



Report from a UK incident

Contractor exposed to radiation during level gauge refurbishment

Description of the incident

A contractor, employed to replace level gauge mounting brackets, was exposed to gamma radiation when a gauge was removed from a vessel whilst the shutter remained open. The gauge contained a 111 GBq caesium-137 source.

Prior to the commencement of work it was stated that an instrument technician employed by the site operator 'had closed the gauge shutter' in accordance with the company's permit to work scheme. Owing to an administrative error, the shutter of the wrong gauge was closed and consequently the contractor removed from the vessel a gauge with an open shutter.

The gauge was set down on a walkway with the primary radiation beam directed towards the lower half of the contractor's legs. The contractor worked for approximately 30 minutes in close proximity to the gauge, before the incident was discovered.

The Radiation Protection Supervisor and subsequently the Radiation Protection Adviser were contacted and a dose investigation carried out. It was recognised during the investigation that the identification system used for the gauges was ambiguous.



A typical caesium-137 level gauge in position

Radiological consequences

Using pessimistic assumptions regarding the occupancy and proximity of the contractor, the doses received by the contractor was estimated to be 16 mSv to the lower legs, and 1.6 mSv to the whole body.

Lessons learned

1. There should always be an exchange of safety information between the site operator and the contractor prior to the commencement of any work. This at the very least should include:
 - (i) the contractor giving a description of the proposed work,
 - (ii) the site operator providing information on the operation and hazards associated with the gauge; this should include an exchange of local rules.
2. A radiation monitoring instrument should be used whenever a gauge is removed from its mounting to confirm that the shutter is closed and the source is fully enclosed (source capsules have been known to become uncoupled from the external shutter mechanisms) The person carrying out the check should be trained in the use of the monitor.
3. The source housing of gauges should be marked with a unique identification number (eg the source serial number), or other distinguishing mark. If such an unambiguous mark had been present in this particular case, the correct source shutter would have been closed.