



ROSPA

*The Royal Society for the
Prevention of Accidents*

Thinking harder about accidents

**Presented
by:**

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THE ROYAL SOCIETY FOR THE PREVENTION OF ACCIDENTS

RoSPA's Mission & Vision

Mission

**To save lives and prevent
injuries**

Vision

**To lead the way in accident
prevention**

Accidents: the costs to the UK

Costs

➤ Personal

➤ Societal

Workplace

150+100 fatal
1 million injuries

Roads

2,200 fatal
280,000 injuries

Home
& Leisure

4,000 fatal
3 million visits to A&E

Other?

7,400 fatal

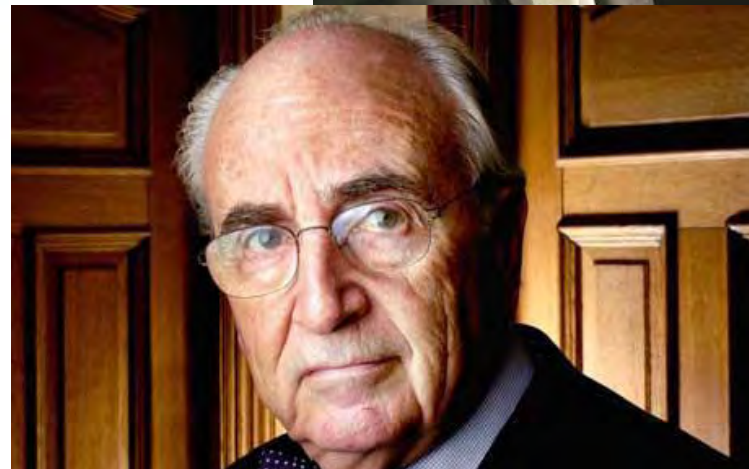
Current challenges in safety

- **Circa 13,861 accident fatalities (2009)**
- **3 million + visits to A&E,**
- **0.3 million life-changing injuries**
 - Safety inequalities (work/road/home/leisure etc)
 - Social inequalities
 - Poor data collection/analysis
 - Not part of public health
 - Poor safety/risk education
- **Excessive risk aversion/compensation culture?**
- **Alleged 'nanny state'?**
- **'Elf and safety gorn mad!'?**

‘Elf and safety’ out of control?

- ***‘Who will protect us from the health and safety set?’***
- ***‘..with the mantra ‘there’s no such thing as an accident’***
- ***‘ ..’elf and safety.. cancer of a civilised society!’***
- ***‘Please stop nannyng us!’***
- ***‘Hypersafety is the one true faith.’***
- ***‘Every week we have more evidence of the slimy, choking advance of jobsworth regulation which seeks to make us “safe” but actually makes us weak.’ (Libby Purves)***

Living in a health and safety culture?



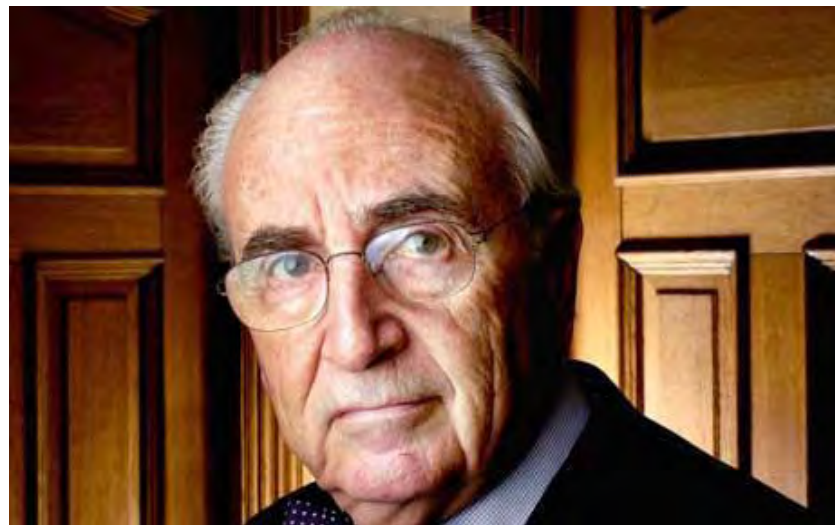
Health and safety over-zealousness?

- Adding to cost?
- Wasting time?
- Creating bureaucracy?
- Heightening anxiety?
- Creating frustration?
- Reducing opportunities?
- Reducing resilience?
- Bringing the image of legitimate H&S into disrepute



‘Common sense, common safety’

- **Aggressive claims advertising**
- **Excessive claims costs**
- **Over complex risk assessments**
- **‘Low hazard’ SMEs**
- **School trips**
- **Play and leisure**
- **Consultants**
- **RIDDOR**
- **Outdoor activities**
- **Public events**
- **Inhibition of heroism**
- **Restaurants**



‘Evidence based policy making’ versus ‘policy based evidence making’?

- **Newspaper reports**
- **Personal anecdotes**
- **‘Your Freedom’ website**

Versus

- **Survey evidence?**
- **Enforcement data?**
- **Professional opinions?**



Three types of stories about risk aversion

1. Genuinely risk averse behaviour (banning things unnecessarily, 'over-the-top' precautions etc)
2. Urban myths (danger notices on mountain sides, hard hats for hire wire artists etc)
3. H&S used a convenient excuse (closing public facilities because they don't meet health and safety standards)

Safety: UK PLC's weakest link or strongest link?



Workplace health and safety: job done?

- 152 notified fatal injuries to workers
 - 26,061 major injuries, 95,369 over three day injuries
-
- 100 + members of the public
 - 500 - 800 fatal work related road injuries?
 - 12,000 + deaths due to work related health damage
 - 1 million injuries (all severities)?
 - 1.2 million cases of work related ill health
 - 30 million working days lost (1.24 days per worker - 24.6 m ill health, 4.7 injury)
 - £20 – 30 billion or between 2 –3 % of GDP!

