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A study on soil-environmental quality criteria and standards of arsenic

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Abstract: Arsenic (As) originating from natural and anthropogenic sources is an ubiquitous metalloid in soils, and can pose potential risks on human health and ecosystems. It is of great practical significance to carry out this study to prompt development or revision of soil-environmental quality standards, further to efficiently control its risks and hazards. Firstly, we briefly introduced the researching background of As soil-environmental quality criteria and standards. Secondly, we summarized the methods of deriving As soil-environmental quality criteria, respectively, based on its soil-environmental background values, ecotoxicological effects, accumulation, exposure models and soil-water partition equations. Thirdly, we reckoned the quantitative or qualitative relationships of As soil-environmental quality standards in various countries and regions according to land uses, tiers and extractants. In addition, the variation on soil-environmental quality standards was generally analyzed. Finally, we prospected the future researches on soil-environmental quality criteria and standards of As.

Keywords: Arsenic; Soil; Environmental quality criteria; Environmental standard

1 Introduction

Arsenic (As) is widely distributed in environment in the form of organic and inorganic species, as a component of more than 245 minerals (including 60% arsenates, 20% sulfides and sulfosalts, and 20% arsenides, arsenites, oxides, silicates and elemental arsenic) (Zhou and Huang, 2001). It ranks the 20th (comprising about

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