

Geochemical Evaluation of Weathering-Induced Release of Trace Metals from the Maastrichtian Shales in Parts of Bida an Anambra Basins, Nigeria

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Abstract : Shales, especially black shales, are of great geological significance, in the study of heavy/trace metal contamination. This is due to their abundance in occurrence and high concentration of heavy metals embedded which are released during their weathering. Heavy metals constitute one of the most dangerous pollution known to human because they are toxic (i.e., carcinogenic), non-biodegradable and can enter the global eco-biological circle. In the past, heavy metal contamination in aquatic environment and agricultural top soil has been attributed to industrial wastes, mining extractions and pollution from traffic vehicles; only a few studies have focused on weathering of shale as possible source of heavy metal contamination. Based on the above background, this study attempts to establish weathering of shale as possible source of trace/heavy metal contaminations. This was done by carefully selecting fresh and their corresponding weathered shale samples from selected localities in Bida and Anambra Basins. The samples were analysed in Activation Laboratories Ltd; Ontario, Canada for trace/heavy metal. It was observed that some major and trace metals were released during weathering, i.e., some were depleted and some enriched. By this contamination of water zones and agricultural top soils are not only traceable to biogenic processes but geogenic inputs (weathering of shale) as well.

Keywords : contamination, fresh samples, heavy metals, pollution, shales, trace metals, weathered samples

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