

Get full version of 'Accident Investigation and Root Cause Analysis' book and PPT presentation for **\$25 Only**

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Incident Investigation And Root Cause Analysis

Learning Outcome



As a step-by-step guide, it will help all organisations, to carry out their own health and safety investigations. Investigating accidents and incidents explains why you need to carry out investigations and takes you through each step of the process:

Step one: Gathering the information

Step two: Analysing the information

Step three: Identifying risk control measures

Step four: The action plan and its implementation

Accident / Incident Statistics



As per HSE UK

In 2015/16

Accident / Incident Statistics



144 workers were killed as a result of a workplace accident.

Accident / Incident Statistics



An estimated **621,000** workers sustained a non-fatal injury at work according to self-reports.



Accident / Incident Statistics



Over **2.3 million** cases of ill health are caused or made worse by work.

Accident / Incident Statistics



“If you think safety is expensive, try an accident”

- Chairman of Easy Group

Accident / Incident Statistics



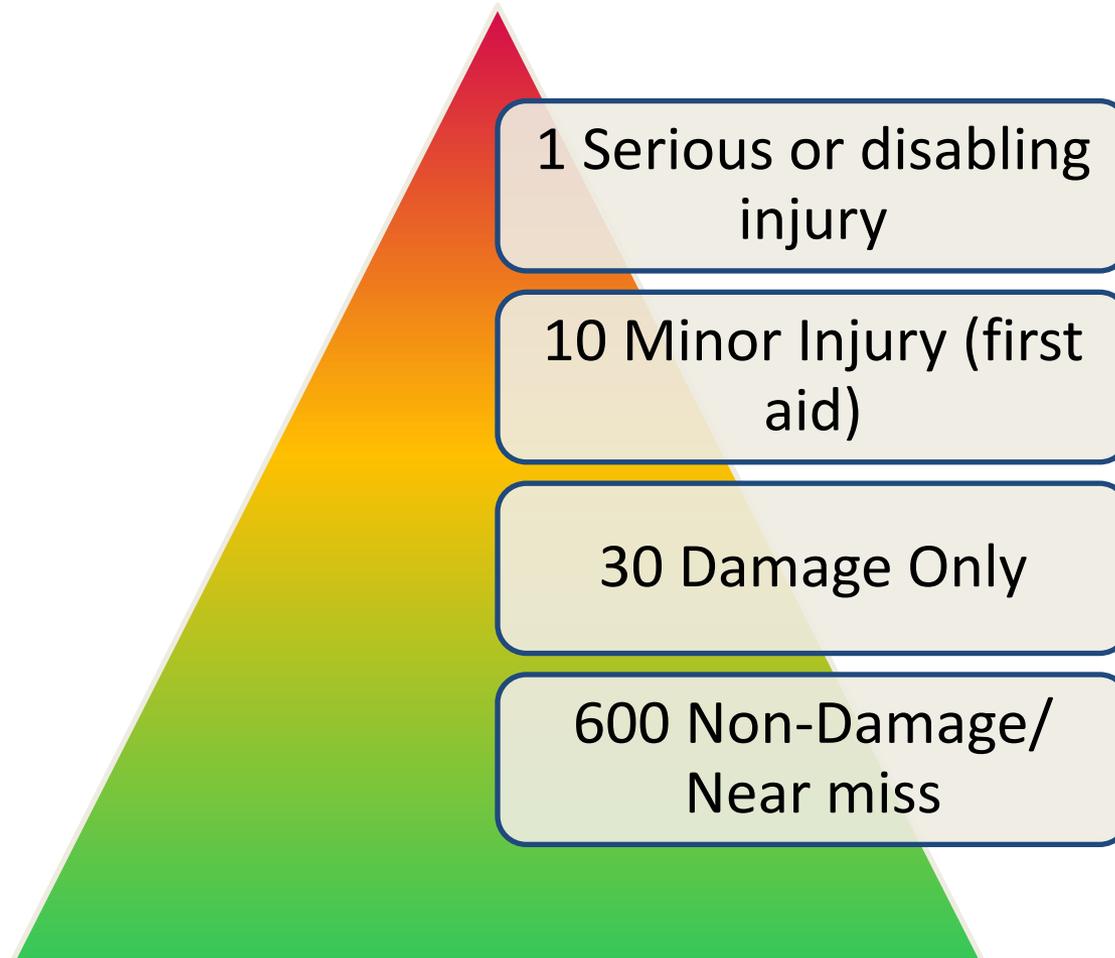
There are good financial reasons for reducing accidents and ill health.

