Assessment of arsenic in drinking water samples in south-western districts of Punjab—India

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ABSTRACT

The present study involves the investigation of drinking water taken from existing hand pumps/submersible pumps, tube-wells, dug wells (underground water), and municipal water supply from the south-western districts of Punjab for the presence of arsenic. Many of the samples analyzed were found to have high Total Dissolved Solids (TDS), pH, electrical conductivity, hardness, and high content of arsenic beyond their permissible limits set by WHO along with high variability, which is a matter of great concern. The study has revealed that 80% of the total samples analyzed were having arsenic concentration above the safe limit (10 l g/L). Out of all the districts analyzed, Faridkot showed maximum contamination of 92% followed by Sangrur 88%, Bathinda 86%, Ferozepur 74%, and Muktsar 60%. The mean arsenic level in water samples obtained from municipal water supply of Ferozepur, Faridkot, Bathinda, Muktsar, and Sangrur is 14.14, 25.171, 23.75, 21.86, and 21.21 with SD 5.177, 5.976, 5.30, and 7.59. The mean arsenic concentration in water samples obtained from public hand pumps is 15.36. An attempt to correlate the physical parameters like pH, TDS, and bore depth of water source was also made. A positive correlation between pH and As concentration was observed with \( r^2 = 0.94 \). The present study suggests the regular monitoring of arsenic content and the seasonal variation, if any, in future.

Keywords: Arsenic; Analysis and surveying; Global positioning system

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