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Occupational exposure in the management of radioactive waste in Syria

Introduction

Workers managing radioactive waste may be exposed to an important amount of radiation depending on the characteristics, radioactivity, and processing procedures of the waste. In Syria, a Radioactive Waste Management (RWM) facility was established, at the Syrian Atomic Energy Commission, to deal with the radioactive waste in the country.

Materials and Methods

Many radiation practices are carried out in the RWM facility and dealing with various types of sources: Co-60, Cs-137, Ra-226, Ir-192, Am-241, Sr-90,... The workers in the RWM are monitored using Harshaw TLD with two chips in the card, Harshaw TLD chips for extremities, and Harshaw TLD manual reader Model 4500. Whole body doses [Hp(10)] for 14 workers were recorded every two months from 2006 to 2022. Introducing recycling of disused sealed sources into the facility implied the measuring of extremities equivalent doses [Hp(0.07)] using finger ring dosimeter.

Results

The figure shows the cumulative recorded Hp(10) during the respective period of work for each worker. The average annual dose for all workers was below 1.8 mSv. The maximum recorded personal dose, during one monitoring period, was 3.3 mSv for worker 5. The measured extremities doses for each practice, usually not frequent, were below 3 mSv.

Conclusion

The recorded whole body and extremity doses were significantly below the recommended dose limits (20 mSv and 500 mSv per year, respectively). This proves that the radiation protection program followed by the staff of RWM facility complies with the radiation protection requirements and assures safe management of radioactive waste according to ALARA principle.

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