

Toxic elements in well water from Malaysia

Abstract

Toxic elements present in well water that is used for drinking pose a threat to the human health in many countries. However, there are few reports on the toxic elements in well water in Malaysia. Since a native doctor informed us about the increasing number of patients with depigmented skin (vitiligo) in Rosob Village, Sabah State, Malaysia, the origin of diseases associated with well water was suspected. Thus, the concentrations of 15 toxic elements in 52 well water samples from Rosob (n=21), and the control areas of Pitas (n=8) and Telaga (n=23) within the same state were measured. No toxic elements with levels exceeding that of the WHO health-based guidelines were detected in the well water samples from Pitas and Telaga. On the other hand, the concentration levels of arsenic (As), uranium (U), and manganese (Mn), independently found in 19% (4/21), 4.8% (1/21), and 19% (4/21), respectively, of the well water samples from Rosob, exceeded the levels given in the WHO health-based guidelines. In the well water samples from Rosob, the average concentration of Mn was found to be higher and its maximum value with levels up to 10-fold higher, respectively, than the value in the WHO health-based guidelines. Significant correlations between Mn and As and between Mn and U were noted. Thus, for the first time, the results of this pilot study showed that the levels of the toxic elements in 42.9% (9/21) of well water samples from Rosob in Malaysia were higher than the values in WHO health-based guidelines indicating the need for further studies. © 2010 Taylor & Francis.