UK occupational H&S failure =

- One 747 crashing every fortnight (fatals/early death)



- Twenty landing every day (injuries/ill-health)



Shops, offices, schools.. ‘Low Hazard’?

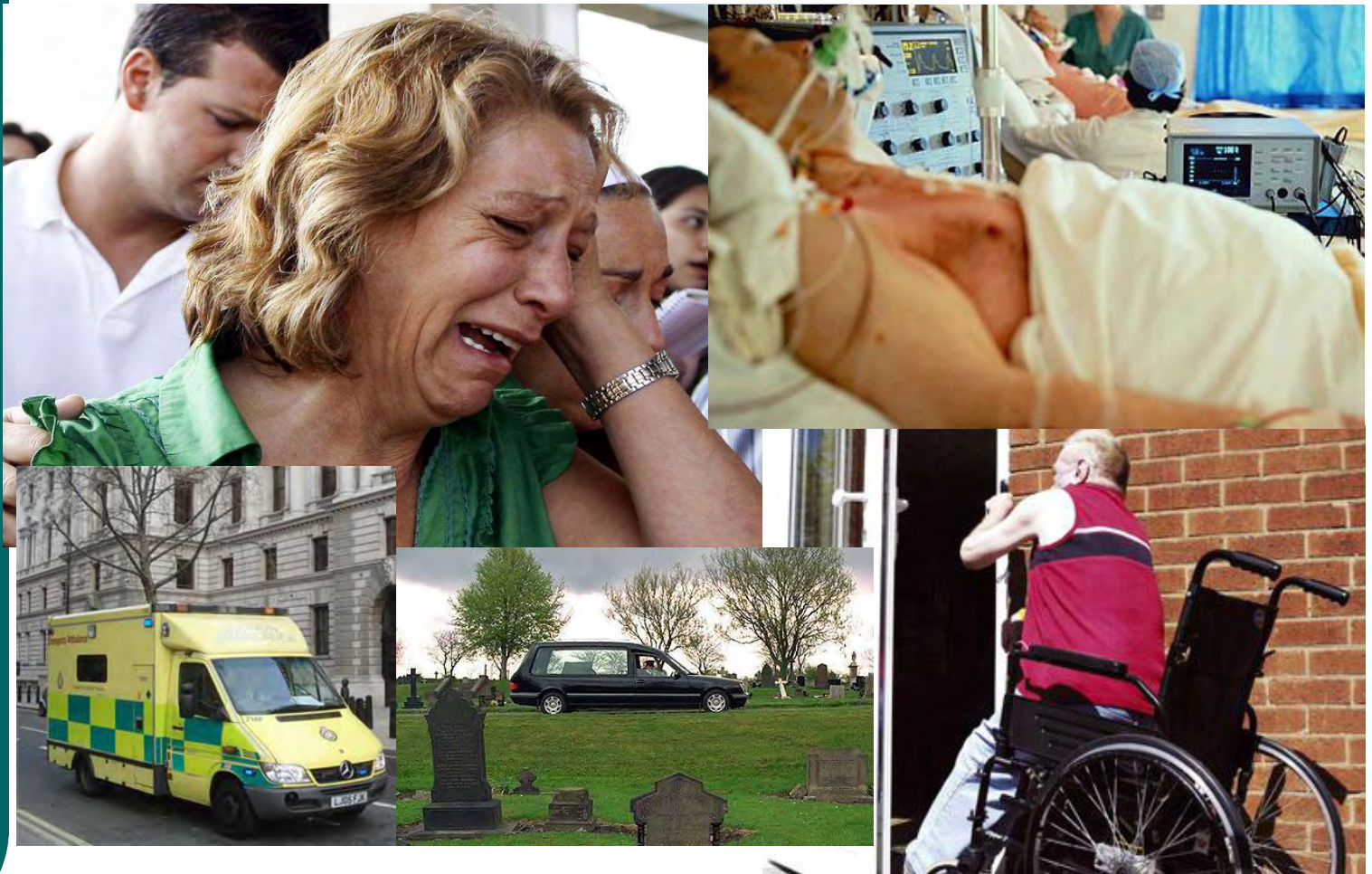
- **Fire**
- **Stress**
- **Slips, trips and falls**
- **Manual handling**
- **Electricity**
- **Gas**
- **Building services/maintenance**
- **Ergonomics**
- **Heating, lighting, ventilation**
- **Violence**
- **Transport**
- **Storage**
- **Etc, etc**



H&S: burden or benefit?



If you think safety's too much trouble, try having an accident!





You have to live with the consequences



- **Damage to business**
- **Loss of workforce morale**
- **PTSD**
- **Legal action**
- **Enforcement**
- **Reputational loss**
- **Career damage?**

Accidents cost money



- **Damage costs**
- **Sick pay**
- **Replacement staff/equipment**
- **Business interruption, delays, lost contracts etc**
- **Investigation costs**
- **Lawyers fees**
- **Fines**
- **Compensation payments**
- **Higher insurance premia**

The cost iceberg



- Most cost is 'below the water line'
- Insured uninsured cost ratio 1:8/1:36
- H&S failures cost UK 30 million working days lost
- 1.24 days per worker - 24.6 m ill health, 4.7 m injury
- Cost to employers £3.9 - 7.8 billion

