

Enclosure 2

International Events

October 1, 2022 to September 30, 2023

The International Nuclear and Radiological Event Scale (INES) is a tool for communicating the safety significance of nuclear and radiological events to the public. Events reported through INES are displayed on the International Atomic Energy Agency (IAEA) public website for 12 months and then they are removed. This enclosure ensures that access to the event descriptions could be maintained throughout the operating experience (OpE) assessment period.

The OpE review group included international events in their review that met the following criteria:

- INES reporting level 2 through 7
- Marked as final (provisional are omitted)
- Events updated within the fiscal year, even if the event date is outside the scope of the assessment.
- Reactor events are omitted.

France, 21 Jul 2022, INES: 2

Contamination of an employee and the break room in a nuclear medicine department

On 26 July 2022, the SCINTIGARD radiology centre in Nîmes notified ASN of an incident concerning the contamination of a radiographer during the preparation of a scintigraphy examination, and dissemination of the contamination in the staff break room of the centre.

On 21 July 2022, the radiographer in charge of preparing the radiopharmaceutical drug syringes was in the break room when the alarm of the active dosimeter worn under his lead apron was activated. The subsequent verification confirmed contamination of the skin of one of the person's forearms. The radiographer immediately underwent the decontamination procedure prescribed for this type of situation.

The centre's radiation protection advisor then carried out radiation checks in the rooms and on the equipment; they revealed a low level of contamination in the preparation chamber and on the edge of the table in the break room. The chamber and table underwent surface decontamination, but the table edge could not be entirely decontaminated therefore the break room was closed and the still-contaminated area was cordoned off until the radioactive elements had decayed. Given their short half-life, these radioactive elements disappear naturally in a few days.

The event resulted more specifically from noncompliance with several internal procedures, including:

- utilisation of the shielded radiopharmaceutical preparation chamber without prior installation of the gloves that seal the chamber;
- failure to check for contamination on leaving the contamination-risk zone, which delayed detection of the contamination;

- and sub-optimal allocation of the radiographers' tasks during the vacation period.

The initial dosimetric results transmitted seemed to indicate that the dosimetric consequences of this event for the worker would be limited, as the received doses in principle remained below the maximum values set by the regulations. Based on these factors, ASN provisionally rated this event level 1 on the INES scale and published an incident notice on 12 August 2022.

The analysis of the radiotoxicological examinations of the radiographer's urine revealed internal contamination within the statutory limits. However, based on complementary analyses conducted by IRSN, the French Institute of Radiation Protection and Nuclear Safety, the equivalent dose to the skin received by the worker was estimated at more than 4 times the statutory limit of 500 mSv over twelve consecutive months.

Given that the statutory occupational exposure limit for the skin was exceeded in a single event, ASN uprated this event to level 2 on the INES scale (International Nuclear Event Scale, rated from 0 to 7 in increasing order of severity).

The centre sent ASN a significant event report with proposed corrective actions. These actions were analysed then discussed during an on-site ASN inspection on 6 April 2023. They raised no remarks from ASN. The centre was nevertheless informed that it must verify the medium- and long-term effectiveness of the corrective action.

Event Date: **21 July 2022** Event Type: **Other**
Event Location: **France, SCINTIGARD radiology centre (Nîmes)** INES Rating: **2 (Final)**

Reported by Autorité de Sûreté Nucléaire (ASN) of France on 09 Aug 2023. Last update on 09 Aug 2023

United States of America, 09 Mar 2023, INES: 2

Stolen Category 2 Source

On March 9, 2023, a radiography camera containing a 4.48 TBq (121 Ci) Ir-192 source was stolen from a licensee's truck. The radiography crew left the job site to get food at a restaurant. The radiographers failed to set the alarm on the dark room of the truck and left the key for the transport box of the radiography camera in the dark room. When they went back to the job site, they discovered that the device was missing. A search was conducted; however, the device was not found. Security footage at the fast-food restaurant was reviewed but the truck was not in the field of view of the cameras. Licensee personnel are conducting a search for the device, in coordination with Texas state regulators. Local pawn shops and scrap dealers will be notified about the theft. Local law enforcement was contacted. Based on activity, the source involved in this theft was Category 2. EN56396

