

AHW015-14

Room: Function Room B

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## Identification of nitrate sources in shallow groundwater of Kathmandu Valley, Nepal using nitrate nitrogen and oxygen is

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Groundwater is an indispensable drinking water resource for many developing countries. The nitrate has recognized as a major pollutants in groundwater. In infants, a high nitrate contamination in the digestive tract is one of the cofactors leading to methemoglobinemia, the presence of methemoglobin in the blood.

The population of Kathmandu valley is more than 1.5 million; whereas the shallow groundwater is using for daily life. In case of city area have the sewage systems. The objective of this study is to identify the nitrate sources in shallow groundwater of Kathmandu Valley, Nepal using nitrate nitrogen and oxygen isotopes.

The 36 shallow groundwater samples were collected public and domestic wells (depth of well are 5-20m). The nitrate nitrogen and oxygen isotopes were determined by denitrifer method for the pre-treatment and analyzed using mass spectrometry (Sercon, Cryoprep and Hydra 20-20).

The nitrate nitrogen and oxygen values suggested that human waste is the major source of nitrate contaminations in shallow groundwater. Furthermore, the existence of a clear slope between the nitrate nitrogen and oxygen isotope values indicated the occurrence of denitrification process in the shallow groundwater.

Keywords: Nitrate nitrogen and oxygen isotopes, Kathmandu valley, Shallow groundwater