

Health risk associated with aluminium exposure in groundwater: a cross-sectional study in an Orang Asli village in Jenderam Hilir, Selangor, Malaysia

ABSTRACT

The purpose of this study was to determine aluminium (Al) concentrations in groundwater used for drinking and cooking and its related health risk among population of 28th Mile Orang Asli village in Jenderam Hilir, Selangor, Malaysia. A total of 100 respondents were recruited, comprising 51 (51.0 %) male and 49 (49.0 %) female residents. Inductively coupled plasma mass spectrometry (ICP-MS) was used to determine Al concentration, while the LAMOTTE TRACER ORP PockeTester was used to measure pH levels. Statistical Package for Social Science (SPSS) was used to analyze the data. Results showed that Al concentration ranged from 0.041 - 0.136 mg/L with a mean of $0.136 + SD 0.041$ mg/L, hence the values obtained were below the standard value (0.2 mg/L). pH levels ranged from 3.82 to 5.84, with a mean of $4.163 + SD 0.411$, which is acidic and below the range permitted by the health authorities. The acidic nature may have an impact on the Al concentration in the water. The Hazard Index (HI) was found to be less than 1, thus there was no health risk of Al exposure in drinking water for the respondents involved. The study area was considered safe from having health risk associated with Al exposure.

Keyword: Aluminium; pH; Drinking water; Groundwater; Hazard Index