



(54) **IN SITU FORMATION OF PHOSPHATE BARRIERS IN SOIL**

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(57) **ABSTRACT**

Reactive barriers and methods for making reactive barriers in situ in soil for sequestering soil contaminants including actinides and heavy metals. The barrier includes phosphate, and techniques are disclosed for forming specifically apatite barriers. The method includes injecting dilute reagents into soil in proximity to a contamination plume or source such as a waste drum to achieve complete or partial encapsulation of the waste. Controlled temperature and pH facilitates rapid formation of apatite, for example, where dilute aqueous calcium chloride and dilute aqueous sodium phosphate are the selected reagents. Mixing of reagents to form precipitate is mediated and enhanced through movement of reagents in soil as a result of phenomena including capillary action, movement of groundwater, soil washing and reagent injection pressure.

20 Claims, 3 Drawing Sheets

