

Arsenic Occurrence, Ecotoxicity and its Potential Remediation

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Abstract

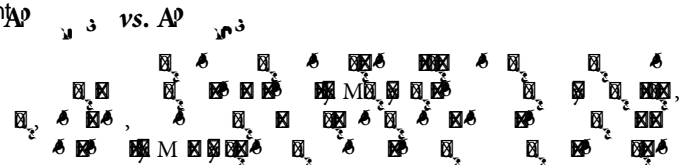
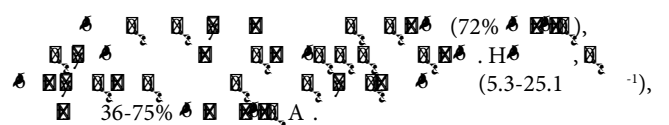
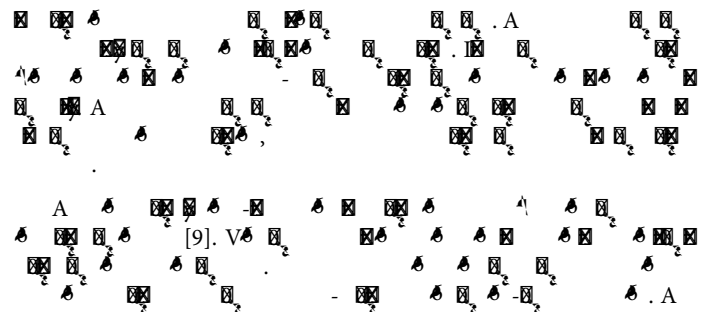
Arsenic levels in water, sediments, and biota of the estuaries and coastal ecosystems have been well documented. Natural and anthropogenic activities such as industrial offshore oil spills and groundwater pollution have increased its levels in natural water systems. This brief review provides a clear view on arsenic occurrence, ecotoxicity and its potential remediation. Both humans and biota were affected from arsenic contamination. The development of substitute materials for arsenic applications in the agricultural and forestry industries and controls of arsenic emissions from the coal industry may be possible strategies to significantly decrease arsenic pollution sources

with -3 oxidation state, (2) Metalloid arsenic with 0 oxidation state, (3) Arsenite trivalent compound with 3 oxidation state, and Arsenate pentavalent with 5 oxidation state [1]

A better understanding of the chemistry of arsenic is needed to identify its toxic properties and its effects on humans and natural environment. Oxidation states affect many properties of arsenic such as soil adsorption, soil solubility and toxicity to animals. Trivalent arsenic was dominant in the reducing conditions in flooded soils, while pentavalent arsenic at oxidizing conditions in drained soils. Inorganic forms of arsenic are highly toxic compared to organic arsenic [5] Organic arsenic includes methylated metabolites in three forms- monomethylarsonic acid (MMA), dimethylarsinic acid (DMA) and trimethylarsine oxide. Inorganic forms of arsenic are trivalent arsenite and pentavalent arsenate [6].

Trivalent arsenic is more toxic than pentavalent arsenic [3]. Arsenic is found in various forms in the environment, such as arsenite (As(III)), arsenate (As(V)), and arsenic acid (As(V)) [1]. Arsenic is also found in various forms in the environment, such as arsenite (As(III)), arsenate (As(V)), and arsenic acid (As(V)) [1].

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