

STUDY CASE N° 2: INCIDENT IN INDUSTRIAL RADIOGRAPHY

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□ Description of the incident¹

A radiography remote exposure container, housing a 550 GBq iridium-192 source, was being used to examine a circumferential weld on a steel vessel under ‘open shop’ conditions, ie. a barriered off area of a factory. On completion of the exposure, the winding mechanism was used to return the source to its container. During this procedure the portable dose rate meter located at the winding position recorded a drop in the dose rate, and this was assumed to mean that the source had been safely returned to the container. However, when the equipment was used five days later the resulting radiographs were all blank, revealing that the source was missing from the radiography container; obviously the source had been lost. After a search the source was found near the location at which it was last used. Later investigation showed that the source had become detached from the drive cable, for some unknown reason, and had fallen unnoticed from the guide tube during dismantling. The dose rate meter had not been used correctly to ascertain that the source had fully returned to its container. The noted drop in dose rates at the winding position had arisen because the source had become detached from the drive cable close the source container, which shielded the dose rate meter from direct radiation from the source. The source was recovered in a controlled manner by the RPS. It was found that during the five days since the source had been lost 78 workers had been irradiated to some degree. Their estimated doses are given below. The source was in a readily accessible position and had it been picked up during the five days that it was missing this would have led to radiation burns and, possibly, fatalities.

| Number of staff | Dose Range (EDE – mSv) |
|-----------------|------------------------|
| 2 | 100 – 150 |
| 4 | 30 – 100 |
| 9 | 11 – 30 |
| 63 | < 11 |

□ Lessons learned

- 1) The monitor should have been taken up to the container to verify the source was fully in the safe position.
- 2) Monitoring should have been carried out when the container was returned to the source storage location. This would have identified much sooner that the source was missing

¹ Incident taken from IRID (Ionising Radiations Incident Database)