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SPATIAL MAPPING OF URANIUM IN GROUNDWATER AND RISK ASSESSMENT AROUND AN ATOMIC POWER STATION IN INDIA

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Abstract

This paper reports the distribution of natural uranium in different underground water sources and health risk evaluation around Narora Atomic Power Station, Narora, India. The uranium concentration at studied locations ranged from BDL (<0.2 µg/L) to 32.37 µg/L with geometric mean (GM) of 6.4 µg/L and geometric standard deviation of 7.85. The life time average daily dose of uranium in drinking water was 0.64 µg kg⁻¹ day⁻¹. The cancer morbidity and mortality risk were also calculated for U-238, U-235 and U-234. The average cancer mortality was 8.03×10⁻⁷, 3.1×10⁻⁸ and 7.21×10⁻⁷ and cancer morbidity was 1.28×10⁻⁶, 4.89×10⁻⁸ and 1.12 ×10⁻⁶ for U-238, U-235 and U-234. It is concluded that health risk is minimal due to low levels of uranium in drinking water in Narora environment. However the concentration of uranium in drinking water must be monitored regularly.

Key words: ingestion dose, LADD, laser fluorimeter, lifetime cancer risk, uranium

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