Australian Government
Australian Radiation Protection and Nuclear Safety Agency

Incident Reporting

John Ward
Manager, Safety Analysis Section

Topics

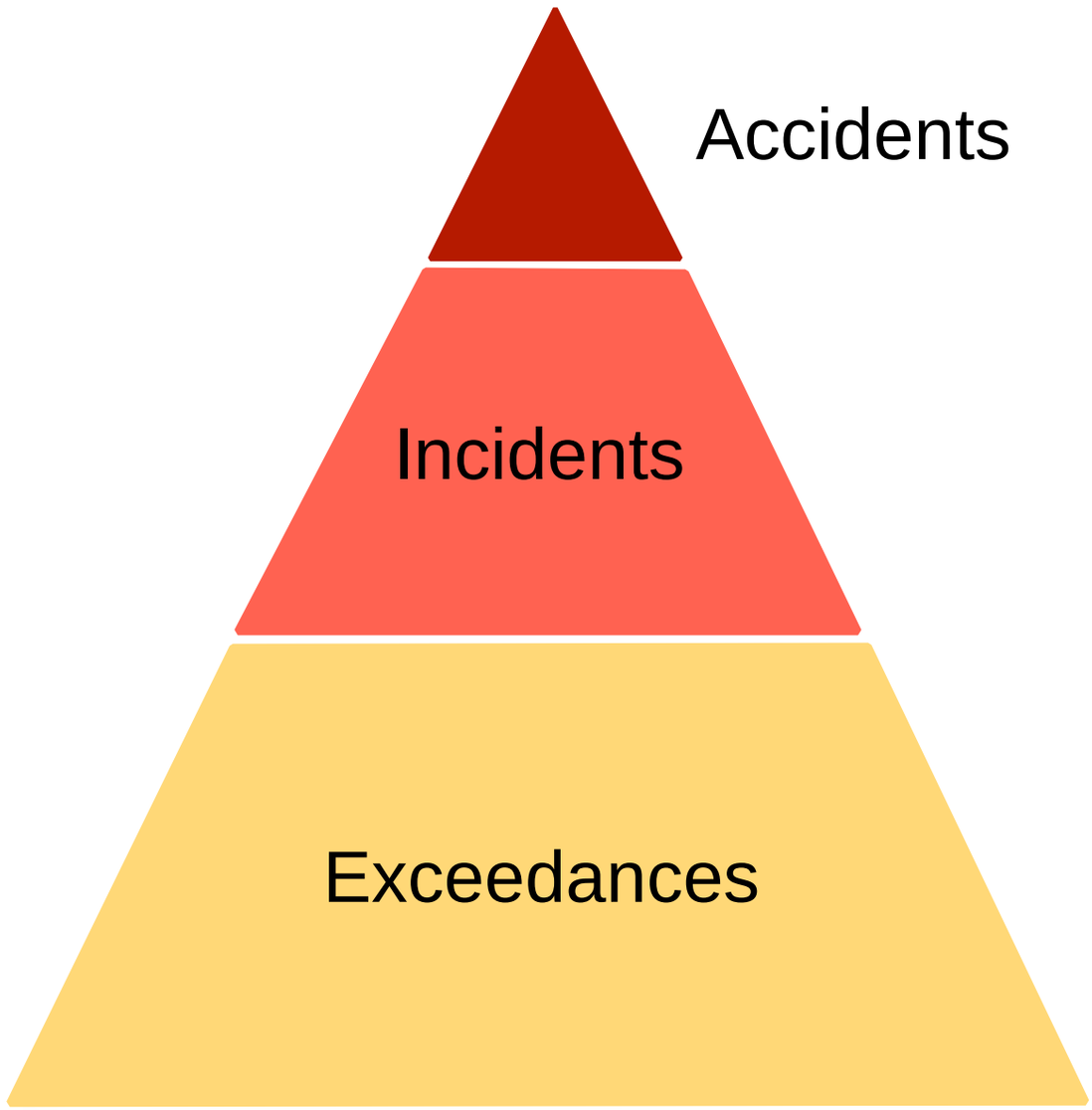
- The similarities in incidents and accidents
- A story of human error
- Requirements for an incident report
- How are we doing?
- Workshop Activity

Australian Government
Australian Radiation Protection and Nuclear Safety Agency

Incidents and Accidents - Similarities

Same Causes

Same Learning Opportunities



What is an Incident?