Costings show that for every **£1** a business spends on **insurance**, it can be losing between **£8 and £36** in **uninsured costs**.

Accident / Incident Statistics



Triangle Model Of Incident Outcomes



Some Definitions

What is an incident?



This is an **unplanned**, **uncontrolled** and **undesired** event that results in no harm, but has the potential to do so.

Some Definitions



What is near miss?

However the definition of an incident is wider in that it also includes dangerous occurrences and near misses. A

near miss is an **unplanned event** that **did not result in injury, illness, or damage** - but had the potential to do so. Only a fortunate break in the chain of events prevented an injury, fatality or damage.

Some Definitions

What is near miss?



Some Definitions

What is an accident?



This is an unplanned, uncontrolled and undesired event which results in harm and/or property damage.

Some Definitions



What is dangerous occurrence?

One of a number of specific, reportable adverse events, as defined in the *Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995* (RIDDOR).



Some Definitions

What is hazard?



The potential to cause harm, including ill health and injury; damage to property, plant, products or the environment, production losses or increased liabilities.

Some Definitions

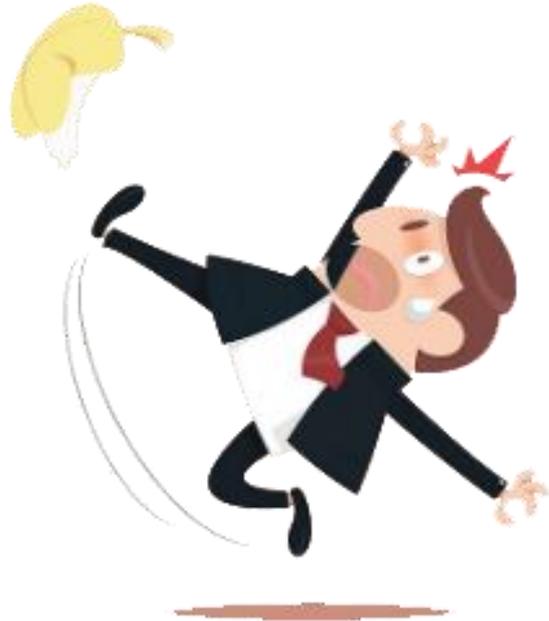


Risk

The level of risk is determined from a combination of the likelihood of a specific undesirable event occurring and the severity of the consequences (ie how often is it likely to happen, how many people could be affected and how bad would the likely injuries or ill health effects be?)

Some Definitions

Immediate cause



The most obvious reason why an adverse event happens, eg the guard is missing; the employee slips etc. There may be several immediate causes identified in any one adverse event.

Some Definitions



Underlying cause



The less obvious 'system' or 'organisational' reason for an adverse event happening, eg pre-start-up machinery checks are not carried out by supervisors; the hazard has not been adequately considered via a suitable and sufficient risk assessment; production pressures are too great etc.

Some Definitions

Root cause



An initiating event or failing from which all other causes or failings spring. Root causes are generally management, planning or organisational failings.



Reasons for investigating accidents



Incidents should be investigated to identify the **cause** to prevent recurrence.

