



Australian Government

Australian Radiation Protection and Nuclear Safety Agency

The Australian Radiation Incidents Register

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What is the ARIR

- A database of radiation incidents from across Australia
- Commonwealth, State and Territory radiation regulators report to the ARIR
- Incidents are defined in NDRP
- ARIR is administered by ARPANSA Regulatory Services
- No identifying data is published from the ARIR



What is a Radiation Incident

Any unintended or ill-advised event when using radiation apparatus or radioactive substances which results in, or has the potential to result in, an exposure outside that normally expected

Each radiation regulator must require notification of incidents to the authority. The regulator must provide information on the incident to the ARIR





What is a Radiation Incident

- Incidents should not be confused with an accident under Regulation 46
- Incidents:
 - have lower consequences, but;
 - occur more frequently
 - are often precursor's of accidents
 - offer excellent learning and improvement opportunities
- Accidents are also reportable to the ARIR

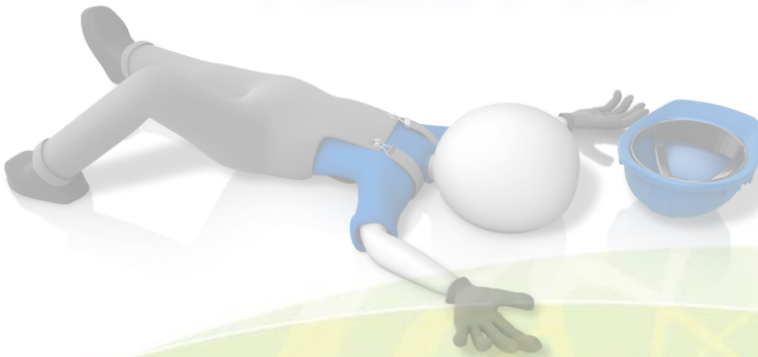




Objectives of the ARIR



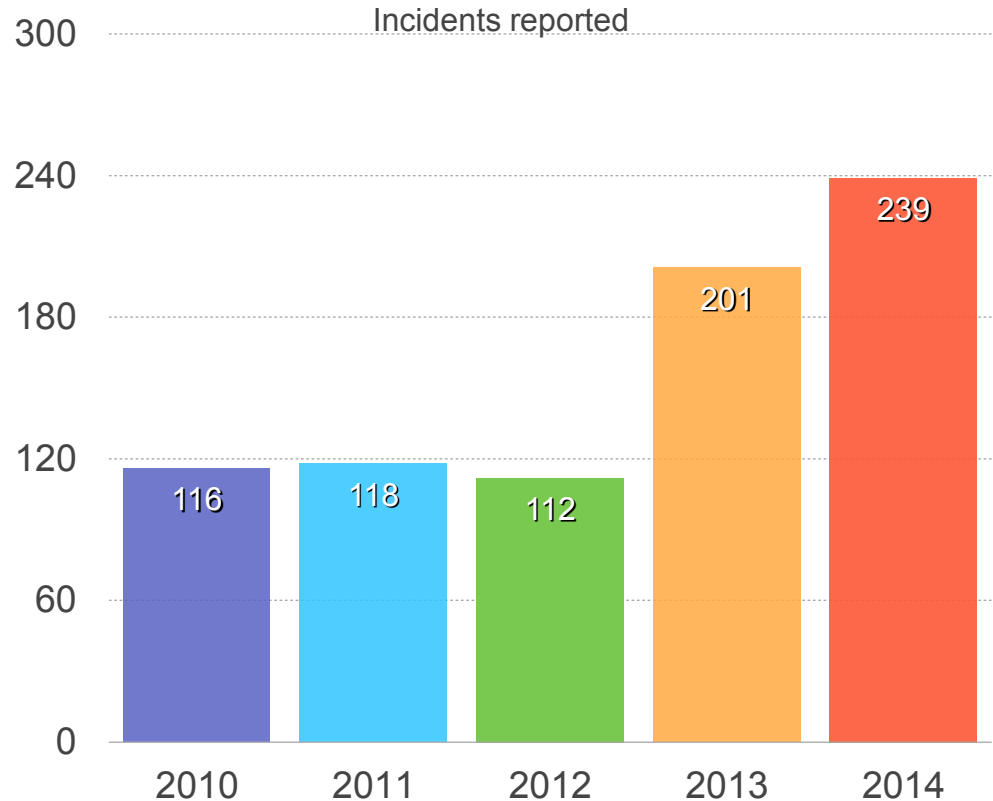
- To highlight specific sources, causes or procedures that give rise to a potential hazard
- To act as a national focus for radiation incidents and accidents
- To provide feedback and guidance to users on preventing or limiting radiation accidents
- To provide data and reports to regulatory and advisory bodies