- Accidents, incidents and exceedances are all types of **Deviations From an Expected Outcome (DFEO)**
- All offer opportunities to learn
  - to avoid
  - to improve
- Learning from incidents and exceedances can help prevent accidents

Australian Government
Australian Radiation Protection and Nuclear Safety Agency

Australian Radiation Incident Register (ARIR)

- Objectives
  - to highlight specific sources, causes or procedures giving rise to potential hazards
  - to provide a National Focus for incident information
  - to provide feedback and guidance to users of radiation
  - to provide useful reports to regulators and advisory bodies

Australian Radiation Incident Register (ARIR)

- A force for good
  - no personal or organisational data is published from the data
  - no associated regulatory intervention
  - provides an opportunity to share and raise awareness of information leading to improvements in safety

Human or Engineering Failure?

- People have an inherent need to categorise
- Old school thinking is look for one or two root causes of an incident.
- We jump to automatically blame human error in the absence of a mechanical failure
- In reality mechanical failure have a human error component and human error is a function of the organisational and operational environment
- The distinction between human and engineering failure is therefore blurred
- Traditional root cause analysis helps to understanding why something happened - BUT SYSTEMIC THINKING IS NEEDED ON TOP

ARIR Report - Transport Incident

- 5 Cs sources packed into a Type A container in regional Qld
- Transported to Brisbane and packed into an overpack
- Loaded onto aircraft and flown to Germany via Dubai
- In Dubai package off-loaded for three days
- After unloading in Germany package set of radiation alarms in warehouse

ARIR Report - Transport Incident

- In Germany surface of overpack emitted 30 mSv/hr
- Inspection found

– lid of Type A container dislodged

– Sources displaced

– One source between lid and body of Type A container

– One source lying against inner surface of cardboard overpack

ARIR Report - Transport Incident

- Conservative dose estimates
  - 6.6 mSv to package handlers
  - 4.6 mSv to passengers seated directly above the storage location in hold (assuming same passenger(s) on both legs
- Reported at INES Level 2

ARIR Report - Transport Incident

- The report provides an detailed timeline
- The potential dose consequence is well defined
- The cause is listed as human error in packing the Type A container
- The future protections comprise of training for staff

The report is silent on what contributed to the human error, on any existing defences in place to identify the error, or on any wider precautions for the future.

Common contributing causes

- Leadership issues
- Operational attitudes and behaviours
- Organisational (business) environment
- Competence
- Risk assessment and management
- Oversight and scrutiny
- Organisational learning
- External regulation

These factors have been identified through a study into the causes of major disasters[1]. The same factors run through all accidents. Poor communication runs across each group.

[1] Prof. Richard Taylor, University of Bristol (UK), Safety Systems Research Centre

ARIR and Learning

- In 2010 there was a previous event where a type A container lid detached during transport and sources were dislodged.

- Effective incident investigation and reporting within the ARIR framework could help avoid future incidents like these.
- This is highly valuable for each of our organisations individually and can have benefits for the wider Australian community.

