

CONFERENCE ABSTRACTS

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The instability of iron content in groundwater in metasedimentary rock formation

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Abstract: One of the major factors affecting the natural chemistry and the quality of the groundwater is the geology of a watershed. Water percolating through the subsurface comes in contact with the soil particles and thus gets influenced by the constituent minerals. Mineral elements derived from the rocks through which groundwater flows can affect the pH of the water, the water's taste, and eventually may cause staining on material surfaces like sinks, tiles and clothing which mostly is caused by the presence of iron if left untreated. With rapid utilization and exploration of groundwater, multiple efforts have been put in to optimize and improve the quality of groundwater for consumptions and daily usage. Based on the quality control from National Water Quality Standards for Malaysia (NWQS) the acceptable iron level in groundwater is 0.3 mg/L for drinking and 1 mg/L for raw water. In this study, the content of iron (Fe) from two tube wells at 100 meter depth and 75 meters apart are monitored for eleven months period. For the purpose of this study, the first and second tube wells are labelled A and B. The data collected from both tube well shows no consistency on the content of iron from both tube well A and B throughout the observation period. The inconsistency of data in the iron level from both tube wells sometimes shows a sudden spike in the iron level from the groundwater and this should be considered when treating the groundwater for daily and consumption purposes. For Tube well A, the highest level of iron recorded is 7.5 mg/L and the lowest 0.05 mg/L, and the average level of iron throughout the observation period is 2.3 mg/L. For Tube well B, the highest iron level is 8.3 mg/L and at times there are even zero traces of iron found in the groundwater and the average level of iron throughout the observation period for tube well B is 1.1 mg/L. This observation is important for designing the water filtered system at maximum capability to filter the highest iron content in groundwater.

Keywords: Groundwater, tube well, iron