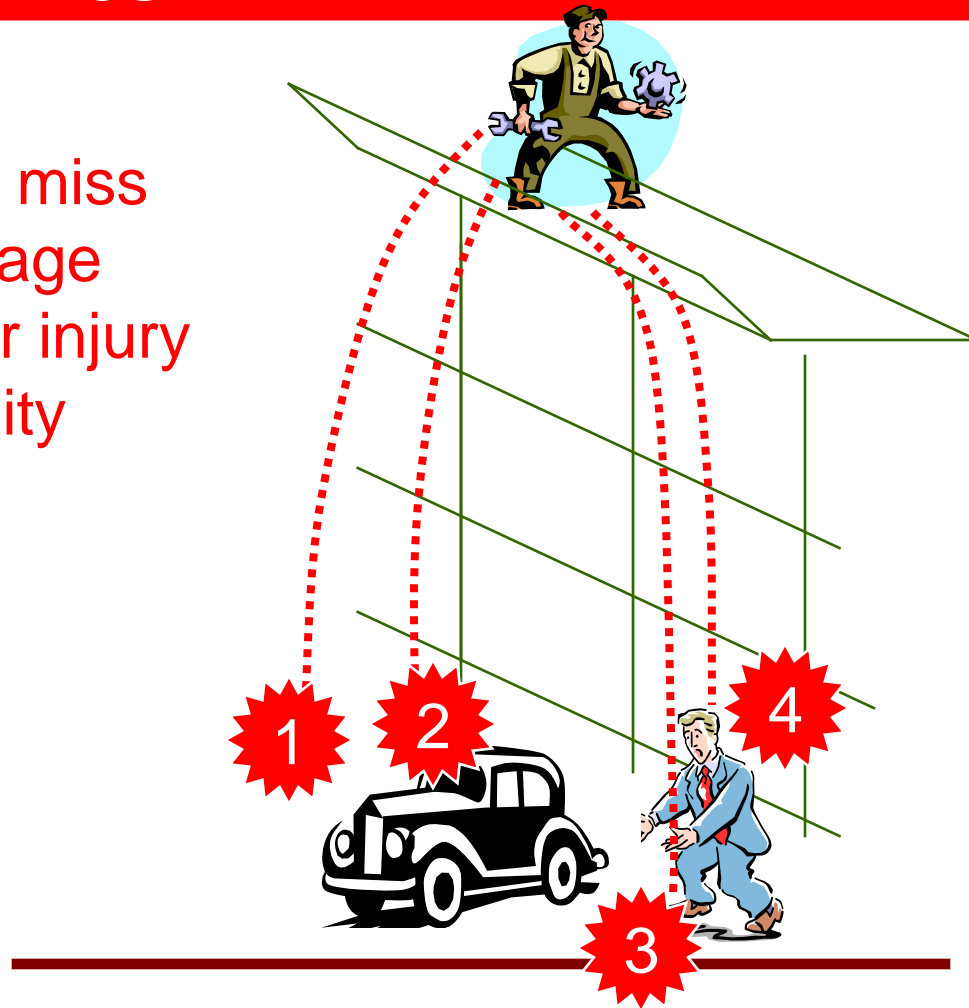
But accidents/incidents are also opportunities



- See accidents as an investment
- Exploit unique learning/change opportunities
- See accidents as 'windows on reality'
- Build trust through team based investigation
- Learn from near misses/hits

Same unplanned event, different outcomes

1. Near miss
2. Damage
3. Minor injury
4. Fatality



OS&H blind spot? Occupational Road Risk



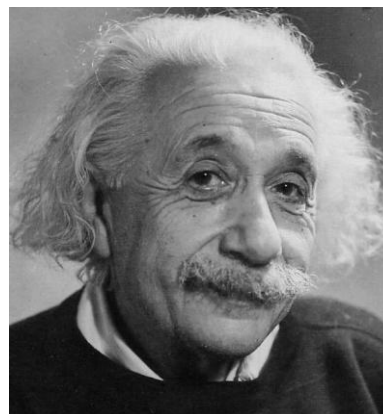
OS&H blind spot?

Work related health damage



- **MSDs**
- **Stress**
- **Skin disease**
- **Noise**
- **VWF**
- **Occupational cancer**
- **Respiratory disease**
- **Zoonoses**
- **General sickness absence**
etc

Need for better safety and risk literacy?



Confused about safety?

- Mixing up hazard and risk?
- Risk management or risk elimination?
- Abuse of the precautionary principle?
- How tough should we be (belt and braces)?
- Action at source versus PPE and training?
- Primary, secondary, tertiary safety solutions?



Sound personal safety decisions?

- not travelling by air?
- always taking children to school by car?
- not eating vegetables that have been grown with artificial fertiliser?
- giving up smoking?
- eating five portions of fruit/vegetables every day?
- always peeling carrots before you cook/eat them?
- always washing your hands after going to the loo?
- always wearing a seat belt in the car?
- always wearing a cycle helmet?
- not drinking more than twenty one units of alcohol a week (men)?
- always wearing a respirator/mask when cycling in the inner city?
- not giving your child the MMR jab?
- only using a registered electrician?
- not using the channel tunnel?
- not riding motorcycles?
- never driving at night?

Sound public safety decisions?

- banning private ownership of hand guns?
- the Dangerous Dogs Act?
- expanding the UK Nuclear Power programme?
- 48 hours as a maximum working week in the EU?
- fitting interlocks to passenger train doors?
- all seater football stadia?
- CRB checks for all nursery staff;
- licensing outdoor activity centres?
- raising the motorway speed limit to 80 mph?
- allowing cycling on the pavement?
- reducing maximum blood alcohol for drivers to 50mg/100ml?

Further problems and challenges...

- **Exaggerated perceptions of risk?**
- **Over-simplifying accidents?**
- **Condemning all human error?**
- **Shallow investigation?**
- **More or less regulation?**
- **Safety and politics?**
- **Knee jerk reactions?**

Basic safety thinking tools needed to answer..

- What do we mean by an accident?
- What do we mean by risk?
- What approach do we adopt to risk control?
- What do we mean by 'safe'?
- Isn't safety just common sense?
- Can all accidents be prevented?
- Must some level of accidents always be accepted?
- Who decides?
- And how do we know they're right?

What's the RoSPA way?

