

The Non-carcinogenic Risk of Cadmium in Bottled Water in Different Age Groups Humans: Bandar Abbas City, Iran.

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Abstract

INTRODUCTION:

The presence of heavy metals such as cadmium in drinking water resources can be dangerous for human because of toxicity and biological accumulation. The consumption of water which contains Cd in high concentration can lead to Bone and Kidney diseases.

MATERIAL AND METHODS:

In this present study, the researcher collected 432 samples of bottled water in the popular marks in summer and winter from the surface of Bandar Abbas. The cadmium concentration was measured by atomic absorption Spectrophotometer in model DR2800 through the Dithizone method. CDI, R and HQ which are caused by Cd for adult men, women and children, have been calculated and evaluated through the equations of EPA and WHO.

RESULTS:

Mean of $1.73 \pm 0.19 \mu\text{g/l}$ ($M \pm SE$) is lower than the standard of WHO and EPA. However, 33.2% of all the samples have concentrations more than the standard limit of WHO, and the concentrations of 22.4% of the samples are more than EPA's standard. The CDI for different age groups is as following manner; Children > adult women > adult men. The CDI in children is more than twice as much as in the CDI for adult men and women. The mean of HQ order for different age groups is children > adult men > adult women. Since HQ of adult men ($34E-5$), adult women ($31E-5$) and children ($84E-5$), is lower than 1.

CONCLUSION:

It can be said that the population of Bandar Abbas is in a safe area regarding the HQ of the bottled water's cadmium.

KEYWORDS:

Bottled Waters; Cadmium; Drinking water; Non-carcinogenic; age groups