Introduction to Air Safety Management

Plan Design Enable

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Objectives

- To Provide Delegates with an awareness of Air Safety and Safety Management
- To introduce generic safety terminology
  - Safety
  - Accidents
  - Hazards
  - Accident Sequence
  - Mitigation
  - Risk Assessment
  - Safety Case, Safety Assessment & Safety Case Report

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Introduction

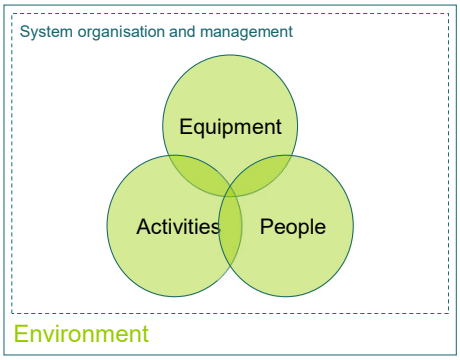
- Everyday activities give rise to many hazards which present risks to workers and the public
- Why do we tolerate risk?
  - Dangers are tolerated to achieve some form of gain
    - Financial benefit
    - Advantages
    - Thrills
- But they must be kept under control
- Safety Management deals with controlling risk – nothing is risk free…

Perception of Risk

- How we perceive risk influences how we react
  - Risk of physical harm is the main driver
  - but also by social, ethical & cultural considerations

What is Safety?

- Safety is freedom from accidents
  - "Freedom from unacceptable risks of personal harm" [MAA02]
  - system operates safely when it does not cause any harm



- Safety Management deals with the prevention of accidents by controlling risk

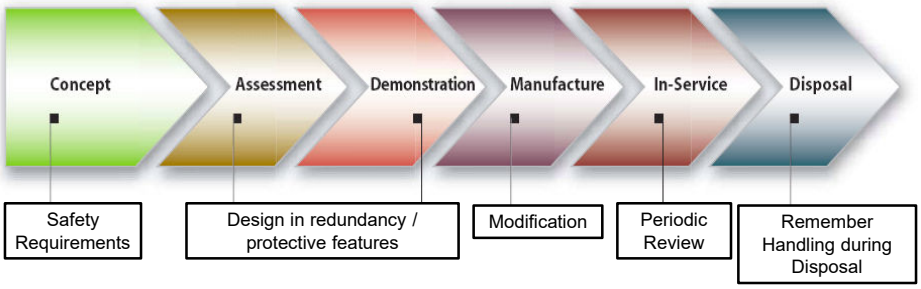
Why Manage Safety?

- **To Minimise Accidents**
- **Financial Reasons**
- **Legal Duty** - The Health and Safety at Work etc. Act 1974 requires employers to ensure, so far as is reasonably practicable, the health safety and welfare of employees working on their behalf
- **Moral Duty** - What employer would want to see an employee injured or becoming ill as a result of the work they were undertaking on the employer's behalf?
- **Maintain capability**
- **Reputation**
- **Morale**

Who is Responsible for Safety?

- Everyone (HSWA)
  - Not just the Safety Manager, Team Leader, Duty Holder…
- But certain organisations act as Safety Focal Points:
  - Health and Safety Executive (HSE), European Aviation Safety Agency (EASA)
    - Legal and Regulatory Requirements
  - Defence Safety Authority (DSA)
  - Military Aviation Authority (MAA)
    - Safety Policy and Regulation
  - DE&S Airworthiness Team (DAT)
  - Quality, Safety and Environmental Protection (QSEP) Team

When Do We Manage Safety?



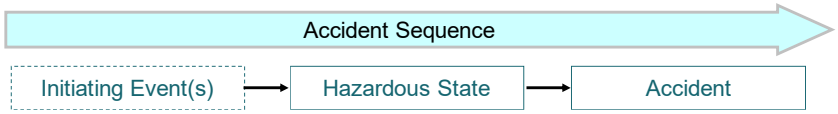
Hazards & Accidents

Hazard

- A physical situation or state of a system, often following from some initiating event, that may lead to an accident *[Def Stan 00-056]*
- An intermediate state where potential for harm exists *[MAA02, ASPIRE Tool 17.A.1.i]*

