



Report from a UK incident

University technician contaminated with Cs-137 from pressurized vial

Description of the incident

A laboratory technician working in a university was attempting to extract part of a caesium chloride solution from a vial. The solution contained 150 MBq of caesium-137, and had been redundant for some time. The university department had an authorisation to dispose of liquid radioactive waste, but at lower activity limits. Therefore, the department has decided to dispose of the material in a series of smaller fractions over several months.

The work was carried out in a controlled area, and the technician used lead bricks to shield the gamma radiation from vial. However, the work was done on a laboratory bench, rather than the fume cupboard which would normally be used for such work.

The vial was capped with a rubber septum and the researcher used a pressure relief needle. However, when this was attempted a spray of was being released from the vial (ie which had become slightly pressurised) which hit the technician in the face. A significant factor in this incident was the age of the vial, which had led to the hardening of the rubber septum, and contributed to the pressure build up within the vial.

Radiological consequences

A few days after the incident, the university arranged for the technician to undergo whole body monitoring to estimate the intake of caesium-137, and hence the internal dose. From this, it was estimated that the technician had received a committed effective dose of 140 mSv.

Lessons learned

- In this incident, the vial containing the solution had deteriorated leading to increased potential for incidents. It is generally bad practice to keep stocks of unsealed radioactive material for extended periods especially after they have been declared redundant. Where materials are to be retained for long periods, appropriate containers should be provided, and their condition periodically checked.
- When working with radioactive liquids, It is important that the risk of spills is properly assessed prior to the work, and appropriate protection measures put in place. Had this work been carried out in a fume cupboard (as was normally required), it is possible that the intake could have been avoided entirely.
- There is also a question about why the university had a redundant solution containing this level of activity when there was no ready means of disposal. Where practical, laboratories should only acquire radioactive materials for which there is an expected use, and ensure that any waste arising can be promptly disposed of via an authorised route.