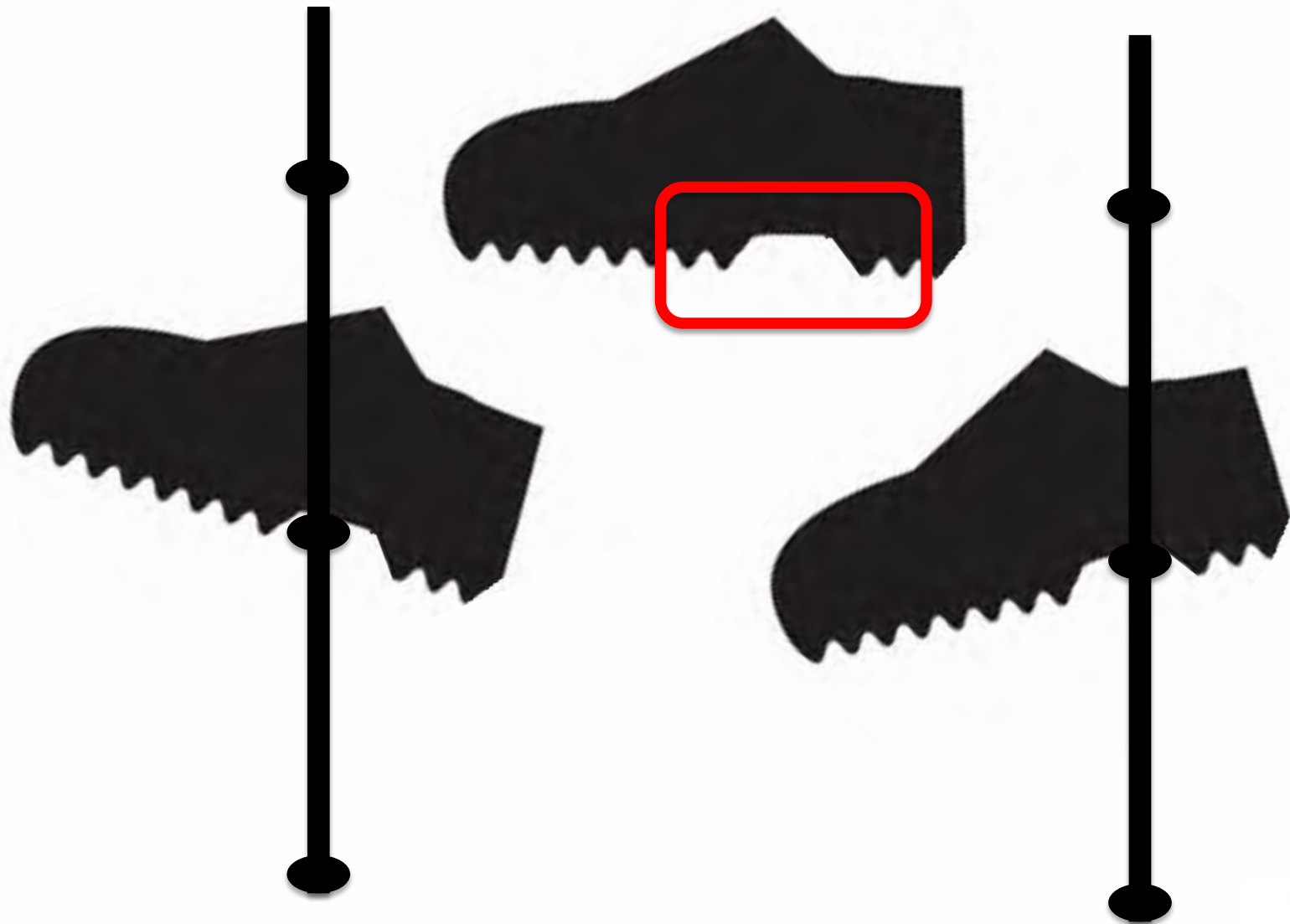
Contact the Health and Safety Authority at wcu@hsa.ie or LoCall 1890 289 389











Safety footwear

- ¾ transport workplaces need slip-resistance
- Oil resistant soles may not be slip-resistant
- Trial before selection
- Check markings for SRA, SRB, SRC or UK Grip
- Check the sole
- **Inspect soles regularly**
- **Replace as needed**



Vehicle walk-on surfaces

- Keep clean & dry
- Provide cleaning equipment





Vehicle walk-on surfaces

- Keep clean & dry
- Provide cleaning equipment
- Use contrasting colours at edges









Vehicle walk-on surfaces

- Keep clean & dry
- Provide cleaning equipment
- Use contrasting colours at edges
- Provide proper lighting
- Check if slippery underfoot when wet
- Slip resistance can be measured







