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Determination of heavy metal residual levels in bottled natural mineral waters sold in Istanbul, Turkey

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Water is a vital food material for humans and other living things to survive. Recent developments in various industrial sectors, urbanization and the spread of agriculture based on modern techniques have resulted in increased contamination of water with heavy metals and microbial agents. This study was conducted to investigate the concentrations of selected heavy metals in bottled spring waters sold in Istanbul, Turkey markets. For this purpose, 200 bottled natural mineral waters were collected and analyzed for the residual quantities of Pb, As, Hg, Cd, and Cu using ICP-MS technique.

The concentrations of Pb, As and Cu were higher to the limit values of the regulations in 72 (36%) of natural mineral waters, while the average amounts of positive samples were determined as 3.01, 4.77, 0.72, 0.01 and 2.49 µg/L for Pb, As, Hg, Cd and Cu, respectively in all analyzed samples.

As a result, it is important to carry out routine control of waters on the basis of welding, filling units and filling containers. The existence of heavy metals in the environment is a serious risk for water quality due to their high toxicity to plant, animal and human life. Thus, it is obviously important to follow out the monitoring of heavy metals in water samples and to take preventive measures to prohibit environmental pollution by heavy metals' contamination in order to protect the public health. Moreover, better hygienic practices in the water industry such as controlling water quality, improving hygienic filling system, sanitizing sufficiently running water, using of non-returnable plastic containers and providing routine training for the relevant staff could be prohibited the risks of heavy metals' contamination.

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