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Spatial distribution and potential health risks of heavy metal(loid)s present in drinking water resources of Iran

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ABSTRACT

Drinking water contaminated by heavy metal(loid)s (HMs) can pose several health risks to humans. The present study was aimed to investigate the spatial distribution as well as possible health risks associated with HMs in drinking water resources in Iran using a literature review. International and national databases searched carefully and a number of 57 articles were found to be eligible for this review. Descriptive statistics were provided for HMs and their spatial distribution and related health risks. The results of estimated hazard quotients (HQ_{Oral}) and excess lifetime cancer risk ($ELCR_{Oral}$) for HMs in drinking water resources revealed high risk of non-carcinogenic and carcinogenic effects for all population groups. The maximum HQ values for subjected HMs were found by following order: As > Co > Hg > Cr > Se > Pb > Cu > Cd > Zn > Ni > Mn > Fe > Ba and the maximum ELCR values for investigated HMs were as follows: Cd > As > Ni > Cr. According to the results of this study strict measures need to be implemented at the national scale to minimize the contamination of drinking waters with toxic HMs.

Keywords: Drinking water; Health risk assessment; Heavy metal(loid)s; Iran; Spatial distribution

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