- Safety an enabler, not a restraint
- Safety relative not absolute
- Only ban the totally unacceptable!
- Ignore the trivial!
- Ensure proportionality (risk versus cost)
- Lead (don't follow) public opinion but always
- Involve stakeholders

***'As safe as necessary not necessarily
as safe as possible'***

Data? Risk? Safety? Cost?



Data? Risk? Safety? Cost?

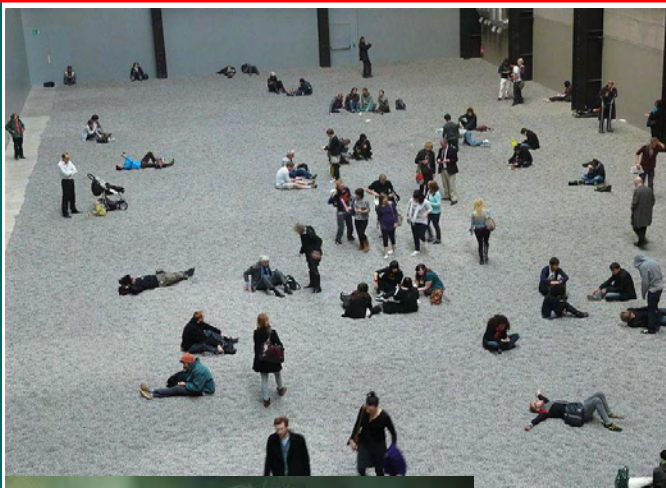


Review of the major outbreak of
E. coli O157 in Surrey, 2009

Report of the Independent Investigation Committee
June 2010



Data? Risk? Safety? Cost?



Not so easy is it?

**So let's get
back to
some basics**



What do we mean by an 'accident'?





- Any unforeseen event?
- Any unplanned adverse event?
- Any unplanned and potentially adverse event?
- Any unplanned event leading to injury?
- Only truly random events devoid of human content?

Hazards, accidents and risk

- All human activity involves exposure to *hazards* (things that could cause harm)
- (Hazards can be *physical, chemical, biological, or psychological*)
- Unless appropriate preventive action is taken, exposure to hazards will always lead to accidents
- The chance that an accident will happen with a certain level of outcome we call a risk
- Risk = probability X consequence

Describing risks....

Risks can be:

-  **High consequence/high probability**
-  **Low consequence/high probability**
-  **Low probability/high consequence**
-  **Low consequence/low probability**

Probability v consequence matrix

		Probability		
		High	Medium	Low
Consequences	High	Intolerable		
	Medium			
	Low			Trivial

Understanding probability



**Just because
something
could happen
doesn't
always mean
it will!**

Outcomes?

For example, the same event can give rise to different outcomes

For every fatal injury there are likely to be:

- **V serious injuries to**
 - **W ‘slights’ to**
- **X ‘damage only’ events to**
 - **Y ‘near misses’ to**
 - **Z failures of control**

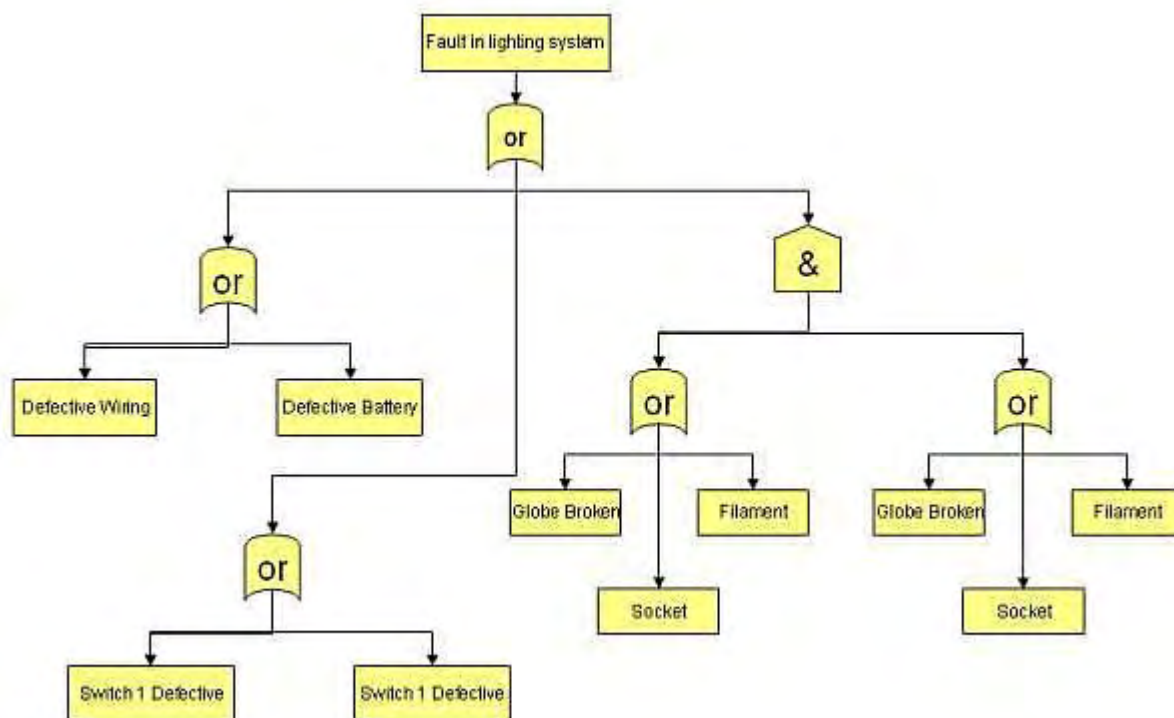
Frank Bird Junior's famous triangle



Understanding causation

- **Necessary and sufficient conditions have to combine**
- **Causality is multi-branched**
- **Tree of causal factors**
 - Quantified Risk Analysis/Assessment
 - Failure Modes and Effects Analysis
 - ECFA (investigation tool)
 - MORT (management oversight and risk tree)

