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## INVESTIGATION OF U-238 AND Th-232 IN FINGERNAILS, TOTAL BLOOD AND DRINKING WATER AMONG WELL USERS IN KADUGLI TOWN, A HIGH NATURAL BACKGROUND RADIATION AREA IN SUDAN

Wednesday, 27 June 2018 17:00 (1 hour)

Sudan Atomic Energy Commission (SAEC) has an ongoing national programme for monitoring radioactivity in Sudanese environment to establish a baseline data as a useful reference for radiation protection in Sudan. Nuba mountains, south-west of Sudan has been detected as a region with the highest radioactivity from natural background. This elevated natural radiation is attributed to the high concentration of  $^{238}\text{U}$ , and  $^{232}\text{Th}$  series, and  $^{40}\text{K}$  in the geological formation. Mining activities (uranium and gold) might take place soon, which will increase radiation hazard to the public. Our aim is to investigate the distribution of  $^{238}\text{U}$  and  $^{232}\text{Th}$  in fingernails and whole blood in relation to its intake via drinking water by Nuba people who live in that area. Water, fingernails, and blood samples were analysed for  $^{238}\text{U}$  and  $^{232}\text{Th}$  using ICP-MS. Results of some water supplies revealed uranium concentrations higher than the WHO guidance level ( $15\text{ }\mu\text{g/L}$ ) for drinking water. Analysis of body tissues showed that both  $^{238}\text{U}$  and  $^{232}\text{Th}$  were better reflected in fingernails than in blood, and thus may serve as biomonitors for uranium and thorium intake in that area. The generated data is a valuable baseline for the decision makers before mining activities begin.

### Country or International Organization

Sudan

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