

Assessment of Groundwater Contaminant migration around an Organo Chemical Unit in Basaltic Terrain, Karnataka, India.

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The protection of groundwater resources is important particularly for drinking water supplies. The groundwater resources have a vital role in supplying agricultural, drinking, domestic and industrial demand in Bagalkot District. A Organo chemical unit is generating solid sludge and is stacked in the composting area within the industrial premises. Treated Effluent storage lagoons and wet disposal of sludge in the composting area has contributed towards establishment of steep gradient in the upstream of various units. High resolution Electrical Resistivity Tomography surveys have delineated the aquifer system based on Resistivity contrast of various profiles as three layers weathered zone, fracture zone and hard rock as the bottom layer. Thus seepage from the composting area shall be moving slowly through the top layer and once it reaches the second layer, it could move faster due to higher permeability of the underlying formations. Geophysical and Hydrogeological have helped in the conceptualization of groundwater flow and mass transport models. The prediction scenario from the mass transport model does not show migration of contaminant plumes across the ridge between Munyal and Dhavaleshwar watersheds.

Keywords: Mass transport Modeling, Seepage, Composting area, Basaltic terrain.

References:

- [1] Acworth, R.I : The electrical image method compared with resistivity sounding and electromagnetic profiling for investigation in areas of complex geology – A case study from groundwater investigation in a weathered crystalline rock environment: Exploration Geophysics, 32, 119–128., 2001
- [2] McDonald, J.M. and Harbaugh, A.W: A modular three-dimensional finite-difference groundwater flow model. Techniques of Water resources Investigations of the U.S. Geological Survey Book.6, pp.586. 1988
- [3] Konikow, L. F., and Bredehoeft, J. D: Computer model of two-dimensional solute transport and dispersion in ground water, USGS, Book 7, Chapter C2, Washington, pp.90, (1978)