CURRENT STATUS OF IAEA ASSISTED NUCLEAR RAW MATERIAL SURVEYS IN SRI LANKA

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A joint proposal submitted by the Geological Survey and Mines Bureau (GSMB) and Atomic Energy Board of Sri Lanka (AEB) was approved in 2011 under the Technical Cooperation Programme of the International Atomic Energy Agency (IAEA), Viana. The IAEA provided a car-borne gamma ray spectrometer with 16 litre NaI crystal, partial financial assistance towards the cost of one Wavelength Dispersive XRF spectrometer and training for geologists and chemists. With new equipment and hand-held gamma spectrometers in possession, four types of surveys were planned. They are; (i) surveys covering coastal sand/beach sand, etc. (ii) surveys in and around previously reported sites, (iii) surveys based on IAEA-assisted study in 1979, and (iv) a new long-term radiometric mapping programme at 1;100,000 scale.

The entire NE coastal belt/beach from Kokkilai to Panama was surveyed for gamma ray intensity. Significantly anomalous areas were found at nine locations where black sand (ilmenite) occurs. Detailed sampling was carried out. Gamma-ray analysis by field equipment indicates that the anomalous signal is mainly from Thorium (Th). Laboratory studies are in progress. Detailed surveys, including investigations by augering collection of sand samples and studying variation of radioactivity levels with depth within the nine promising zones were also conducted.

Field surveys were conducted in the area around Mitipola where Thorianite and Uranothorianite were first reported in 1903. Analysis of twenty five granitic rock samples revealed that there is no uranium mineralization in the host granite except for slightly elevated La, Th and Ce contents. Thus it is concluded that U-Th minerals are restricted to minor pegmatites that cut across the country rock. Mapping of these pegmatites is planned as future activities.

GSMB has undertaken a radiometric mapping programme using the car-borne and Hand-held Gamma-ray Spectrometers covering all twenty one map sheets of the country at 1:100,000 scale. Under this programme, radiometric mapping of 1:100,000 sheets of Dambulla – Pallegama (sheet no. 11) and Kandy – Hanguranketa (sheet no. 14) were completed. In the Dambulla – Pallegama sheet, three promising anomalous sites were identified in Kaudupelella, Naula and Ambana areas. Detailed studies to demarcate the boundaries of these three areas and sampling are currently in progress. In 2018, GSMB has conducted radiometric mapping programme of Alutgama – Galle

(sheet no. 19). In this map, six promising anomalous sites were identified in Kurundugahahethekma, Pituwala, Indigahawila, Uragasmanhandiya, Makumbura and Yakkalamulla areas. In order to identify priority areas for ground surveys and systematic exploration for minerals, the need of an Island-wide airborne radiometric/magnetic survey is strongly justified.

***Keywords**: nuclear raw material survey, gamma ray spectrometer, anomaly, uranium, thorium*