

US EPA TECHNICAL PERFORMANCE REVIEW SELECTING AND USING SOLIDIFICATION/STABILIZATION TREATMENT FOR SITE REMEDIATION

In November 2009, the US Environmental Protection Agency published a document titled Technical Performance Review: Selecting & Using Solidification/Stabilization Treatment for Site Remediation. The scope of this document is to provide basic information about Solidification/Stabilization (S/S) treatment. The document discusses important factors to consider in the selection of S/S treatment, such as treatability studies and S/S specifications to evaluate performance, type of contaminants to be treated, cost considerations, and long-term permanence.

The review states that S/S treatment typically involves mixing a binding agent into the contaminated media or waste. These techniques are done either in-situ, by injecting the binder agent into the contaminated media or ex-situ, by excavating the materials and machine mixing them with the agent. Common types of binder materials used are organic binders, such as organophilic clay, and inorganic binders that may include cement, fly ash, lime, phosphate, soluble silicates, or sulfur. In applying S/S for treating organic contaminants, the use of certain materials, such as organophilic clay, either as a pretreatment or as additives in cement, can improve contaminant immobilization in the solidified/stabilized wastes.

This is a reiteration of previous US EPA documents that stated the potential benefit of organophilic clay as a cement-based additive.

- USEPA Handbook of "S/S of CERLA & RCRA Wastes; Physical Tests, Chemical Tests, Technology Screening, Field Tests", EPA/625/6-89/022, Pg. 3-3. "Organophilic Clay-based S/S Processes: This technology appears to be very promising in terms of binding organic wastes. Recent investigations (Gibbons & Soundararajan 1988) indicate that these organophilic binders truly bond with organic wastes."
- USEPA Technical Resource Document: S/S and Its Application to Waste Materials, Pg. 4-13: "For certain organics, organophilic clay may improve cement-based or pozzolanic process performance."

References

Technology Performance Review: Selecting and Using Solidification/Stabilization Treatment for Site Remediation. US EPA Office of Research and Development, National Risk Reduction Engineering Laboratory, Cincinnati, OH. EPA/600/R-09/148, November 2009. <http://www.epa.gov/nrmrl/pubs/600r09148/600r09148.pdf>

Technical Resource Document : Solidification/Stabilization and Its Application to Waste Materials. US EPA Office of Research and Development, National Risk Reduction Engineering Laboratory, Cincinnati, OH. EPA/530/R-93/012, June 1993. <http://www.cement.org/waste/pdfs/EPATechnicalResourceDocument.pdf>

Solidification/Stabilization of CERLA & RCRA Wastes; Physical Tests, Chemical Tests, Technology Screening, Field Tests. US EPA Office of Research and Development, National Risk Reduction Engineering Laboratory, Cincinnati, OH. EPA/625/6-89/022. May 1989. <http://www.cement.org/waste/pdfs/EPATesting.pdf>