STUDY CASE N° 6: INCIDENT WITH RADIOGRAPHY IN SWEDEN

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❑ Description of the incident

At the site of a Swedish nuclear power station, some radiography companies had installed X-ray equipment in a building, which was not within the supervised area of the power station. In this incident a weld on a non-radioactive pipe was to be radiographed with an X-ray set to approve the welding method. The radiography equipment and the pipe were installed in a lead-shielded temporary radiography room, 3 x 3.5 m. The operator put the tube voltage to 155 kV and the exposure time to 5 minutes and checked, from the operators place (a panel outside of the room), that the required values were achieved. He then left the area for a few minutes.

A big warning sign was posted at the entrance to the temporary radiography room. However, this sign was also there when no radiography was effected and the people working in the area had got accustomed to this. The doors to the temporary radiography room were kept closed but not locked when radiography was performed.

Three persons entered the building looking for the operator but cannot find him. They wanted to have a look at the weld on the pipe. They looked at the operator panel and drew the incorrect conclusion that the radiography equipment was not in use. They subsequently open the door to the radiography room and called out for the operator. When no answer was received they entered into the room and inspected the weld on the pipe. The TLDs were worn at the height of their pockets because they also functioned as identity cards. However in the accident this meant that they were not in the useful beam of the X-ray set. The later reconstruction of the radiation field and the position of the three persons, together with the information from their dosimeters, showed that fortunately the incurred doses were in fact quite low; the effective dose equivalents were 0.5 mSv, 0.9 mSv, and 3 mSv respectively.

❑ Lessons learned

1) The incident provides a classical example of warning signs eventually being neglected if they are up all the time, even when no radiation source or radiation field is present.
2) A temporary radiography room of this type should always be monitored when radiography work is performed and a flashing lamp or some other clear signal should inform people that the radiography equipment is in use.