

Exposure of workers performing industrial radiography

Posted on: 24 December 2014

Event Date: 31 October 2013	Event Type: Other
Event Location: Slovenia, building construction site of thermo PP Šoštanj	INES Rating: 2 (Final)

In October 2013, four workers were exposed performing industrial radiography at a construction site of a thermal power plant in Slovenia. The dosimetry service reported the received doses of 27.5 mSv, 19.18 mSv, 2.62 mSv and 1.86 mSv in one month period. The received doses of all four workers exceeded a monthly dose constraint of 1.6 mSv. The total received annual doses of two workers were 32.25 mSv and 20.52 mSv exceeding the statutory annual dose limit for occupationally exposed workers of 20 mSv.

Two workers were exposed due to technical problems with one of the devices. It also seemed that personal electronic dosimeters were not working properly. Furthermore, they did not report about the incident to a radiation protection officer.

The exceeded monthly dose constraint of the other two workers was due to workload.

A few days after the event a technical support organization examined all the devices at the site and found out that additional device of the same type was not working properly.

The event is still under investigation. An authorised technical support organisation will perform the reconstruction of the event as well as the equivalent dose for extremities, lens of the eyes, other body organs exposed and the total effective dose will be assessed.

The overexposure of the workers indicates a low level of safety culture in the company.

Update from 23 December 2014: The technical support organisation has completed the reconstruction and calculated a dose for the most exposed worker of 4 Sv to the hand and 14 mSv for the lens of the eyes and 37 mSv to the whole body. For the second worker the calculated dose was 11 mSv to the

whole body. The uncertainties in the reconstruction of the event were high, especially the time of the exposure. The investigation shows that the workers did not use survey meters.

Deterministic effects have not been observed.

The devices were also examined by an authorised service company and it was found out that one of the devices probably got a hit, which was the main reason why the locking system did not work correctly. There was also some kind of dust found inside the devices.

Conclusions: The event shows a low level of safety culture in the company. Workers were overloaded (time pressure, several teams in the same area, two less experienced workers worked together) and they used the device that was probably hit and therefore the locking system did not work correctly. They did not use survey meters and their electronic dosimeters were not working properly. In addition, they did not follow up the Operation Manual and company`s instructions in case of an emergency. The radiation protection officer was not informed about the problems with the container.

INES Rating: 2 - Incident (Final) as per 24 December 2014

Impact on people and the environment

Release beyond authorized limits?	No
Overexposure of a member of the public?	No
Overexposure of a worker?	Yes

Impact on the radiological barriers and controls at facilities

Contamination spread within the facility?	No
Damage to radiological barriers (incl. fuel damage) within the facility?	No

Degradation of Defence In-Depth

Person injured physically or casualty?	No
Is there a continuing problem?	No

Justification of Rating

The event was rated as level 2 based on the criterion "Exposure of a worker in excess of statutory annual dose limits" in Table 3 of the INES manual (p. 21).

Contact Person for Further Information

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