SILICIFICATION IN THE EPPAWALA PHOSPHORITE DEPOSIT

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In the weathering profile of the Eppawala Phosporite Deposit, several processes occur due to the tropical weathering conditions of the area. Some processes are enriching which make the availability high and some are degrading which reduce both available and total P_2O_5 contents. In localities of the latter type, the P_2O_5 content could be as low as zero. This phenomenon was studied in detail with the intention of understanding the process of degradation.

Silicification was identified as the major process of degradation of the ore. This process was first observed in thin sections and later confirmed by X-ray Diffractometry (XRD), Differential Thermal Analysis (DTA) and chemical methods. After confirmation of the presence of the silicification process, Scanning Electron Microscopic (SEM) studies and Electron Probe Micro Analysis (EPMA) were carried out.

In the SEM and EPMA studies, finer textures and processes of silicification and their degrading nature were studied in detail. These investigations revealed that the silica in the degraded area occurs in the form of *mega quartz*. The average size of the quartz crystals is around 30 μm. These mega quartz crystals appear to have grown within the cavities and later spread to other areas. X-ray maps show that the P content diminishes to zero where mega quartz crystals are present.