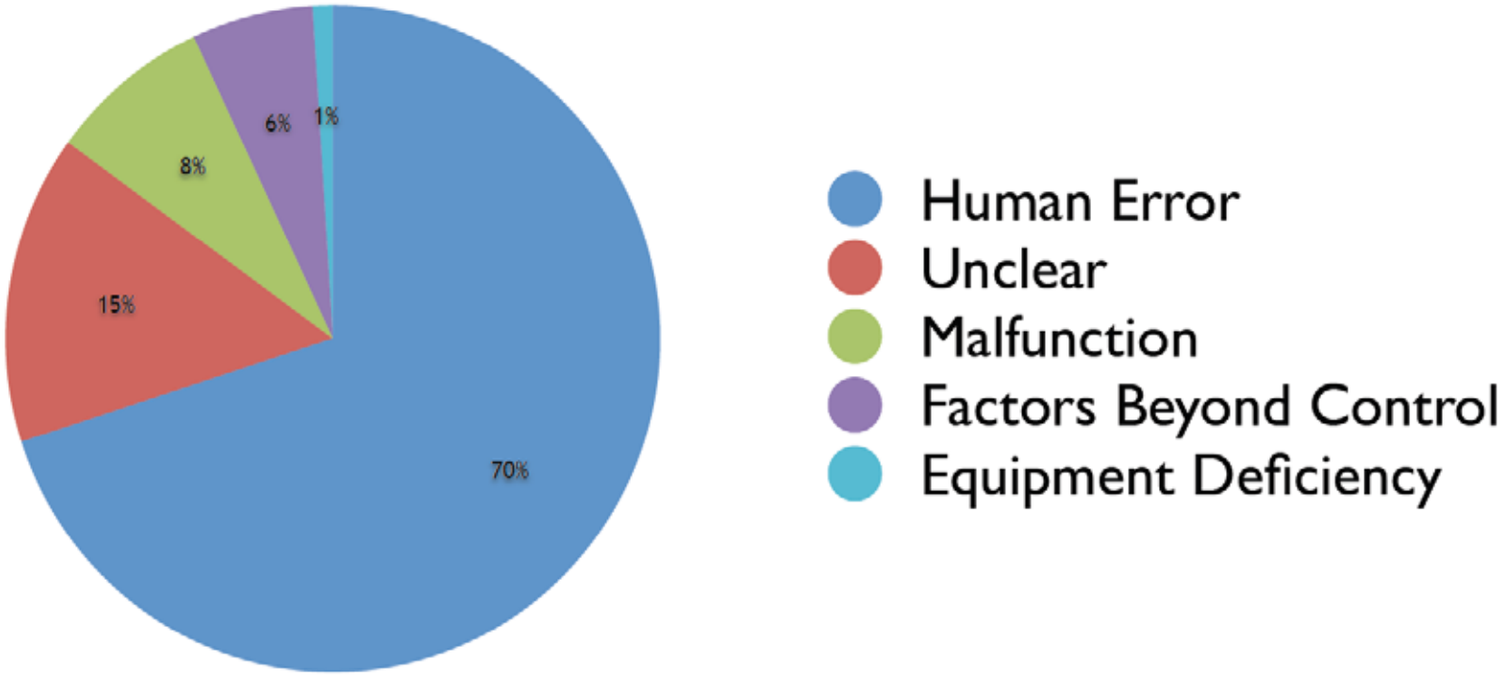
Human Error?

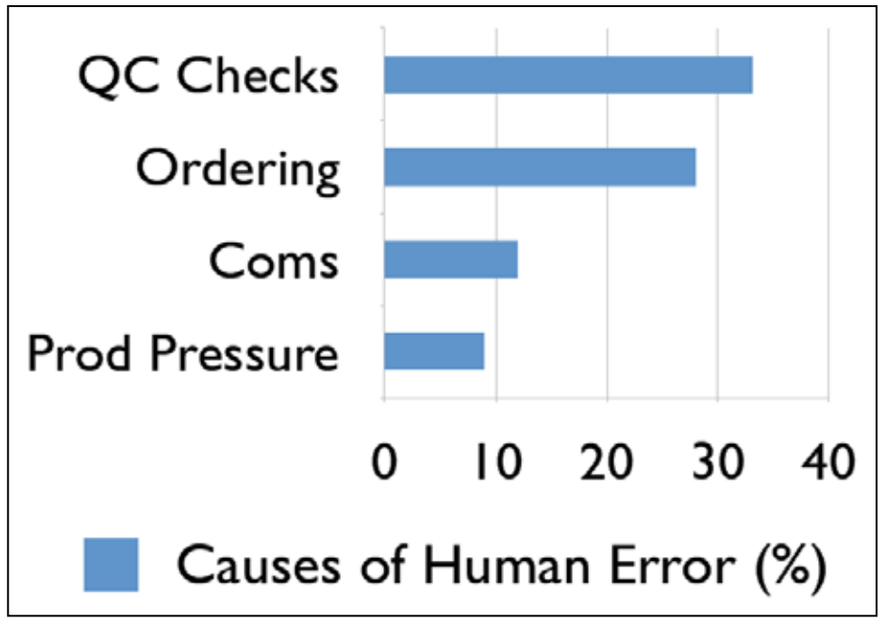
"Explaining one error by pointing to another (inadequate supervision, deficient management, bad design) does not explain anything. It only judges what you, in hindsight, think they should have done."