Fault and event trees



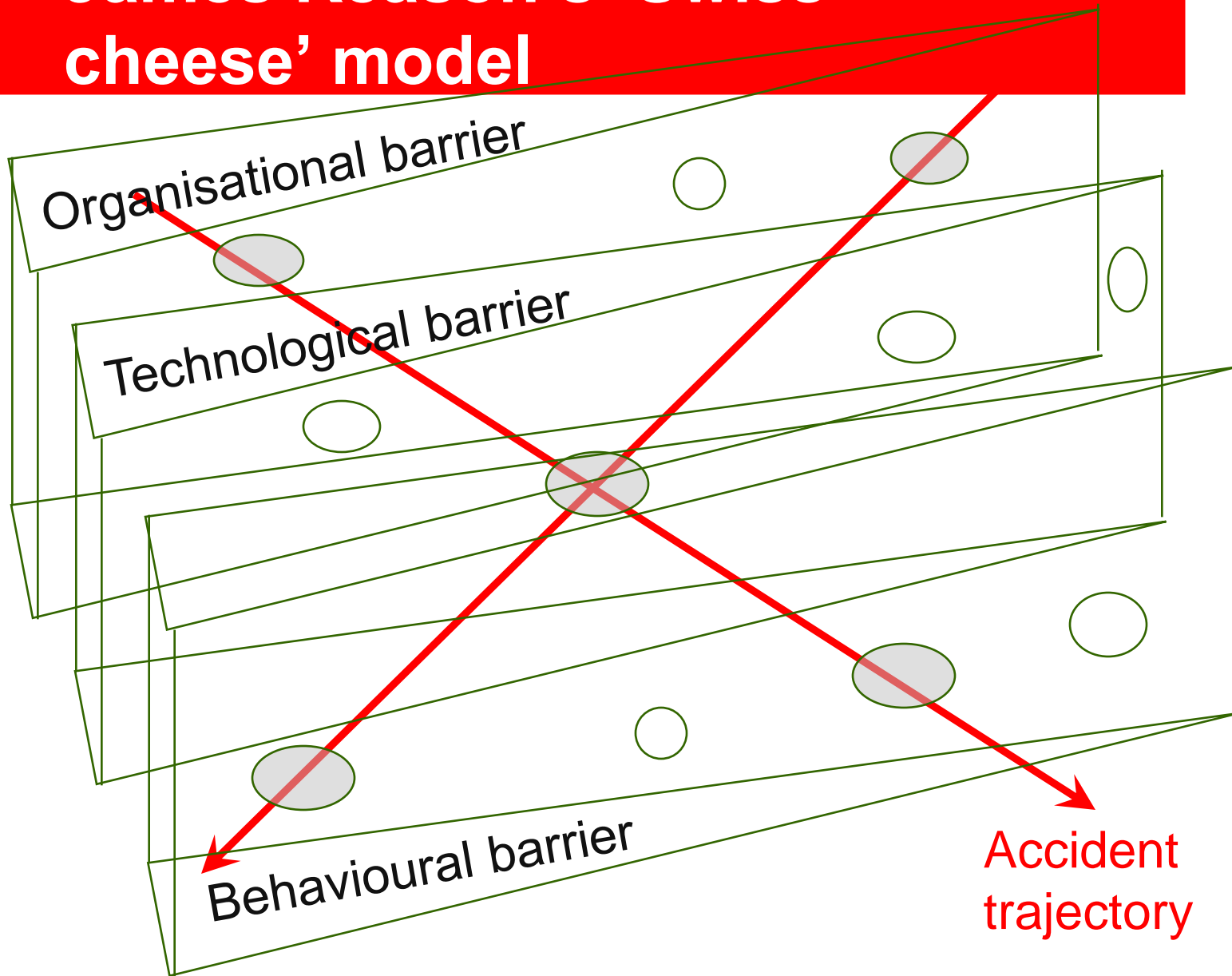
Understanding barriers to accidents

- **Three kinds of barrier (with holes in each!)**
 - Organisational
 - Technological
 - Behavioural
- **If the holes line up you have an accident trajectory**

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James Reason's 'Swiss cheese' model



Understanding human error



UNCONSCIOUS

- Slips
- Lapses

MISTAKES

- Skill based
- Ruled based

VIOLATIONS

- Exceptional
- Routine
- Situational

Error types can combine



e.g.

**Violation + Error =
Crash**

Prof Steve Stradling

So what do we mean by safe?

- No such thing as absolute safety (Safety = broadly tolerable risk, controlled SFAIRP)
- Safety thus a matter of judgement based on risk assessment
- But how safe is safe enough?
- And again, who decides and how?
- It's all about RISK ASSESSMENT

Assessing risk to:

- 1. Understand potential for harm**
- 2. Assess whether controls adequate or more needed**
- 3. Which risks to tackle first**

