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Uptake of arsenic by manganese dioxide from water

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Arsenic contamination of drinking water has been reported from many parts of the world. The maximum permissible level of total arsenic in drinking water is 10 microgram L-1 as recommended by WHO. Natural geochemical contamination through soil leaching is the primary contributor of dissolved arsenic in ground water around the world. The most common species present in water are the inorganic species: As(V), predominates in well oxygenated waters, and As(III), predominates in ground water. The reduced state, As(III), is more toxic, more soluble, and more labile than the oxidized As(V). Methods for removal of arsenic from water have been reviewed [1]. Arsenic remediation from water using manganese dioxide has been reported in the literature [2].
In the present work, uptake of As(III) and As(V) by manganese dioxide was studied. Manganese dioxide was chemically synthesized in laboratory by various methods. Uptake was studied by batch equilibration method using 76As as radioactive tracer. The influence of various parameters such as method of preparation and storage and aging, pH, initial concentration of arsenic and contact time has been studied. Uptake of arsenic is dependent on method of preparation of MnO2. Also, uptake efficiency for As(III) and As(V) is different.

Reference
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