

MINERALOGICAL AND SOLUBILITY VARIATIONS IN THE DIFFERENT COMPOSITIONAL ZONES OF THE EPPAWALA PHOSPHATE DEPOSIT

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In the Eppawala phosphate deposit, several compositional zones based on colour, texture and structure can be recognized. These observations have led us to identify the deposit as a terrestrial phoscrete-type phosphorite (Dahanayake and Subasinghe, 1988, 1989a). In the phosphorite, the relatively large primary crystals (sometimes the long diameter extends to more than 50 cm) of apatite occur in a light to dark brown finer groundmass. The groundmass occurring in lithified form or as soils when weathered shows secondary apatite and silica mineralization. (Dahanayake and Subasinghe, 1989b)

X-ray diffractometry of samples of various phosphate-rich zones of the Eppawala deposit helps to identify the occurrence of several phosphate minerals; hydroxyl chlor-fluor apatite, fluorapatite, carbonate apatite, crandallite etc. These different phosphate-rich entities which can be recognized in the field by their colour and texture indicated water solubilities ranging from 0.002 to 0.11% and citric acid solubilities from 0.94 to 5.6% (P_2O_5). It was also noted that solubilities varied significantly within different size fractions of a given phosphate-rich entity. On the basis of these preliminary observations we would recommend detailed solubility studies on different mineralogical and size fractions with a view to eventually exploiting the Eppawala deposit on a selective-mining basis.

References

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