Levels of risk assessment

- 1. Generic and/or**
- 2. Specific – but always**
- 3. Dynamic**

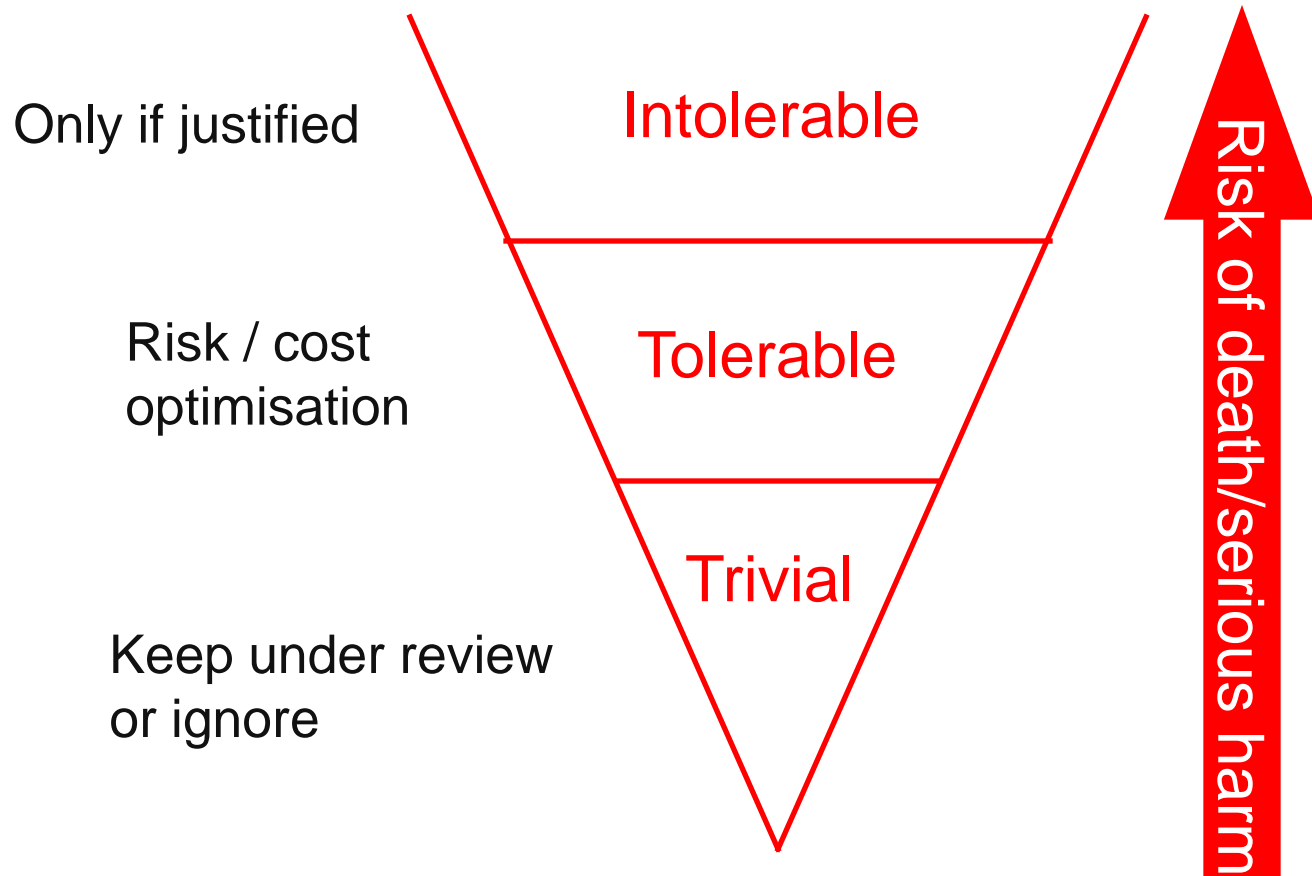
‘TOLERABILITY’

Risk triage to assess whether risks are:

- **‘Intolerable’ (too high/unjustified?)**
- **‘Tolerable’ (reduce risk until ALARP)**
- **‘Trivial’ (keep under review or ignore)**

Difficult concept!!! But very useful nonetheless

**The ALARP (as low as reasonably practicable triangle
a.k.a. John Rimington's Carrot!)**



Approaches to risk control: The hierarchy of preferred options

- ***ELIMINATE***
- ***REDUCE***
- ***ISOLATE***
- ***CONTROL***
- ***ADAPT***
- ***EMERGENCY ACTION***

Options for intervention

- **Primary (initial integrity)**
- **Secondary (protection)**
- **Tertiary (emergency response)**

Reliability/defence in depth? (building your safety case)

- If it can happen it must not matter!
- If it can matter it must not happen!
- **Examples:**
 - redundancy, diversity, a variety of techniques
 - procedures, physical safeguards, alarms
 - emergency procedures

Dealing with uncertainty?



- Dose/response unclear?
- Reliability unclear?
- Scale of consequences unclear?
- Efficacy of control unclear?
- Who get's the benefit of any scientific doubt?

So is a risk...

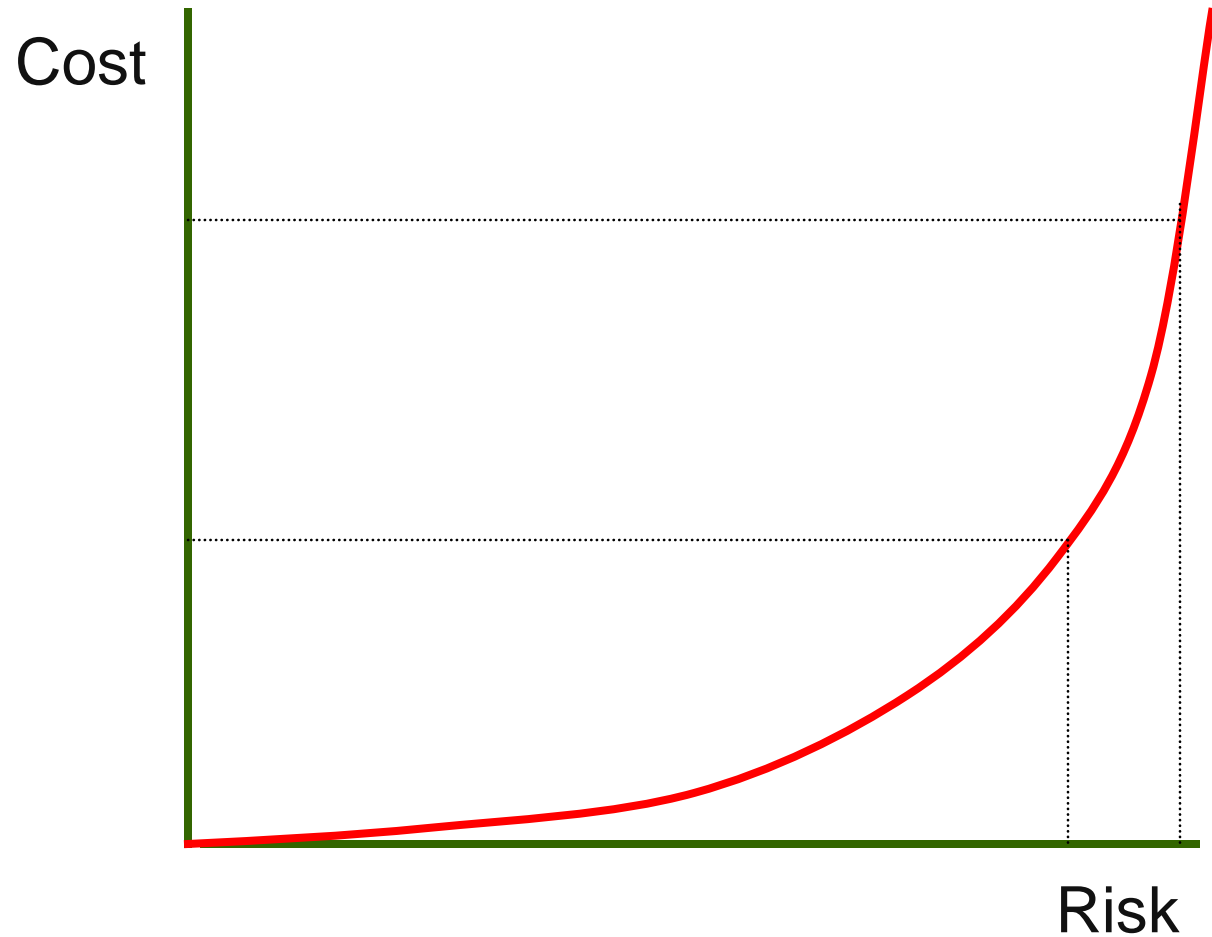
- **Justified?**
- **Within tolerable limits?**
- **Optimised?**

