



Report from a UK incident

Gamma NDT source disconnected - radiographers exposed between radiographs

Description of the incident

A two-man team was carrying out gamma radiography on a construction site using a 1.85 TBq iridium-192 source in a remote exposure container. A set of three exposures had been completed before radiation monitoring by one of the radiographers revealed that the source had remained at the end of the guide tube after the final rewinding.

At the end of each exposure, the end of the guide tube would have been repositioned and the films changed. The lead radiographer would have been very close to the source during these operations. The contingency plan to recover the source was put into action by the radiographers. Both operators were wearing personal dosimeters but not alarm monitors.

Subsequent reconstruction of the incident suggested that the source pigtail had not been connected to the wind-out cable by the radiographer, and had simply been pushed to the end of the guide tube where it had remained for all three exposures.

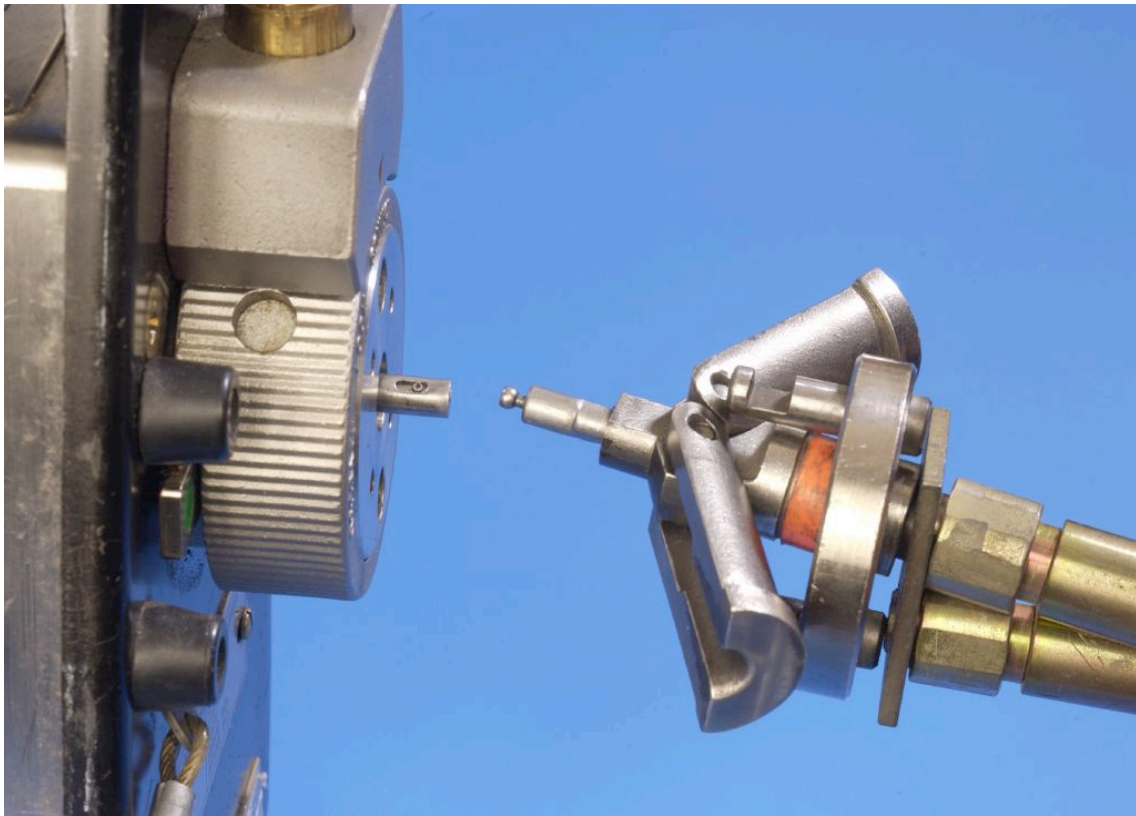
Radiological consequences

Whole body doses were obtained from the personal dosimeters worn by the two radiographers. A reconstruction of the incident was carried out in order to estimate doses to the hands:

Lead radiographer:	Whole body 43 mSv	Hands 200 mSv
Second radiographer:	Whole body 2.9 mSv	Hands 3 mSv

Lessons learned

- Radiation monitoring **MUST** be carried out after **EVERY** exposure. Had this been carried out, doses would only have been received during the subsequent source recovery, and would have been significantly lower.
- With modern gamma radiography projection containers it should be impossible to expose the source unless the source pigtail is connected to the cable (see photograph). In this particular incident this was not the case (although the connector dimensions were within the manufacturer's specifications, and the equipment was considered to be in good condition). Whatever the equipment type, care must always be taken when connecting the source pigtail to the wind-out cable and reliance should not be placed upon interlocking or similar mechanical mechanisms.
- Personal alarm monitors should always be worn during site radiography.



Photograph of gamma radiography source connector. In this example, the source cannot be exposed unless the pigtail is connected to the cable.