Reasons for investigating accidents



Other reason for investigating accidents

Determining
the cost of
accidents

Establish legal
liability

Identify
trends

Improve
practices

Calculate
costs

Collect
statistical data

The causes of adverse events

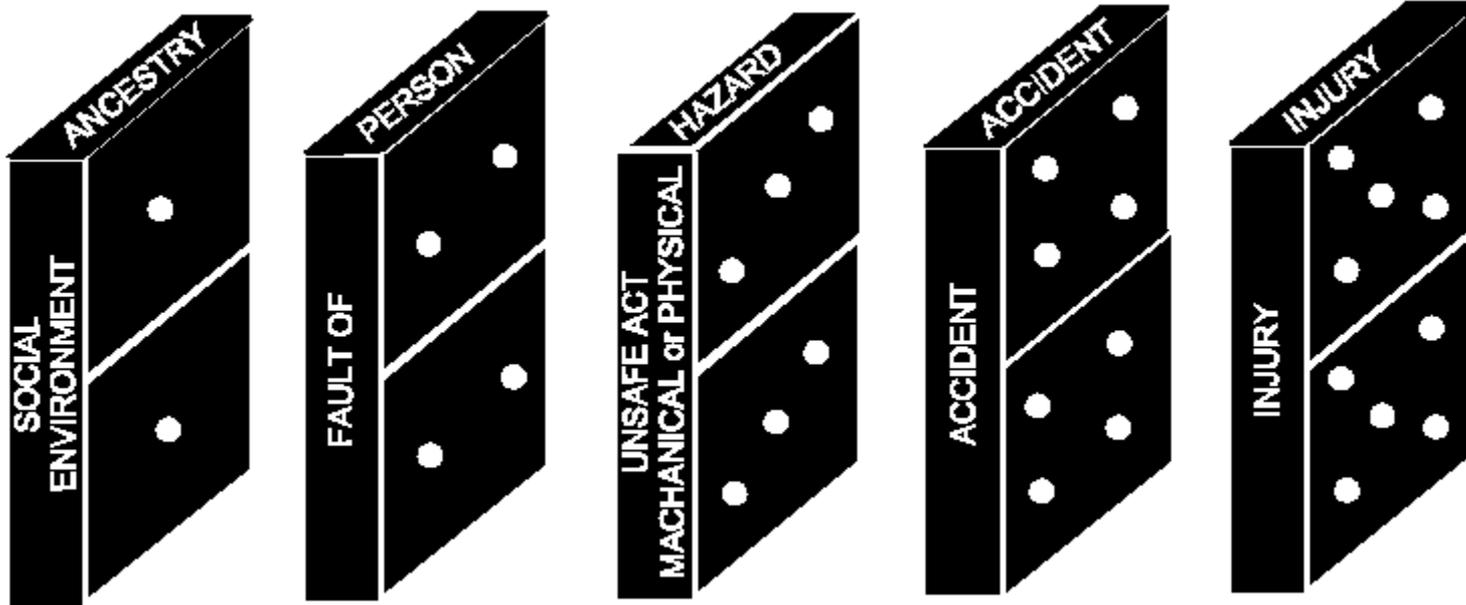


Domino theory :

In 1931, the late H.W. Heinrich presented a model known as the '**domino theory**' as this accident sequence was likened to a row of dominoes knocking each other down in a row.

The causes of adverse events

Domino theory :



The causes of adverse events



Domino theory :

According to W.H. Heinrich (1931), all accidents are caused:

88%
of by unsafe acts of people

10%
by unsafe actions

2%
of industrial accidents are
unavoidable

The causes of adverse events

Domino theory :

The sequence is:-

- Injury, caused by an;
- Accident, due to an;
- Unsafe act and/or mechanical or physical hazard, due to the;
- Fault of the Person, caused by their;
- Ancestry and Social Environment.

The causes of adverse events



Domino effect:

Adverse events have many causes. What may appear to be bad luck (being in the wrong place at the wrong time) can, on analysis, be seen as a chain of failures and errors that lead almost inevitably to the adverse event.

The causes of adverse events

Domino effect:

