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Toxic elements fractionation during underground water purification processes: Concentration and environmental impacts

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Toxic elements that have harmful effects on the human health include aluminum (Al), arsenic (As), cadmium (Cd), lead (pb), mercury (Hg), thorium (Th) and uranium (U). Water samples were collected from underground water purification plant to study the variation in Al, As, Cd, Pb, Hg, Th and U concentration through the treatment processes and its relation to physical and chemical properties of water. Samples represent the different treatment processes (input, output, after filtration, sludge tank, reverse osmosis permit and reject, and waste water ponds). Toxic element oncentration in the collected samples were measured using ICP-MS. The chemical properties of water samples Water physical and chemical properties, i.e. pH, EC, major cations (Ca, Mg and K) and major anions (CO3, HCO3, Cl and SO4) were determined. The effect of water treatment processes on elements concentration; drinking water quality (before and after treatment) and the ecological risk assessment were discussed.

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