

INES Event Rating Form (ERF)

Version 1

Sender's Name: Todd Smith
Sender's Organization: Nuclear Regulatory Commission (NRC) (United States of America)
Event Title: Overexposure to worker due to iridium-192 contamination event
Event Date: 2019-10-22
Location / Facility: Albuquerque, New Mexico/ Spectratek
Event Country: United States of America
Event Type: Radioisotope Processing/Handling Facility

INES Rating: 2 - Incident (Provisional)
Rating Date: 2021-12-21

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

Event Description
 On October 22, 2019, a worker was manually drilling a container with 39.96 GBq (1080 mCi) of iridium-192 in ceramic tracer beads. The worker was not wearing eye or face shields. An accident occurred and material from the drilling struck the worker's face and eyes. Immediately after, the worker repeatedly washed their face and eyes. On the next day, a survey of the worker's face/eye area showed that contamination remained. Subsequent surveys over the next 103 days showed steadily decreasing amounts.
 The incident occurred at Spectratek in Albuquerque, New Mexico. The Radioactive Processing Laboratory has a dedicated ventilation system and is separate from the rest of the facility. This type of work would normally be performed in a lead-lined Hot Lab with a manipulator arm but the manipulator arm was out of service. Areas of the building were contaminated by the incident. The areas were decontaminated and surveys performed on October 23, 2019, were below background.
 A dose reconstruction of the incident was performed. The dose assessment report was shared with the regulator on December 17, 2021. The dose results indicated a committed effective dose equivalent to the worker of 14.8 microsieverts (µSv) (1.48 mrem), a shallow-dose equivalent estimated to be 6.63 Sv (663 rem), a lens dose equivalent estimated to be 0.1 Sv (11.5 rem), and an effective dose equivalent of 36 µSv (3.6 mrem). The dose results are provisional.
 The worker's shallow-dose equivalent was provisionally calculated to be 6.63 Sv (663 rem) which exceeds the annual dose limit (shallow-dose equivalent of 0.5 Sv (50 rem)) in 10 CFR 20.1201(a)(2)(ii). NRC EN55665

Rating Justification
 A Level 2 is warranted for exposure of a worker in excess of statutory annual dose limits. See Section 2.3.1 INES User's Manual 2008 Edition (IAEA-INES-2009) http://www-pub.iaea.org/MTCD/publications/PDF/INES-2009_web.pdf

Press Release Attached: No
Technical Document Attached: No
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