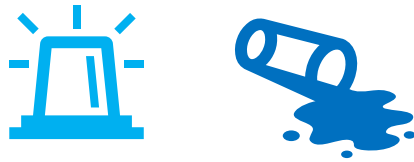


Radiation Accidents and Incidents

What does the University and HSE require?



Reporting radiation incidents/accidents

- What is and what isn't an accident?
- What actions are required under the regulations?
- When would we need to notify the authorities?
- How to report incidents

Actions required under the regulations



- Depending on the severity of the incident/accident, different actions are required
- Most incidents/accidents will be dealt with locally in consultation with the Safety Office, no notification of authorities necessary
- Some incidents/accidents require a formal investigation and notification of HSE, EA or ONR by the RPA
- Unless a minor spill, contact the SO for advice and dose assessments

What is a radiation accident?

IRR17, paragraph 238:

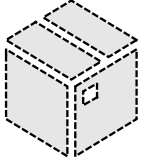
“...small contained spillages of radioactive material and other incidents that could not result in exposures of concern [...] are not radiation accidents. An exposure of concern is where the accident, or actions such as clean-up, resulted or could result in a significant exposure, i.e. an exposure which significantly exceeds normal planned exposures.”

Examples of unplanned doses:

- skin contamination or exposure to X-rays
- significant spill requiring closing-off area for decontamination

👉 If unsure contact us 👉

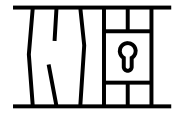
Notable incidents not directly resulting in a radiation dose



- Loss or suspected loss including during transport.



- Release or spill of significant quantities



- Unauthorised/forced entry to an area containing radioactive sources.

- Fires, floods or structural collapse of an area containing radioactive sources.



- Any unexpected delivery of radioactive sources to a department, or unexplained failure of an expected item to arrive.



- Any suspected loss or unauthorised interference with materials in a radioactive waste store.



Example 1: contamination – no dose



- Contamination found on the floor after S-35 work
- Low energy beta emitter, no external dose
- Contingency plan followed: screen for spread of contamination, incl. soles of shoes
- No contamination outside supervised area detected
- Spill cleaned-up carefully
- No skin doses received
- Cause of incident found to be leaky container



Example 1: contamination – no dose



What does IRR require?

- IRR 13(2)(d) If contingency plan arrangements were carried out the employer must analyse the cause of the incident and determine any required measures to prevent a recurrence.
- A record must be made and kept for 2 years
- AssessNet reporting system will cover this
- RPA review
- No reporting to authorities necessary

Example 1: contamination – no dose



Measures to prevent a recurrence - lessons learned

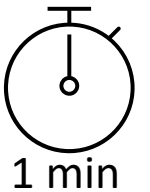
- does contingency plan require adjusting?
- is all equipment in good condition?
- was monitoring adequate to prevent spread of contamination?
- would PPE have provided adequate protection in case of personal contamination?
- ...



Example 2 – Accident resulting in potentially high skin dose



- Contamination of glove with P-32 after dispensing stock solution
- Contamination monitor off-scale
- Glove removed within 1 min
- No contamination underneath



Example 2 – Accident resulting in potentially high skin dose



- RPS informed who contacts the Safety Office and DSO
- The incident is logged on Assessnet
- further actions depend on dose received
- contamination or dose-rate monitor reading is most useful
- do you know the monitor response to your radionuclide?

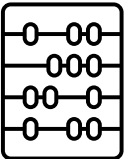


Example 2 – Accident resulting in potentially high skin dose



If no measurements are available:

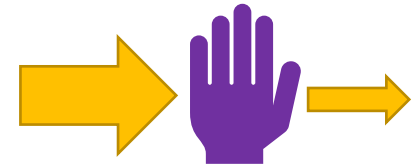
- Estimate dose based on volume of droplet and time of contact
- 50 ul droplet of 0.37 MBq/ul solution results in a skin dose of 583 mSv/min.
- Overexposure?!
 - > immediate investigation by SO and notification to HSE and Occupational Health of potential overexposure.



Example 2 – Accident resulting in potentially high skin dose



Refinement of dose estimate – attenuation by glove



- assuming thickness of 0.1 mm and 1g/cm^3 density of glove material
- 2.5-fold attenuation of dose from P-32 (Varskin calculation)
- revised dose estimate of 230 mSv
- still actionable dose (under reg. 24; over 30% of a dose limit and exceeding skin dose investigation level of 50 mSv)
- requiring immediate investigation but not immediate notification

Example 2 – Accident resulting in potentially high skin dose



Investigation



- Interview persons involved
- Are control measures adequate?
- Is the contingency plan suitable?
- Was the contingency plan followed?
- Are systems of work ensuring doses are kept ALARP?

Example 2 – Accident resulting in potentially high skin dose



Improvements to procedure – suggestions?

