Report from a UK incident

Exposure of electrical fitter during maintenance of cigarette manufacturing machines

Description of incident

An electrical fitter was involved with the maintenance of cigarette manufacturing machines which incorporated three strontium-90 radioactive sources. Since the source shutter had to be removed, the fitter decided that it was safer first to remove the three sources to the source store.

However, the cigarette machine was made by a different manufacturer to the machines the fitter was used to, and upon opening the source housing, he discovered that the sources were physically smaller than he had expected. This caused them to be more difficult to remove and subsequently attempt to refit. The fitter spent some time trying to refit the sources and was exposed to radiation during this time.

The sources were eventually refitted by the machine manufacturers using a special jig for source removal/replacement.

Subsequent investigations identified that the manufacturer's instructions, not available to the fitter at the time of the incident, recommended that owing to the difficult nature of the task, source removal and replacement should not be performed on this machine without using the specially designed jig.

A typical cigarette manufacturing machine

Radiological consequences

The fitter's extremity dosemeter, worn on the finger, recorded a dose of 60 mSv. The body dosemeter recorded 0.0 mSv (whole body and skin doses). Fortunately the sources were not damaged and hence there was no contamination.

Lessons learned

All employees must be familiar with and have received appropriate technical training for all equipment that they are required to work with. This is particularly important where they are undertaking work on equipment containing radioactive sources. They must also have access to any necessary manuals and have received radiation protection training.

Employees must also have read the local rules which must clearly address maintenance procedures and, where there is the potential for access to a radioactive source, the potential doses must have been properly assessed.