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Radiological Safety Assessment for Workers Involved in the Management of Radioactive Waste Generated from Remediation of Adaya Site

Under the Radiation and Nuclear Safety Directorate's program for ensuring safety during decommissioning of destroyed nuclear facilities and remediation of radioactively contaminated sites in Iraq, radiological safety assessment was conducted for workers involved in the management of radioactive waste generated from remediation of Adaya site. Adaya site (located at Al-Musil city, north of Iraq) is radioactively contaminated with uranium isotopes (mean contamination level 316629.2 Bq/kg for 238U(234mPa) and 21468.2 Bq/kg for 235U). Two computer codes were used for evaluating the potential radiological impact of radioactive waste management operations: SAFRAN (Safety Assessment Framework) version 2 (2020) was used for estimating radiation doses to workers involved in sorting, compaction, packaging and storage of radioactive waste, and TSD-Dose Version 2.22 (1998) computer code was used for estimating radiation doses to facility workers from waste-handling operations.

The results show that the potential radiation doses to workers involved in radioactive waste management activities vary depending on the tasks they perform (0.1 mSv/y from waste transportation, 0.7 mSv/y from storage, 0.047 mSv/y from receiving and sampling, 0.435 mSv/y from sorting, 0.288 mSv/y from compaction and 0.432 mSv/y from packaging activities). The total dose estimates to the workers as a consequence of radioactive waste management activities (2 mSv/y) are well within regulatory limit (20 mSv/y), indicating that it is highly unlikely that the receiving, sampling, sorting, packaging, transportation and storage of the produced radioactive waste resulted in significant radiological health impacts to the waste management workers.

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