Reporting Statistics

- ARPANSA has been actively encouraging improved reporting
- Increased reporting is a sign of improved reporting culture
- Reports from the commonwealth are steady - around 4 per year

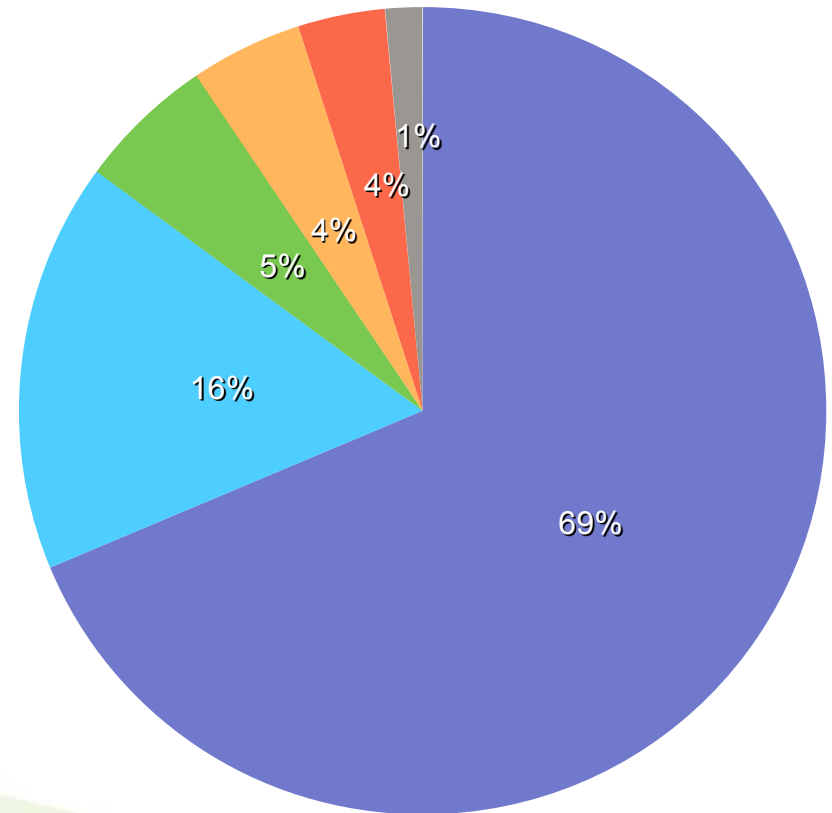


Reporting of 2014 incidents has not closed



Distribution of Primary Causes (2013)

- Human Error
- Unclear
- Equipment Malfunction
- Patient Error Beyond Control
- Complicated Medical Procedure
- Equipment Deficiency





