

Ammonium sources of groundwater in Kathmandu Valley, Nepal

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Groundwater quality is a critical problem in the Kathmandu Valley, Nepal. The population of the city increased by 6 times in the last six decades and more than half of water demand depends on groundwater source. Microbial and nitrogen contamination causes loss of water resources, nevertheless, understanding of nitrogen source and dynamics in groundwater system still remains insufficient in the central area of the valley. Objective of this study is to identify source of ammonium contamination on shallow and deep groundwater.

Groundwater samples were collected from 34 shallow wells and 5 deep tube wells in September 2014. Ammonium ion were detected from 12 shallow wells and 2 deep wells. Those ammonium concentrations ranged from 1.3 to 103 ppm. Nitrogen isotope values in ammonium ranged from -0.3 to 9.3 permil; this wide range of the nitrogen isotope values suggested possibility of ammonium contamination from natural and anthropogenic sources.

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