Event Date: **09 March 2023** Event Type: **Radiation Source**
Event Location: **United States of America, Houston, TX / Statewide Maintenance Company** INES Rating: **2 (Final)**

Reported by Nuclear Regulatory Commission (NRC) of United States of America on 15 Mar 2023. Last update on 15 Mar 2023

Worker Exceeded Annual Whole Body Dose Limit

A nuclear medicine technologist received a whole body dose of approximately 0.113 Sv (11.3 rem) over the third quarter of 2022. The last seven years of dosimetry for this employee consistently show total annual occupational exposures at or near 10% of the annual limits. Employee's job duties did not change during the reported period. Inspectors conducted a reactionary inspection on January 9, 2023. No additional information to support the licensee's claims that the exposure was not valid was obtained during the inspection or through additional documentation provided to the State. Contamination seems unlikely as the dosimeters are screened for gamma radiation upon intake. The processor believes the badges were exposed to angular, shielded, or collimated radiation. Re-analysis supported the exposure reports. The licensee was cited for failing to report timely, failing to limit occupational doses to 0.05 Sv (5 rem), failing to restrict the employee's additional occupational exposures for the remainder of the year, and failure of the Radiation Safety Officer to initiate timely investigation. The dose to the nuclear medicine technologist exceeded the U.S. regulatory limit for the annual whole body dose of 0.05 Sv (5 rem). EN56300

Event Date:	30 September 2022	Event Type:	Other
Event Location:	United States of America, Waukegan, IL / Vista Medical Center East	INES Rating:	2 (Final)

Reported by Nuclear Regulatory Commission (NRC) of United States of America on 21 Feb 2023. Last update on 21 Feb 2023

Worker Exceeded Annual Whole Body Dose Limit

A radiographer received approximately 0.055 Sv (5.5 rem) when a radiography exposure was performed. The radiographer was between the source and the pipe being tested for approximately one minute. The distance from the 1.12 TBq (30.4 Ci) Co-60 source to the pipe was two feet. There were a total of three radiographers. The radiographer operating the source (the operator) stood behind a brick wall. The operator thought nobody was in the area, and it was safe to perform the exposure. Due to the loud environment, the individual who received the exposure was unable to hear his alarming rate meter. The exposed individual's self-reading dosimeter was off scale. All radiographers' dosimeters were sent to the licensee's dosimetry processor for reading. Results showed that the other two radiographers did not receive any significant exposure. All three individuals have been removed from duties that would require additional exposure. The dose to the exposed radiographer exceeded the U.S. regulatory limit for the annual whole body dose of 0.05 Sv (5 rem). EN56271

Event Date:	14 December 2022	Event Type:	Radiation Source
Event Location:	United States of America, Deer Park, TX / Acuren Inspection Inc.	INES Rating:	2 (Final)

Reported by Nuclear Regulatory Commission (NRC) of United States of America on 23 Dec 2022. Last update on 23 Dec 2022

United Kingdom, 25 May 2022, INES: 2

Exposure of a worker in excess of the statutory dose limit

The routine internal dosimetry monitoring program identified an unexplained positive result for one worker. Extensive investigation, including bioassay data analysis and a detailed review of working circumstances and facility state, concluded that the worker received an internal (effective) dose of 23.00 mSv in 2020 by inhalation of resuspended surface contamination of recently separated material.

In the United Kingdom the statutory annual (effective) dose limit is 20.00 mSv. Additional testing found no other workers to have been affected and there was no radioactive release.

Event Date:	25 May 2022	Event Type:	Fuel Reprocessing
Event Location:	United Kingdom, Sellafield Ltd. UK	INES Rating:	2 (Final)

Reported by Office for Nuclear Regulation (ONR) of United Kingdom on 19 Oct 2022. Last update on 19 Oct 2022