Car Park Surface
Slippery When Wet

Vehicle walk-on surfaces

- Keep clean & dry
- Provide cleaning equipment
- Use contrasting colours at edges
- Provide proper lighting
- Check if slippery underfoot when wet
- Slip resistance can be measured
- Aluminium chequerplate “offers poor slip resistance if wet or contaminated”

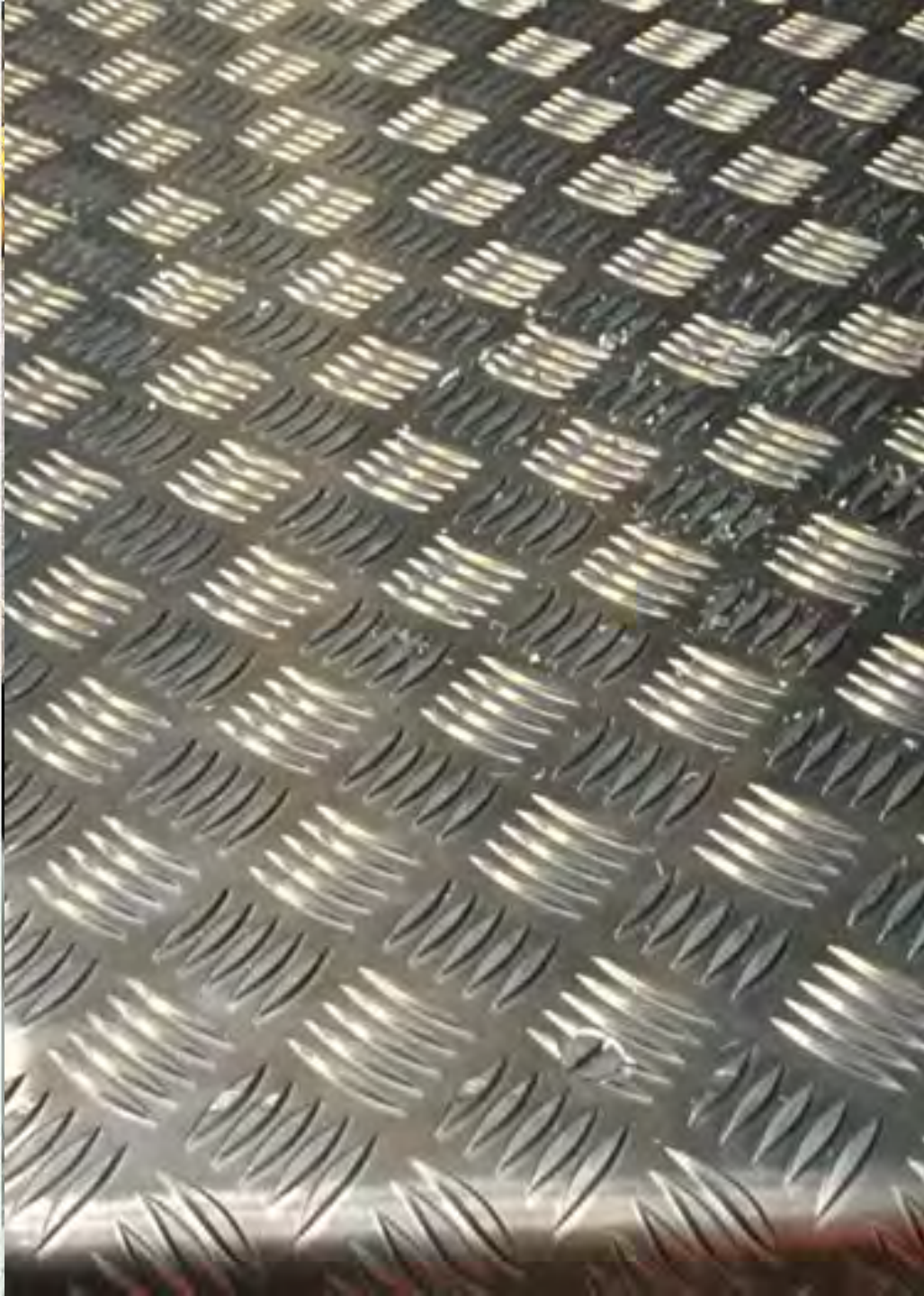


A study of the slip characteristics of metal flooring materials

Prepared by the **Health and Safety Laboratory**
for the Health and Safety Executive 2007

[http://www.hse.gov.uk/research/
rrpdf/rr534.pdf](http://www.hse.gov.uk/research/rrpdf/rr534.pdf)

RR534
Research Report





Slip Risk

High

**Aluminium
chequerplate “offers
poor slip resistance if
wet or contaminated”**





hsa.ie/Slips

Watch Your Step



Open the Door, Check the Floor



Check footwear is slip-resistant



Check if surfaces slippery underfoot when wet

Thank you

