Assessment of groundwater vulnerability and quality under urban-industrial influence in a subtropical town of north India

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Abstract The growth of urban settlements and industrial activities, along with increasing demands for various water uses, are causing considerable stress on the water supplies worldwide. The present study examines the impact of urbanization and industrial development on the shallow groundwater regime in a subtropical town (Saharanpur) of north India where the major source of water supply for drinking is from shallow hand pumps and tubewells tapping alluvial aquifers. Many of the industrial units of the town discharge waste effluents directly into the nearby drains. The assessment of groundwater vulnerability by using the well known DRASTIC Index approach has indicated that many central and southern localities of the town are threatened by pollution. This is corroborated by the analysis of groundwater samples wherein parameters like faecal coliforms, cadmium, chromium, nitrates and sulphate occur in high concentrations. For future protection of groundwater, 11 additional well locations have been identified for quality monitoring.

Key words groundwater; protection; Saharanpur; alluvial aquifer; vulnerability; north India