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A Study Of Groundwater With Special ReferencetoArsenic Contamination & Its Consequences

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Abstract

For the past few decades, arsenic (As) contamination of groundwater and soil has become an important environmental problem globally. Many As compounds exist in the environment and biological systems as well. Naturally occurring As contamination of groundwater has been reported in groundwater more than 105 countries of all continents except Greenland and Antarctica. Arsenic mostly exists in two types of oxidation states which are arsenate (As^{5+}) and arsenite (As^{3+}). These two oxidation states are interconvert able by oxidation of As^{3+} into As^{5+} and reduction of As^{5+} into As^{3+} Arsenic also exists in another form i.e. organic form and it is formed by biomethylation of arsenic. An arsenic contaminated area namely, Ballia district of UP was chosen for this study. A set of 36 samples were collected from hand pumps and tubewells (30–33 m depth) thrice in a year namely pre-monsoon, monsoon and winter seasons. Nine samples were also collected from deep bore well hand pumps (66–75 m) to study the difference in geochemistry with the shallow pumps.Various water quality parameters like As (III), As (V), sulphate, nitrate, phosphate, bicarbonate, ammonia, were determined. Arsenic concentrations ranged from 0 to 468 µg L-1 in ground water collected from depths