Physico-chemical and heavy metal concentration in the drinking water of Narangi and surrounding areas of District Swabi, Pakistan

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Contaminated drinking water is being the cause of many health problems in different parts of the world. This has affected human health with serious diseases such as lungs cancer, skin cancer, kidney problems and also respiratory problems. This study was conducted to find out the quality of water in Narangi and its surrounding areas (Permoli, Merali and Sherdara), where the main sources of drinking water are dug wells, tube wells, hand pumps and springs. Representative water samples were collected from different sources in the study area in order to determine the physico-chemical parameters and heavy metal concentrations. Physical parameters such as pH (6.1-7.4), EC (90.2-585 µs/cm), TDS (47.0-307 mg/L), Turbidity (0.10-100 NTU), and temperature (18-24 ˚C) were determined with the help of electro chemical analyzer. While anions nitrates (0.4 – 12.5 mg/L), nitrite (4 – 48 mg/L), sulfate (5 – 88 mg/L), phosphate (0.18-1.45 mg/L), and chloride (0.5-32.5 mg/L)were determined with the help of DR2800 spectrophotometer. Heavy metals, Cu (0.17 – 70.7), Ni (<0.05 – 11.15), Cd (<0.05 – 2.39), Co (<0.05 – 0.78), Cr (<0.05 – 9.43), Zn (<0.05 – 2897), Pb (<0.05 – 30.66), Mn (<0.05 – 19) and Fe (<0.05 – 188) in µg/L were determined using atomic absorption spectrometer AAnalyst-700. The values of different parameters of water from different sources indicated that all the physical parameters, anions and heavy metal concentrations were within the permissible limits set by WHO(2004). On the basis of findings it is concluded that drinking water of Permoli, Mirali, Sherdara, and Narangi areas have low concentrations of physical parameters, anions and heavy metals. Therefore, no health related hazard, concerning the studied parameters in drinking water, can be envisaged.