Proportionality?

The 'Goldilocks principle'

- Too much (over-hitting)
- Too little (under-hitting)
- Just right (optimised)

Risk /cost optimisation?



Costs?

- **Money?**
- **Time?**
- **Opportunities?**
- **Other?**

Prioritisation?

Do you allocate scarce resources to...

- high risk/low exposure/high cost interventions? OR
- medium risk/medium exposure/medium cost solutions? OR
- low risk/high exposure/ low cost measures?

Stakeholder perspectives

‘Risk creators’

- Demanding ‘beyond reasonable doubt’ evidence
- Moderate safety ambition
- Trust experts
- Confident
- Highly cost conscious
- Control

‘Risk takers’

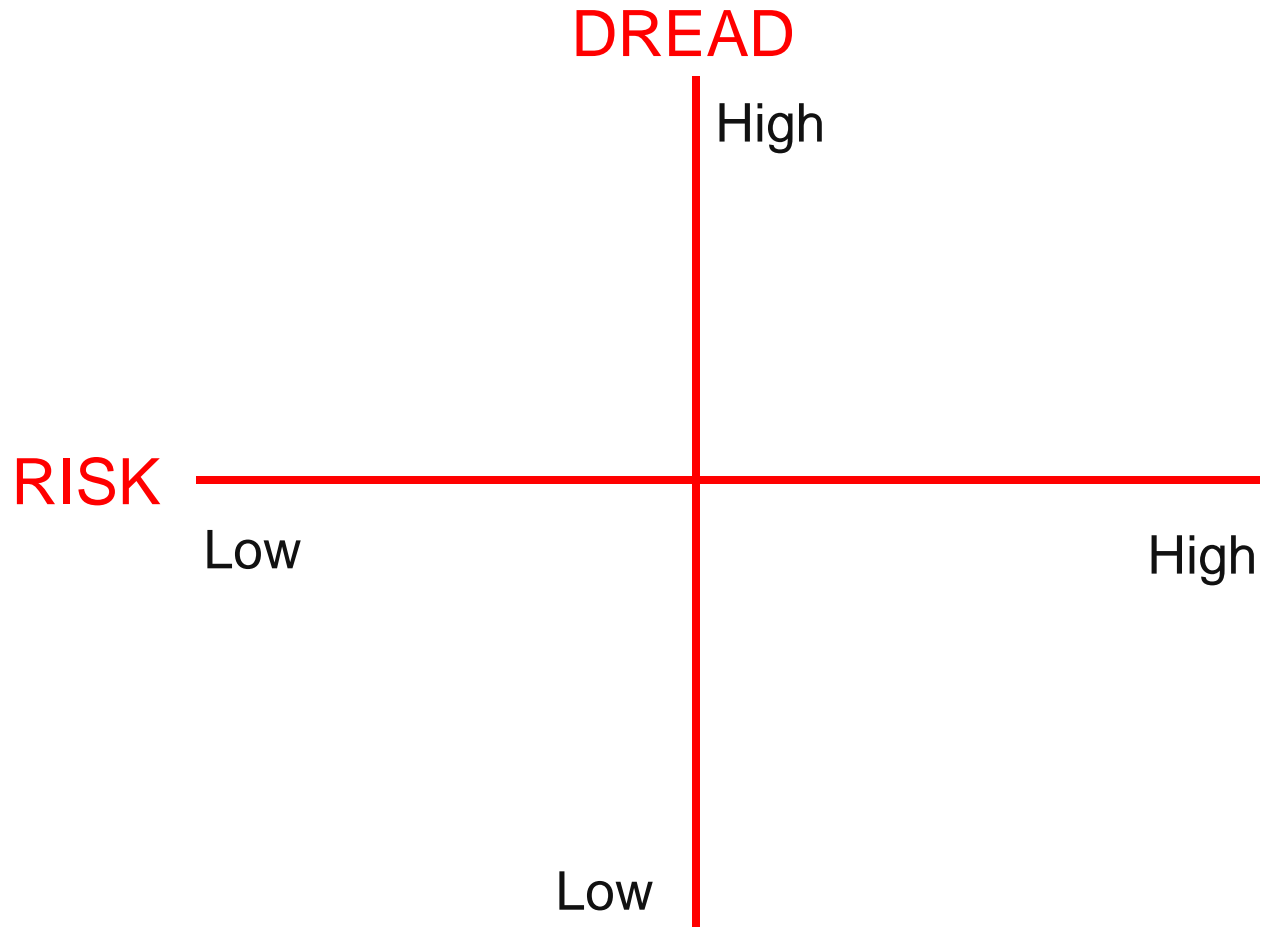
- Demanding ‘on balance of probabilities’ evidence
- High safety ambition
- Mistrust experts
- Sceptical
- Less cost conscious
- Ban

