Hydro-chemical Techniques for the Delineation of Fresh Ground Water Resources in Coastal Aquifers

V.K.Saxena

National Geophysical Research Institute, Hyderabad, India.

vks_9020010@yahoo.co.in

Sea water intrusion in the coastal region is widespread. It is not only occurs in India but in various parts of the world. In the past one decades a large areas of Krishna, Godavari, Pennar, Kaveri and Gangetic terrain etc have been affected and intern reduces the rate of agricultural production. Sea water intrusion not only contaminates the fresh groundwater regime but also reduces the fertility of the soil. During the past few decades, the rapid increase in sea water intrusion in various coastal areas of India has caused the transformation of fresh groundwater to brackish/saline water. Because of sea water intrusion most of the fertile land becomes waste land. It is noted, one decade ago, Krishna and Godavari deltas were well known for varieties of agriculture production but presently formers have been losing their interest on cultivation. The main sources of saline water intrusion are: (1) changes of land use from agriculture to residential (2) increase number of bore wells /dug wells / hand pumps (3) low rain fall conditions (4) untimely depression cause for flood and high tides and (5) increase rate of aquaculture etc. Thus pumping of excessive groundwater may be a cause for the possible intrusion of sea water in this region. Hydro chemical and Hydrological studies have been carried out for the delineation of fresh groundwater aquifer and for the identification of fresh groundwater potential zones. Attempts have been made to identify an economical and simple process, which can give preliminary information about sea water intrusion in coastal region which intern help to select alternate crop type. The distribution trends of trace elements over North and South Krishna delta were examined in relation to fresh, brackish and saline water regions. The Strontium and Boron have shown significant variations in fresh, brackish and saline water environment and found to be a sensitive chemical tracer responding to change in fresh to saline water environment.

Key words: groundwater, intrusion, agriculture, tracer, cultivation and soil.