



## Report from a UK incident

### Source fell out of shielding container – level gauge in a quarry

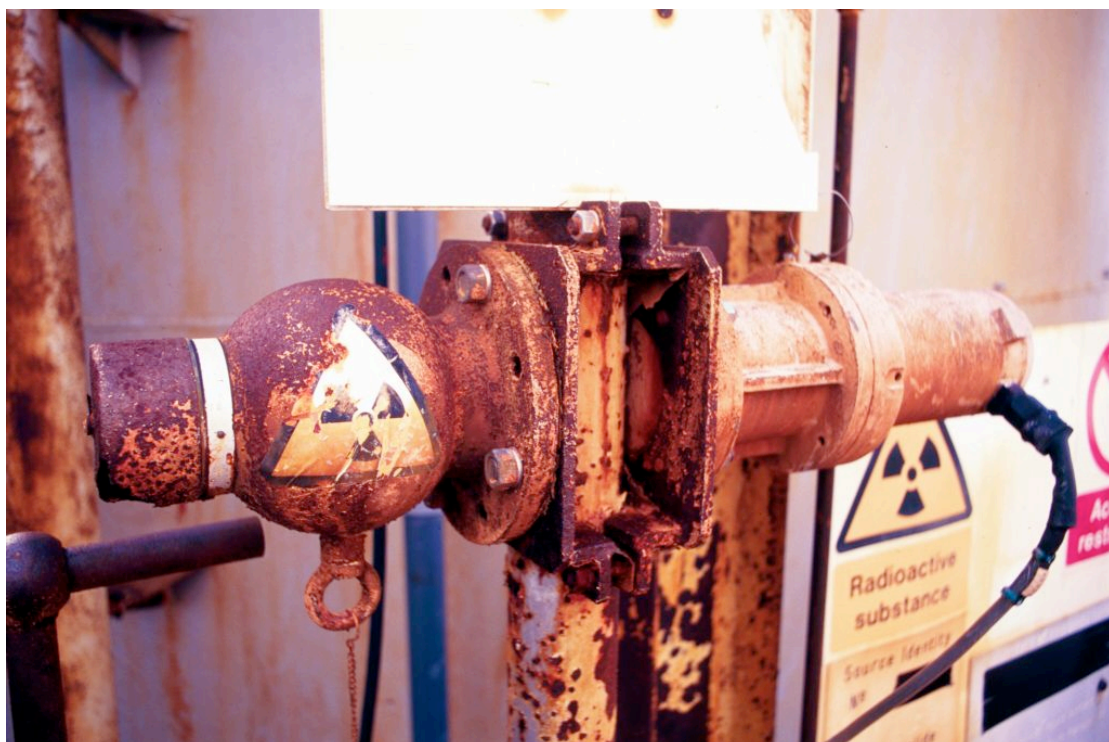
#### Description of the incident

A plant operator at a quarry found components of a caesium-137 level gauge lying on the ground beneath the equipment in which it was installed. Without appreciating the risks, he picked up the unshielded source and other parts of the gauge and carried them to his control room.

In the meantime, the site radiation protection supervisor discovered that the gauge had failed and set about locating the source. It was eventually tracked down to the control room, where it had been kept for two days. When the supervisor found the source he immediately threw it to the ground below the control room and then buried it in a nearby earth bank. The area was coned off and the supervisor contacted the appointed radiation protection adviser.

The adviser attended to recover the source into a lead pot and supervise its transportation to the site source store. A leak test was carried out, which demonstrated that the source capsule was intact.

Investigations found that the cover to the source housing had become loose over time, as it was installed on equipment that was subject to vibration. The cover was normally held in place by two bolts and when these became loose the source was able to fall out. The plant operator was not aware that the equipment was radioactive, or of the risks of picking it up as he had not received any training and was not aware of the local rules.



## Radiological consequences

The activity of the source was 1.85 GBq. Dose estimations were made by the adviser using measurements taken from the unshielded source.

	Hand	Whole body
Plant Operator	300 mSv	3 mSv
Supervisor	50 $\mu$ Sv	4.4 $\mu$ Sv
Adviser during recovery	< 10 $\mu$ Sv	< 10 $\mu$ Sv

## Lessons learned

1. The suppliers of the gauge should have ensured it was fit for purpose and designed in such a way as to prevent the bolts working loose.
2. The site should have ensured that source location checks included a check of the condition of the gauge. Remedial work should have been carried out before the gauge became loose and the source was able to fall out.
3. All staff working in the vicinity of equipment containing a source of radiation should receive awareness training concerning the potential risks. They should also have been asked to read the local rules. In particular, they should be made aware of the contingency plans and the importance them being properly implemented should any defect or other incident arise.