- Lower activity concentration?
- Smaller volume/aliquots?
- Frequency of contamination checks?
- Remote handling tools?
- Shielded racks?



With good control measures in place, are accident doses unlikely to exceed levels requiring classification?

Example 2 – Accident resulting in potentially high skin dose



Reporting after formal investigation



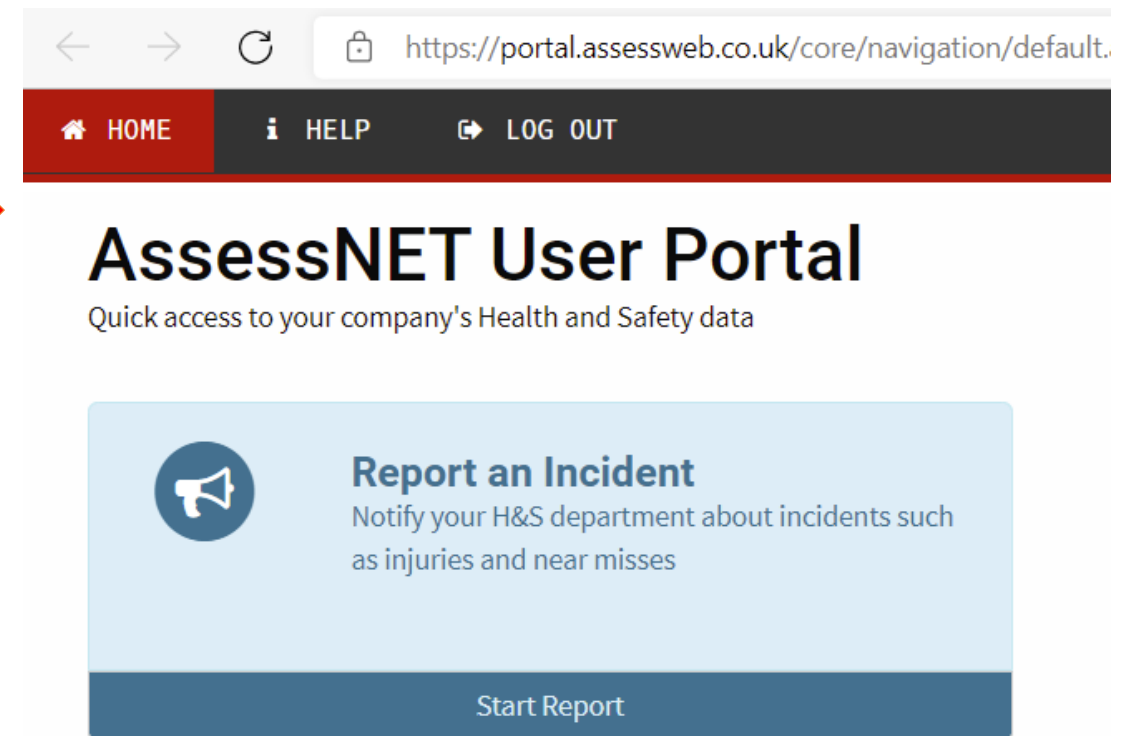
- RPA will investigate and summarise in report
- HSE and affected person will be informed of the outcome
- Report kept for 30 years and until affected person is 75
- also logged on AssessNet, but reported directly to HSE (not RIDDOR)
- Exemption: failure of certain irradiators to de-energise or retreat to safe position is RIDDOR reportable, irrespective of any dose received

Reporting incidents on AssessNet



<https://www.safety.admin.cam.ac.uk/subjects/accidents-and-incidents>

Main System Access	Portal Access
	
Who can use it Registered users (For example, DSOs and Departmental Administrators) should always access the main online reporting system by clicking on the icon above.	Who can use it All unregistered University personnel who wish to report an incident (however major or minor) should do so using the portal. This can be accessed by clicking on the icon above.
Training and guidance available You can access: - AssessNet Training Manual for Registered Users (DSOs and DAs) - Further Questions by the DSO for Portal Users (Word) - Further Questions by the DSO for Portal Users (pdf)	Training and guidance available You can access: - Portal Users Step-by-Step Guide - Guidance notes for completing University Accident/Incident Online Reports - Further Questions by the DSO for Portal Users (Word) - Further Questions by the DSO for Portal Users (pdf) - Assistance from your DSO



← → ↻ <https://portal.assessweb.co.uk/core/navigation/default.>

HOME HELP LOG OUT

AssessNET User Portal

Quick access to your company's Health and Safety data



Report an Incident

Notify your H&S department about incidents such as injuries and near misses

Start Report

Reporting incidents on AssessNet



- you should already have informed the SO radiation team and your DSO if unplanned exposures/incident happened
- once you have dealt with the immediate aftermath of an accident, submit an incident report without delay
- log incident as a “near miss” unless there is also an injury
- incident type can be changed by DSO
- DSO will supply further detail in consultation with RPS