

Boron exposure assessment using drinking water and urine in the North of Chile

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Boron is an essential trace element for plants and humans however it is still an open question what levels of boron are actually safe for humans. This study, conducted between 2006 and 2010, measured exposure levels of boron in drinking water and urine of volunteers in Arica, an area in the North of Chile with high levels of naturally occurring boron. Samples were taken of tap and bottled water (173 and 22, respectively), as well as urine from 22 volunteers, and subsequently analyzed by inductively coupled plasma spectroscopy (ICP-OES). Boron varied in public tap water from 0.22 to 11.3mgL⁻¹, with a median value of 2.9mgL⁻¹, while concentrations of boron in bottled water varied from 0.01 to 12.2mgL⁻¹. Neither tap nor bottled water samples had concentrations of boron within WHO recommended limits. The concentration of boron in urine varied between 0.45 and 17.4mgL⁻¹, with a median of 4.28mgL⁻¹ and was found to be correlated with tap water sampled from the homes of the volunteers (r