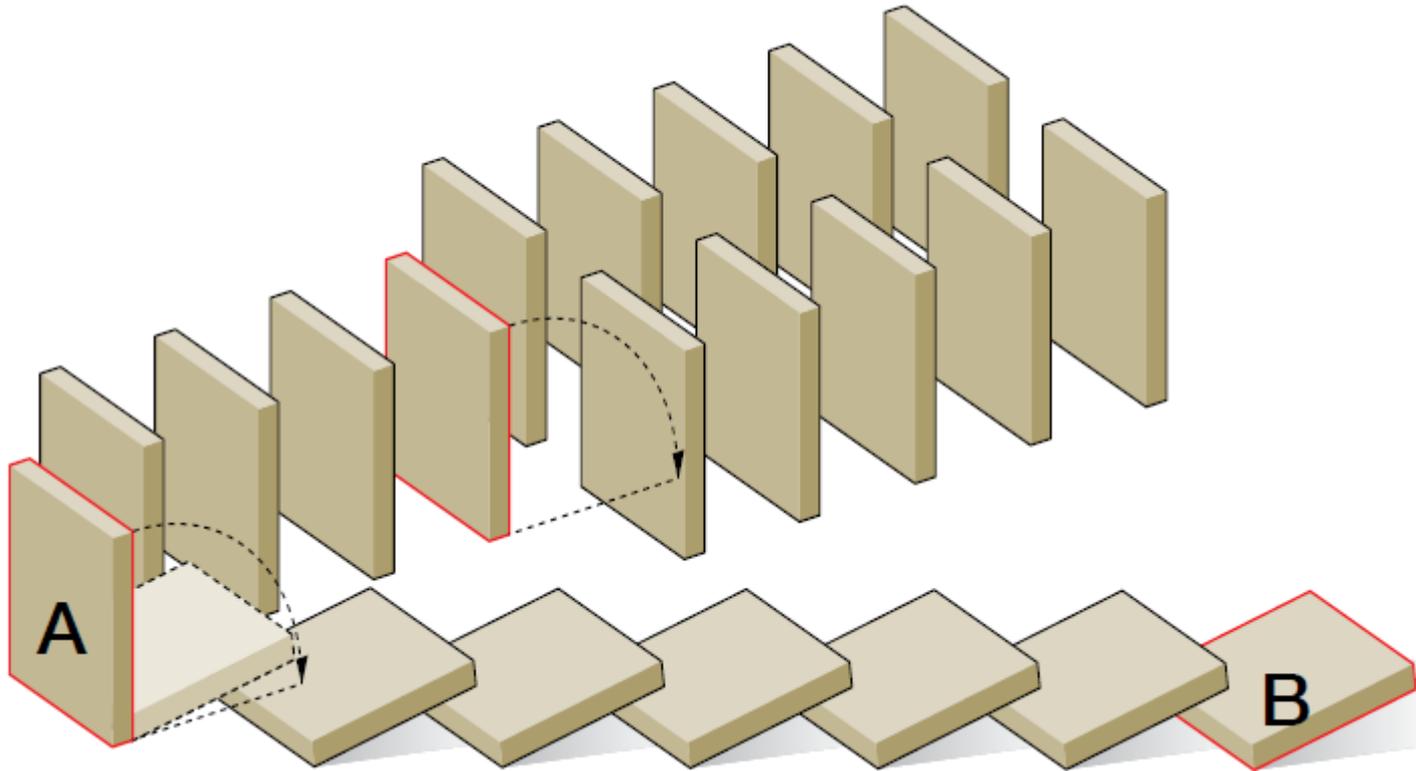
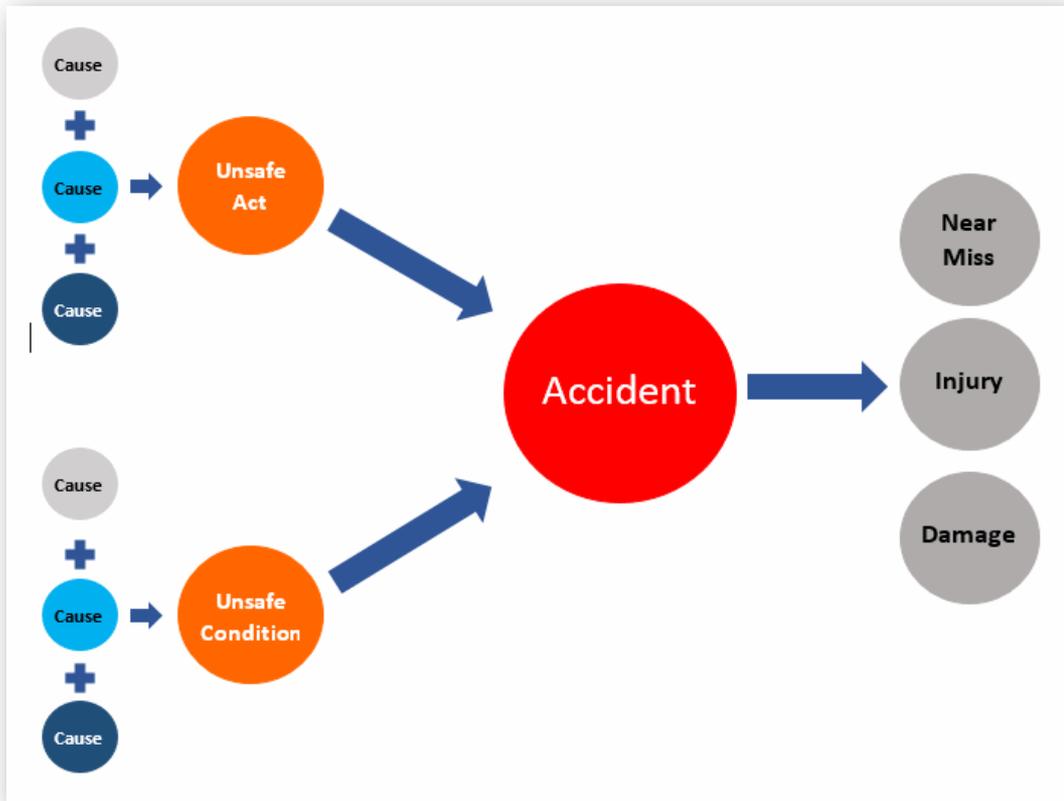