Factors that affect risk perception

- Probabilities and consequences?
- Harms ordinary or catastrophic?
- Affecting individuals or society?
- Effects immediate or delayed?
- Natural or man-made?
- Familiar or unfamiliar?
- Controllable or uncontrollable?
- Exposure voluntary or involuntary?
- Conferring benefit or cost?
- Trust in experts?

Models and tools

Slovic matrix



Can insurers incentivise better OS&H performance?

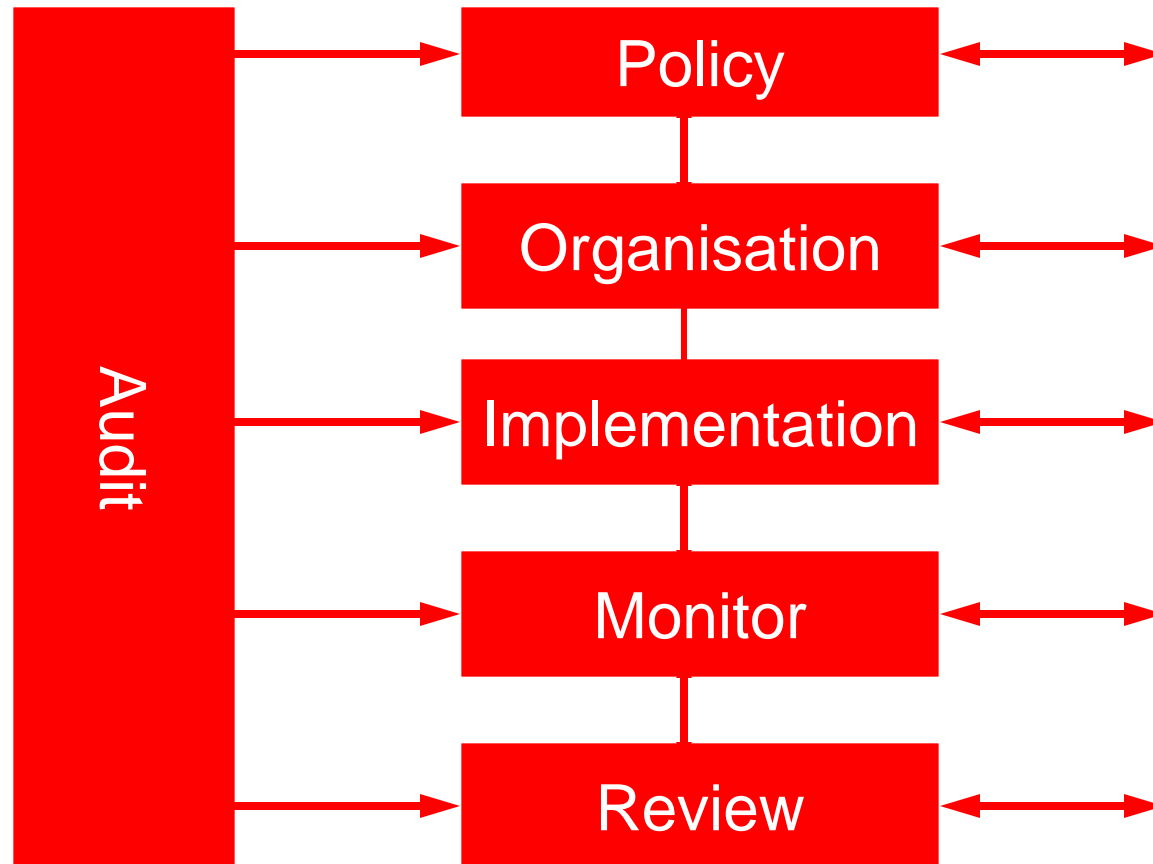
Optimistic view

- Lower premia
- Risk profiling
- Safety conditions
- Provision of advice/support
- Benchmarking
- Data/research

Pessimistic view

- Premia set actuarially
- ELCI small part of a bigger basket
- Competitive market
- Market conditions
- ELCI a loss leader?
- Higher excess a better route?

Organisational risk management (HSG65)



And what about safety culture?

- **Shared perceptions of the seriousness of problems and the efficacy of solutions?**
- **Shared values and commitment?**
- **Consistently safe behaviours?**
- **Emotional intelligence?**

High reliability organisations?



- 1. Pre-occupation with failure**
 - 2. Reluctance to simplify**
 - 3. Sensitivity to operations**
 - 4. Commitment to resilience**
 - 5. Deference to expertise**
- **‘ORGANISATIONAL MINDFULNESS’**

Hallmarks of OS&H capability?

- **RoSPA Awards**
- **OHSAS 18001**
- **Proprietary audit schemes**
- **Pre-qualification schemes (SSIP)**
- **Sector schemes**
- **Training provider assessments**
- **CHASPI, CBI Contour etc**
- **HSE data**
- **GoPOP data**

Remember..

**Safety is vital but
getting it right it isn't
always so easy...**

The logo for ROSPA (The Royal Society for the Prevention of Accidents) is displayed. It features the word "ROSPA" in a large, white, bold, sans-serif font against a solid red rectangular background.

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Thank you
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