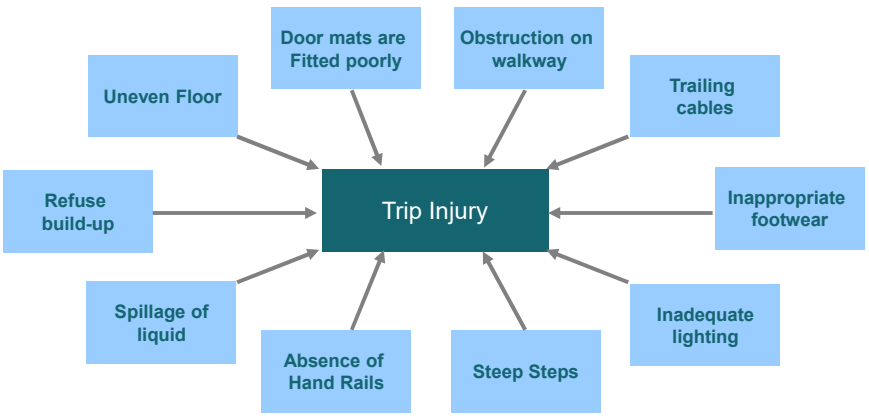
Accident

- An event that results in injury or ill health *[HSE]*

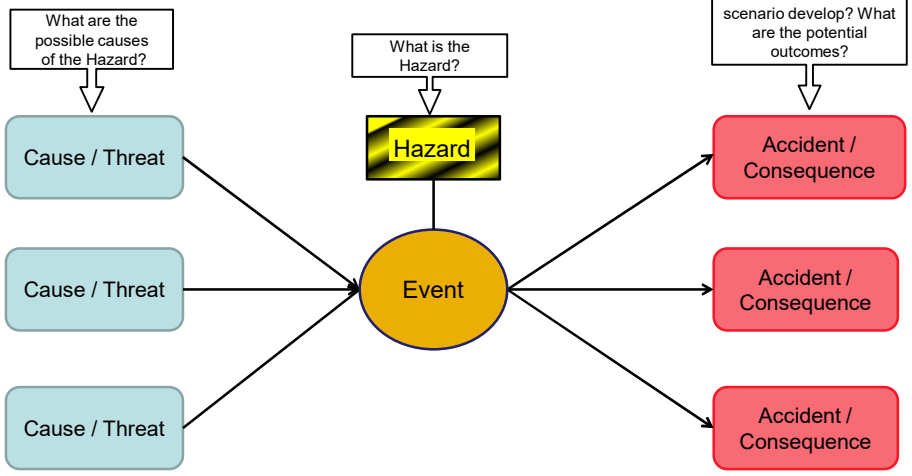


One Accident, Multiple Hazards

Many accidents can occur from more than one hazard



Bow Tie



Mitigation

- A control measure designed to disrupt and block the accident sequence, thereby preventing the accident
- Also known as safeguards, defences, risk reduction
- Can take various forms:
  - Fail safe systems
  - Automatic cut-offs
  - Alarms
  - Procedures
- Defence in depth – multiple layers of defence.

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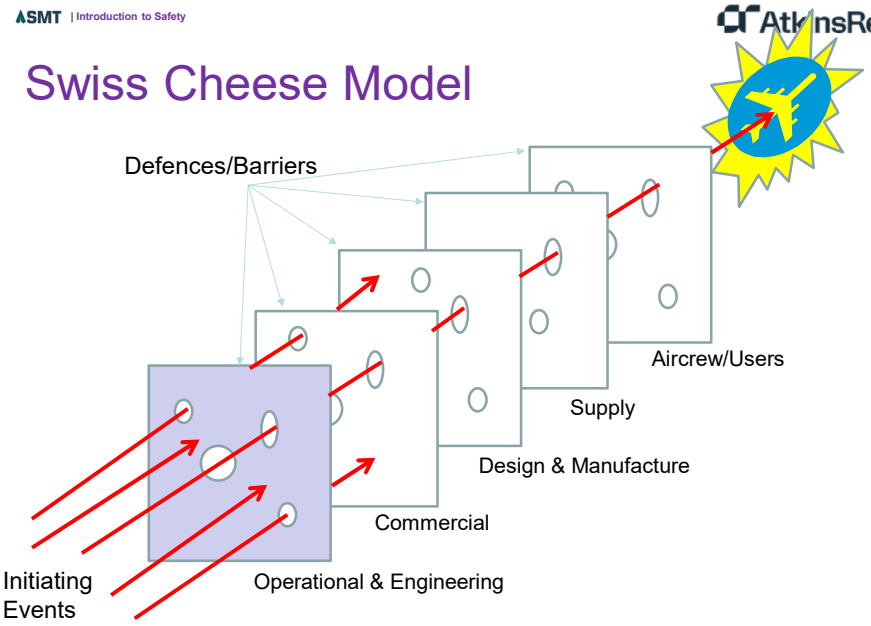
Swiss Cheese Model



