

## **Influences of Hydro-Geochemical Process on Groundwater Quality in Mekong River Basin Aquifer, Cambodia**

Mohamed Ali Yusof Bin Mohd Husin<sup>1, \*</sup>, Baba Musta<sup>1</sup>, Kongkea Phan<sup>2</sup>, Fatimah Sudirman<sup>1</sup>

<sup>1</sup>*Faculty of Science and Natural Resources, Universiti Malaysia Sabah, Jalan UMS, 88400 Kota Kinabalu, Sabah, Malaysia.*

<sup>2</sup>*Faculty of Science and Technology, International University, Street 1011/1984, Sangkat Phnom Penh Thmey, Khan Sen Sok, Phnom Penh, Cambodia.*

\*E-mail: [mohamedali@ums.edu.my](mailto:mohamedali@ums.edu.my)

### **Abstract**

Arsenic contamination in groundwater is a concern that affects distinctive amount of population along the Mekong River Basin in Cambodia. Since its discovery in the year 2000 many efforts have been made to establish proper practice, knowledge and mitigation action to ensure the well-being of residents that was afflicted. This study is conducted to determine the concentration of arsenic in selected groundwater well around Mekong River Basin. Approximately 21 sampling location from Kandal, Kratie, Tbong Khmum and Kampong Cham have been selected, where sample of sediment and groundwater is taken for analysis. Arsenic concentration is analysed using ICP-OES, while X-Ray Diffraction is used to observe the mineralogical content in sediment. Results from the analysis shows considerable amount of Arsenic are found in sediment and groundwater. The Interim Freshwater Sediment Quality Quidelines (ISQS) limit exceeds in Tbong Khmum and Kampong Cham. All four provinces exceeds the arsenic limits in drinking water by WHO Guidelines for Drinking Water Quality of 10 µg/L, but within range when compare to Cambodian Drinking Water Quality Standards of 50 µg/L. Lead and Chromium records exceeding the limit of both standards. Due to the natural formation mineral in sediments within the aquifer, reactions between the mineral and groundwater in the area is inevitable, therefore proper sediment and rock analysis should be done when building well pumps to avoid incur losses due to futile groundwater quality where arsenic bearing mineral exists.