

## **Contaminant Interactions with Redox-Active Transition Metal (Hydr)oxides**

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Interaction with redox-active transition metal (hydr)oxides impacts that fate of many common organic and/or inorganic contaminants. For example, the mobility of arsenic and chromium is largely determined by its oxidation state, with As(V) and Cr(III) being less mobile than As(III) and Cr(VI). The transformation from one species to another often occurs at the surface of Mn and/or Fe (hydr)oxide minerals surfaces. Similarly, organic contaminants such as bisphenyl A (BPA) and endocrine disruptors are readily degraded at the surface of Mn(IV) oxides. Understanding the reactivity of transition metal oxides in field settings requires a comprehensive understanding of mineral-surface geochemistry, aqueous products, and the kinetics and mechanisms of contaminant transformation. Here, we use the reduction of Cr(VI) by chemically reduced iron (hydr)oxides, as well as the oxidation of BPA and As(III) by Mn(III/IV) oxides to explore factors that may limit or enhance the reactivity of these minerals in common environmental settings.