"Reprimanding errant operators may seem like a quick, rewarding fix. But it is like peeing in your pants. You feel relived and perhaps, even nice and warm for a little while. But then it gets cold and uncomfortable. And you look like a fool.."

Prof. Sidney Dekker
Safety Science Innovation laboratory
University of Griffith, Australia

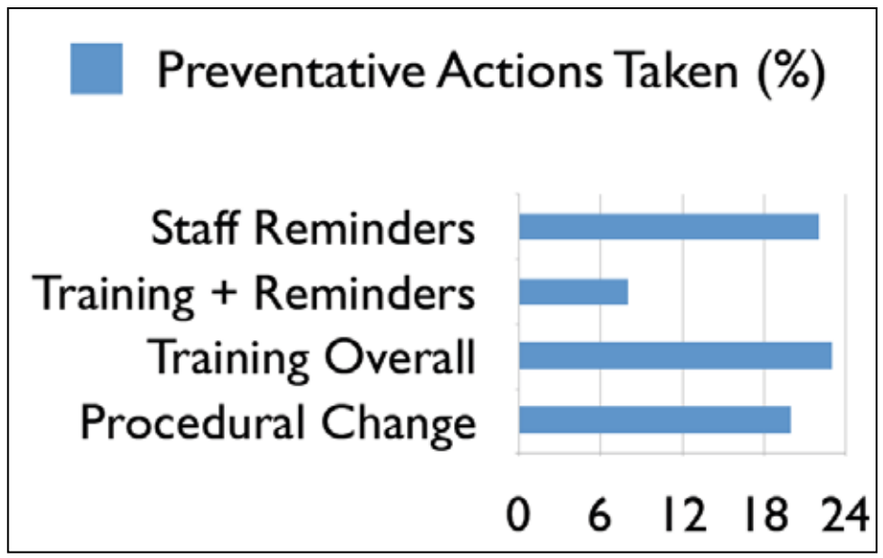
ARIR - 2012 Results





ARIR Reports indicate a tendency to attribute cause to front line workers

Workers are most often reminded to do the right thing and are ‘retrained’



Incident Reporting - Can we do better?

- Information to identify causal factors

- Context
  - Everything that was going on at the time
  - Timeline
  - Complex relationships between all parts
- Consequence
  - the outcome
  - the immediate consequence
  - the organisational reaction
- Retrospective Understanding
  - what really happened
  - what changes provide additional defences.

Safety is not a lack of accidents, it is the presence of defences

Incident Reporting - Can we do better?

- Workers do not cause failure; they trigger existing weaknesses in organisational systems
- Investigations should determine if:
  - other people may have done the same thing in prevailing circumstances
  - new defences can be introduced
  - existing defences can be improved
  - if learning can be applied outside of the immediate organisational area
- Different organisations need differently tailored incident reporting.
- Incident reporting should be used to:
  - be vigilant of where failures can occur
  - strive to reduce complicated operations
  - respond to low level signals seriously
  - respond to events deliberately

Incident Reporting - Can we do better?

- Different organisations need differently tailored incident reporting.
- Incident reporting should be used to:
  - be vigilant of where failures can occur
  - strive to reduce complicated operations
  - respond to low level signals seriously
  - respond to events deliberately

Conclusions and Messages

- DFEOs vary in consequence but have the same learning potential.
- We all need to avoid jumping at conclusions for cause.
- Human error should be the start of an investigation not the conclusion
- Safety is the presence of defences, not the absence of accidents

Australian Government
Australian Radiation Protection and Nuclear Safety Agency

THANK YOU

CONTACT ARPANSA

Email: John.Ward@arpansa.gov.au
website: www.arpansa.gov.au

Telephone: +61 2 9541 8350
Freecall 1800 022 333
General Fax: +61 2 9541 8348