

STUDY CASE N° 3: INCIDENT IN A UNIVERSITY LABORATORY

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□ Description of the incident¹

A university department had, for quite a number of years, a stock of caesium-137, in the form of caesium chloride solution. This was originally obtained for use in a teaching experiment, but this was discontinued many years ago and the solution retained for other possible uses. During a programme of disposing of old sources an incident occurred which gave rise to a significant intake. At the time of the accident the activity of the solution was 150 MBq. The solution was kept in a standard multidose vial with a rubber septum cap. The work was being undertaken on a shelf bench behind lead bricks. This was contrary to the local rules, which required the work to be done in a fume cupboard. The user reported that when a pressure relief needle was used, the force necessary to push through the age hardened rubber system was such that when it penetrated it went further and entered the solution. This gave rise to an unexpected spurt of liquid from the vial, which contaminated the face of the user. It is possible that through ageing or being left in the sun the vial had become slightly pressurised. The user decontaminated himself and the laboratory, but did not report the incident to the University authorities until several days later. Subsequently whole body monitoring measured the intake to be 10 MBq and the committed effective dose equivalent was estimated to be 140 mSv. It was thought that ingestion was the main intake route, but inhalation or absorption through the skin would not have altered the assessed dose. The intake amounted to a remarkably high 7 % of the original activity, which suggests the users face was close to the vial or other things also went wrong.

□ Lessons learned

- 1) The retention of radioactive solutions beyond their useful life provides an ongoing potential for accidents, especially where ageing of the containment is relevant.
- 2) The incident provides a classic example of why manipulations of this type and using this amount of activity were required to be, and should have been, carried out in a fume cupboard.
- 3) All incidents should be reported as soon as possible so that appropriate measures can be taken. Although it did not occur here, poor monitoring after the decontamination could have left a situation where the contamination was allowed to spread.

¹ Incident taken from IRID (Ionising Radiations Incident Database)