

 Report from a French incident**Phosphorus-32 contamination of a student in a medical research laboratory****Description of incident**

During a phosphorus-32 protein phosphorylation experiment, a student was contaminated; she was informed of the risks that the handling of high activity presents (a few dozen millicuries) but without any specific training or special protective measures.

While she was handling a vial containing a 1.11 GBq (30 mCi) solution of P-32, with latex gloves, the vial was made slippery by condensation, slipped from her hands and fell on the straw mat behind the Perspex protection screen. The condensation on the vial was due to the fact that it had been removed from a refrigerator shortly before handling.

Splashes of contamination were recorded on the nose (a drop), the laboratory coat, and the gloves.

The student quickly removed the contaminated clothing and washed her nose with soap and running water, after which contamination checks gave readings close to background.

Radiological consequences

The P-32 was diluted in 60 mL of aqueous solution, and the activity in contact with the skin contact was estimated to be approximately 1 MBq (30 μ Ci) for a period of 5 minutes at most.

Estimate of the dose equivalent received by the skin (nose):

- 1 kBq/cm² of P-32 on the skin gives a dose rate of 1.9 mSv/hr, therefore for 1 MBq we have 1.9 Sv/hr.
- For 5 minutes of exposure, the dose received by the skin would be 160 mSv (at the time of this incident, the annual regulatory limit for the general public was 50 mSv).

A urine sample carried out one day later did not reveal any significant activity.

Lessons to be learned from the incident

Vials containing a radioactive solution should be carefully handled, for example with suitable tongs to keep the vial from sliding from the handler's gloved hands (especially when the vial comes out of a refrigerator).

It is worth noting the importance of personal protective equipment (as was worn in this case) and the correct actions taken by the contaminated person who properly adhered to the procedures to be followed in the event of contamination, namely:

- Remove and dispose of contaminated clothing as solid radioactive waste,
- Rinse the contaminated areas of the skin thoroughly without rubbing
- Check for residual contamination after washing, and wash again if necessary.

This incident also demonstrates the importance of information and training that must be provided to all new students. Practical courses should also be provided to new.