

Integrated assessment of risk for contaminated sites due to on-site sanitation systems in mining area, Karnataka, India

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Abstract The sanitation coverage in rural households of India is very low. A field study was carried out in the Kolar Gold Field mining residential area. The residents of the study area depend on bore wells and resort to septic tanks for disposal of domestic waste. The main objective of this study is to assess the impact of septic tanks/low cost sanitation systems on groundwater and soil environment in the unsaturated zones of the soil. The hydraulic conductivity of the soil in the study area varied from 0.13 to 0.31 m day⁻¹. Higher concentration of nitrates and chlorides in well waters show that groundwater is getting contaminated with on-site sanitation effluents. Higher concentrations of major metals, salts and gases were also observed because the geology of the particular area has influence on the quality of water. Based on the investigations, appropriate technological options are proposed.

Key words bacteriological; hydrogeological; infiltration; nitrification; onsite sanitation systems; unsaturated zones; weathered rock