

USE OF MINERALS IN THE DEGRADATION OF ORGANIC POLLUTANTS FROM AQUATIC SYSTEMS

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ABSTRACT

This paper reports the potential use of mineral surfaces, particularly of iron oxides, as a starting material for the mineralization of chlorinated organic pollutants from aquatic systems. The overall mineralization rate of CCl_4 was optimal at pH 3 when goethite suspensions were utilized in the degradation process. The apparent coverage of the reactive surface sites by various contaminants has been attributed to the reduced reactivities of surface sites when pH exceeds 6.5. In order to enhance the mineralization rate of organic pollutants at environmentally significant acidity conditions, the reactive sites of goethite surfaces were first activated with a coating of Fe(II). The observed rate of mineralization of CCl_4 was increased by an order magnitude when the chemical reaction was conducted in the presence of Fe(II)-coated goethite with a pH range of 4 to 7.