Accident Causation Model – Prof James Reason

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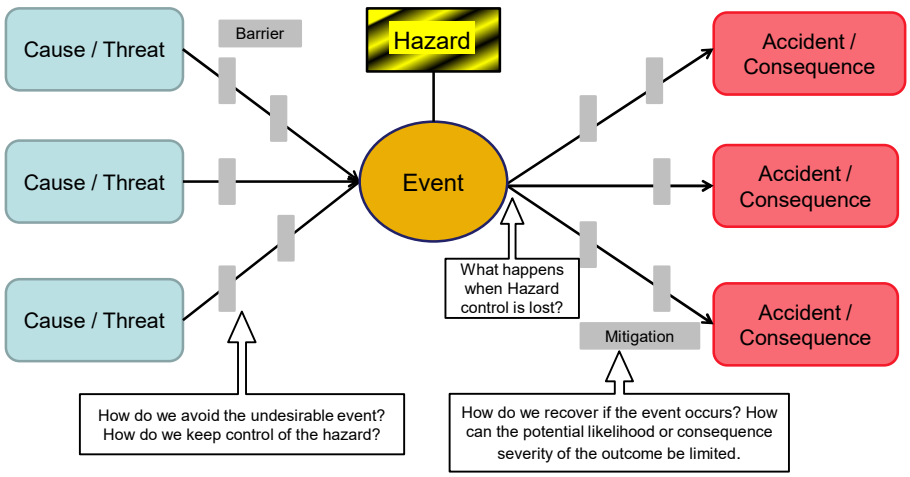


Risk Assessment

- Risk assessment is the process of analysing the accident sequence and determining the level of risk experienced
- In assessing potential accidents, the following parameters are used: *[MAA02]*
- **Severity** – assessment of extent of loss (**How bad**)
  - Harm - deaths / injuries
- **Likelihood** – the likelihood of suffering that loss (**How Often**)
  - Rate of occurrence often expressed as frequency or probability
- **Risk** – Is a measure of exposure to possible loss and it combines the severity of loss (how bad) and the likelihood of suffering that loss (how often) *[MAA02].*

Risk (Classification) Matrix

- A RCM enables classification according to each Single Risk's assessed severity and likelihood. It is designed to enable hazards to be assessed on a like-for-like basis and to assist with the determination of appropriate levels of Duty Holder risk ownership.

		Severity			
		Minor	**Major**	**Critical**	**Catastrophic**
Likelihood	**Frequent**	M	H	VH	VH
	Occasional	L	M	H	VH
	Remote	L	L	M	H
	Improbable	L	L	L	M

[RA1210]

Safety Cases & Safety Assessments

Safety Case is a structured argument, supported by a body of evidence that provides a compelling, comprehensible and valid case that a system is safe for a given application in a given operating environment. *[Def Stan 00-056]*

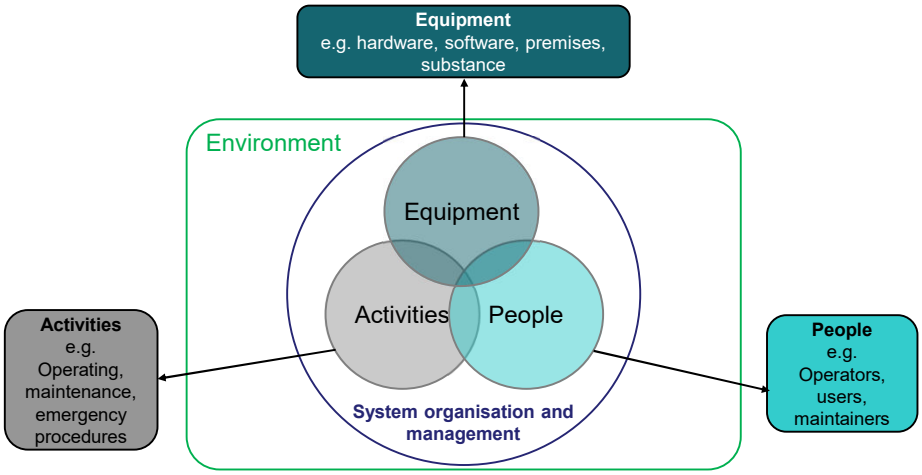
Safety Case Report is a document that gives a snapshot of the state of safety at the time it is produced. Summarises the arguments and evidence of the Safety Case and documents progress against the safety programme. *[Def Stan 00-056]*

Air System Safety Case is as per that of a Safety Case but also includes: it is through-life pan-DLoD and addresses a combination of the physical components, procedures and human resources organized to deliver capability. *[MAA02]*

Equipment Safety Assessment (ESA) contains the structured argument that the system is safe for its intended use and that a specific DLOD has been considered in the context of the overarching Air System Safety. *[MAA02]*

Type Airworthiness Safety Assessment (TASA) contains the structured argument and evidence that demonstrates the "Air System is Acceptably Safe to Operate in-Service to Defined Limits within its Support Framework". *[AET Tool 16]*

System Context
- More than just Hardware & Software



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Have we Achieved the Learning Objectives?

- What is Safety?
- What is the difference between a hazard and an accident?
- When do we apply mitigation?
- What is meant by a Safety Case Report, Safety Assessment and a Safety Case?

Questions