Groundwater Contamination in India: Problem and Solution

V.K. Saxena

¹ National Geophysical Research Institute, Hyderabad, India,

In various parts of India, the groundwater have been facing serious groundwater contaminated problems which are such as hardness, sea water contamination, fluoride, nitrate and arsenic etc. A major part of the coastal areas which includes deltas like Krishna, Godavari, Pennar, Kaveri etc are already contaminated by sea water intrusion. Such activity not only spoiled many fresh water aquifers but also last their fertility of the soil which intern reduces the crop growing capability and also number of crop rate and their varieties. Increasing activity of aquaculture in the coastal areas is also influence the ingression of sea water and damaging the soil structure. Fluoride is also a burning problem and known from the lost 5 decades. Presently most of the states have been affected. In spite of many decades affords and huge money involved, still the problem is unsolved. Reports on the occurrence of arsenic in groundwater resources and the associated health hazards due to human consumption have been made from various parts of India during the past few years. Demand of groundwater is becoming more and more and excess pumping may cause the groundwater depletion. Because of deeper ground water level, water force to interact with surrounding deeper rocks and minerals which earlier was interacted. The presence of arsenic in the rock, mineral and soil are reported in various places where groundwater was found high in arsenic. Arsenic dissociated in groundwater by water -rock interaction, in particular, by hydro-geological processes, such as weathering return and biological action. Anthropogenic activities may also cause enrichment of arsenic in groundwater. Arsenic enrichment groundwater has been found in various parts of India, including West Bengal, Orissa and Andhra Pradesh. Arsenic in groundwater is present in various species like H₃AsO₃, H₂AsO₃, HAsO₃, H₃AsO₄, H₂AsO₄ and HAsO₄ etc. The toxicity of arsenic may vary from one species to another. The effects of Eh and pH on arsenic speciation have been studied. It has been shown that some correlation exit between arsenic verses pH & Eh. Mostly ground waters of India are nearly neutral to mildly alkaline (7.1 to 7.8) which are in favorable condition in consideration to arsenic dissociation and dissolution process. Afford to study the chemistry of arsenic in various arsenic enriched areas have been made and the results are presented and discussed in this presentation.

Key words: Groundwater, Fluoride, Arsenic and dissolution.