

Report from a French incident

Contamination of nuclear medicine department with I-131 due to patient sneezing

Description of the incident

In a dose administration room in a nuclear medicine department, a patient was required to drink 555 MBq of Iodine 131 (15 mCi) for a thyroid treatment (thyroid dysfunction). The administration of the radioactivity is carried out in the presence of a radiophysicist and a doctor.

At the same time as swallowing the product, the patient sneezed. Almost the entire product was projected onto the wall, on the doctor and, to a lesser extent, on the physicist. Also, a fraction of the iodine evaporated in the room.

Following this incident, the doctor's and physicist's clothing were removed and stored in the radioactive waste decay store. The dose administration room, which was located in a controlled area (equipped with an air extraction system with activated carbon filters), remained closed for the day and the window, which is at the end of the room, was opened in order for any gaseous iodine to be dispersed.

The competent person in radiation protection was also contacted. Suspecting that there had been contamination (the air and surface contamination levels had not been measured), the room was decontaminated (cleaning of the walls and floors and placement of contaminated furniture in the radioactive waste decay store).

One day after the incident, there was no residual surface contamination.

Radiological consequences

Urine analysis was undertaken on the doctor and the radiation physicist, and this gave negative results. The film badges indicated an exposure of less than the usual monthly values in this nuclear medicine department, that is to say, about 0.5 to 1 mSv.

Lessons to be learned from the incident

This type of incident must be considered likely to occur at some time during nuclear medicine. In this case, a contingency plan had already been prepared and was implemented, which limited the resulting risks from accidental contamination. The main lines of the procedure implemented by the nuclear medicine department were the following:

- The radioactive product is prepared in a cup contained within a sealed pot.
- Before the radioactivity is swallowed, there is a practice under the same conditions (cup, and pot and same quantity of liquid) so the patient is aware of the volume and procedures involved.
- To swallow the radioactivity, the patient sits in front of a table and wall covered by absorbent (plastic backed) paper. Thus, if the product is spit out, only this paper will be contaminated.

Also, to reduce the risk from air contamination, the procedures should facilitate rapid ventilation of the room (e.g. opening the windows quickly).

Finally, this type of incident may be avoided by administering the activity in capsule form (taken with plenty of water to reduce local irradiation of the stomach).