

**HEAVY METALS AND TRACE ELEMENT
DISTRIBUTION IN GROUNDWATER AROUND
EPPAWALA APATITE DEPOSIT**

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Abstract

Sri Lanka phosphate was discovered at Eppawala which is situated in north central province along the Kekirawa –Thalawa Road, about 240Km from Colombo. The deposit is estimated to occupy an area of 7 Km². Mineralogically, the phosphate rocks have different origins and chemical and physical properties. The principal phosphate minerals in them are the apatite (Ca phosphates). Chemically, a pure fluor-apatite would contain 42% P₂O₅ while francolite, another mineral found in phosphate rocks has 34% P₂O₅. Chemical composition of the Sri Lankan apatite is [Ca₅(PO₄)₃(F, Cl, OH)]. Mainly F concentration is higher than other Cl & OH anions.

Apatite rocks by their very geological and mineralogical nature contain a host of environmentally hazardous chemical elements such as Cd, Pb, Hg, U, Cr, As, Fe, Mn, Cu, Pb, Al, Zn, Ba, Be, Li, Rb, Sr and among others. Those elements leaching to ground water due to weathering, it may cause health issues.

Nonetheless not sufficient study has been conducted on heavy metals and trace elements contamination of drinking water of the Eppawala apatite region of Sri Lanka. For this reason, due emphasis is given to the analysis of these contaminants.

The main objective of this research is to determine the levels/concentration of some of the physicochemical parameters, heavy metals and trace elements (Fe, Mn, Cu, Zn, Ba, Be, Li, Rb, Sr) in drinking water in different parts of the Eppawala apatite region, to compare the values with the national and international organization(WHO) recommended drinking water standards. And distribution of heavy metals and trace elements around Eppawala phosphate deposits (EPD).

The water sample was collected around the EPD tube well and dug wells. Sample size (60) was determined by distribution of the population around the EPD. Sample was collected in wet season and after analyze the water samples, over again 13 sample was collected in dry season and it was analyzed.

Standard laboratory analyzed method and atomic absorption spectrometer (AAS) was used to establish the major heavy mineral and trace elements.