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Radiological risk assessment of water sources from the Serule area of Botswana

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Abstract. Environmental radioactivity studies involving water sources are essential for the monitoring of the quality of drinking water for public consumption. Natural water sources generally contain some level of concentration of alpha and beta emitters. Radiological examination of these sources becomes necessary to determine their contribution to internal radiation exposure by ingestion. Most villages in Botswana use untreated natural water for human consumption. The recent discovery of uranium in the Serule village of Botswana has established the need for analysis of water samples from the area. Twenty water samples were collected from various sources such as boreholes, wells, rivers and local ditches in Serule. These will set a baseline that currently does not exist in Botswana with regard to radiological concentrations of both surface and ground water. Screening of water samples was carried out using a liquid scintillation counter (Quantulus 1220) to determine the gross alpha and beta activity of the water samples. A presentation will be made on the application of the liquid scintillation counting method for measurement of gross alpha and beta activities in spiked water samples from Serule, Botswana. This includes sample preparation, radiation detection and analysis techniques.

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