Estimation of water quality, management and risk assessment in Khyber Pakhtunkhwa and Gilgit-Baltistan, Pakistan

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ABSTRACT

The present study is based on water quality assessment for drinking and irrigation purpose in 10 districts of Khyber Pakhtunkhwa and Gilgit-Baltistan, Pakistan. A total of 181 water samples were collected with random sampling criteria and undergone quality assessment through the American Public Health Association standard procedures. Electrical conductivity (EC), turbidity and arsenic were found higher in drinking water than upper permissible limits of World Health Organization (WHO) and the National Environmental Quality Standards-Pakistan (NEQs-Pak). Multivariate quality indexes were applied, water quality index determined that overall water quality was good for drinking purpose. However, health risk assessment was evaluated, and results showed that values of hazard index (HI) were near the threshold limit (HI \ge 1) both in adult and children. Irrigation water quality for surface water used for irrigation purpose was in good quality. Permeability index was found unsuitable for surface water. However, EC, turbidity, and arsenic were exceeding a limit for drinking purpose. Reducing anthropogenic activities including waste disposal, regular monitoring of water supplies and apply preventive measures can improve the water quality status.

Keywords: Drinking water; Health risk; Irrigation water; KPK Pakistan; Water quality index

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