Figure - Sequence of dominoes

The causes of adverse events

Multiple Causation Theory



According to Peterson (1978), there is not only one causes behind to accidents. There are many factors, causes and sub-causes behind every accident. Under the concept of “multiple-causation”, the factors, causes, sub-causes combine together in random fashion and causing to accidents.

The causes of adverse events



Multiple Causation Theory



Unsafe Act

- Failure to warn others of danger
- Leaving equipment in dangerous condition
- Working without authority
- Disconnecting safety devices
- Using defective/ wrong equipment
- Failure to use or wear PPE
- Horseplay/skylarking

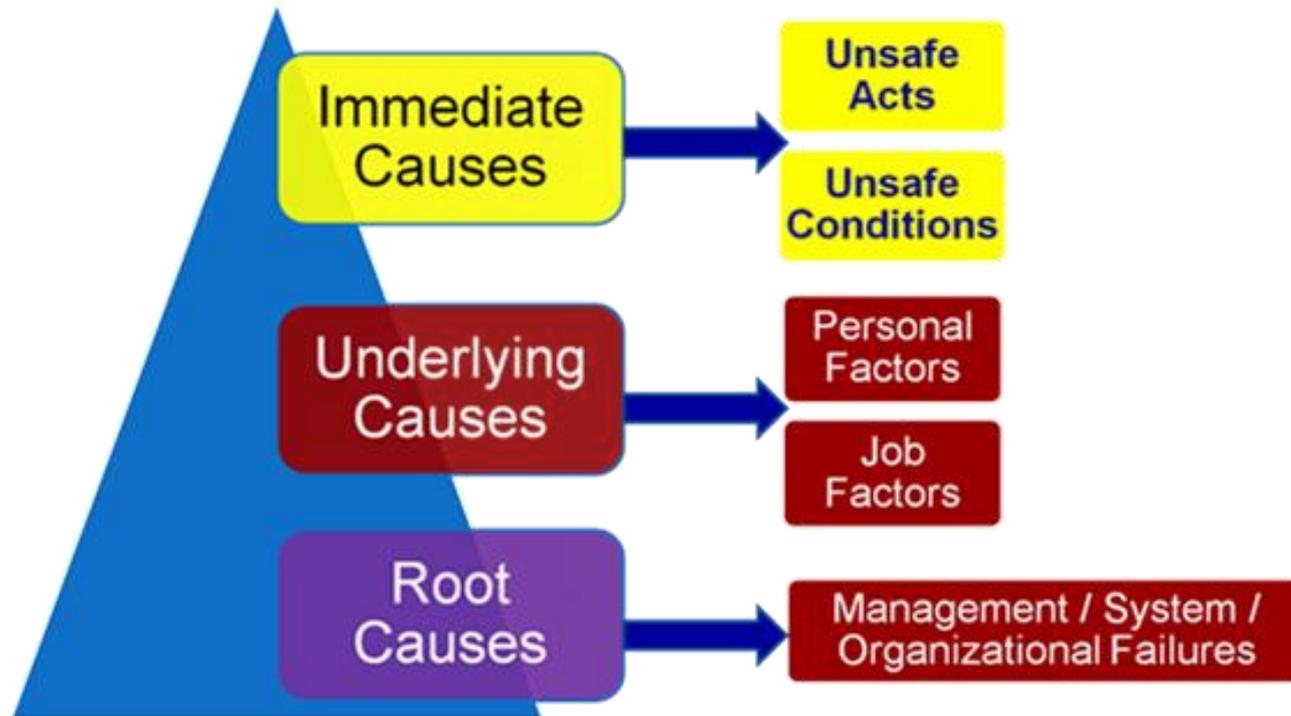


Unsafe Condition

- Inadequate or missing guards
- Fire hazards
- Poor housekeeping
- Noise
- Inadequate supervision
- Untrained staff

The causes of adverse events

Causes can be classified as:



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