Contributing Causes

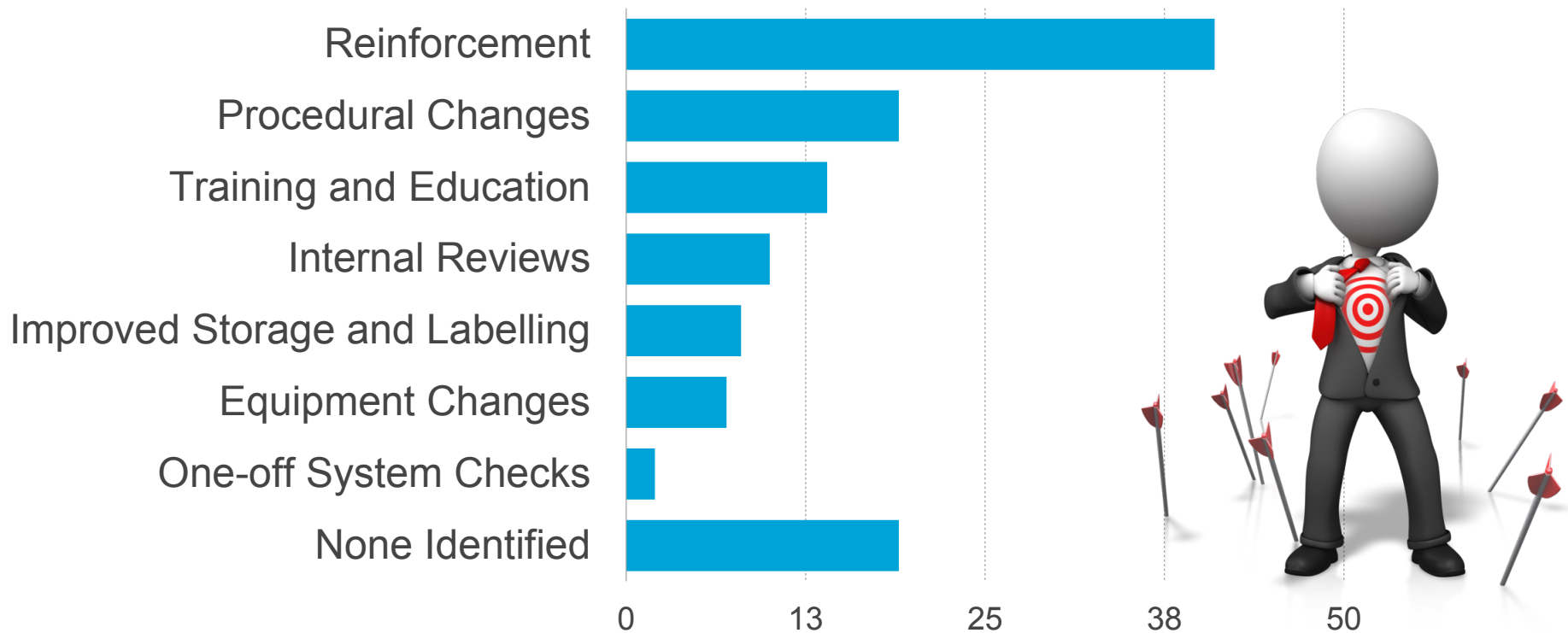


Identifying contributing causes takes effort

- Identifying contributing causes is very important
- Allows controls to be identified and put in place
- Effective controls can block the pathways to incidents and accidents
- **The majority of reports do not provide quality causal data**



Preventative Measures Applied (2013)



■ Percentage of incidents measure was applied to

More than one preventative measure may be applied



Borehole Logging Incident

- Radiation Exposure to Borehole Loggers and Drilling Contractors
- Cat 4 Source (54 Gbq Cs-137)
- Prosecution is ongoing
- Categorised as INES Level 3
- Occurred in 2014 in a field site





Borehole Logging Incident

- Logging tool brought to surface
- Source unknowingly left on platform whilst loggers packed away
- Work progressed around source
- Radiation warning signs were removed and drilling workers permitted access
- Drilling worker spotted and examined source



Borehole Logging Incident

- Drilling worker spotted and examined source
- Borehole logger examined and ID'd source. Passed it to colleague.
- Second Borehole Logger threw source to ground and evacuated area
- Borehole Logging Engineer recovered source to safe storage
- Period source exposed reported to be around 15 minutes



Borehole Logging Incident

- All personnel spent three days in hospital (supervision and tests)
- Discharged from hospital under medical supervision
- First operator experienced:
 - hair loss to lower leg after seven days
 - developed to rash then painful ulceration
 - appeared to be healing after around 40 days
- Various doses received by workers
 - Two exceeded dose limits
 - Estimated dose to First Operator estimated at between 4 to 13 Sv to lower leg
 - Medical specialist advice is that injury is consistent with a dose of unto 25 Gy to central wound and 15 to 20 Gy nearby



North Sea Incident

- An incident with similarities occurred in the North Sea in 2008
 - Radiation sources unknowingly left on platform
 - Employer prosecuted by UK HSE
 - 300k GBP fine (a record)
 - No injuries





North Sea Incident - Findings

- Failure in health and safety management system
- Inadequate risk assessment
- Insufficient instructions
- Insufficient training
- No procedure in place to require a worker to confirm by monitoring equipment that the source was correctly located
- Incident entirely foreseeable and preventable
 - risk were previously identified
 - inadequate controls were in place
 - should serve to remind employers and employees of importance of risk assessment and of constant vigilance



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THANK YOU



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ARPANSA's Holistic Safety Webpage

www.arpansa.gov.au/Regulation/Holistic