Department of Civil Engineering and Engineering Mechanics
Columbia University

Usage of Rice Husk and Oil Palm Ashes for Solidification/ Stabilization of Contaminated Soil and Industrial Sludge

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Solidification/stabilization (S/S) is an established technique used for treating industrial waste sludge as well as metal-contaminated soil. Solidification refers to improving the physical integrity of waste sludge in order to facilitate handling while stabilization refers to reduce the mobility of contaminants via various mechanisms such as precipitation, chemisorption, encapsulation and ion exchange. S/S treatment generally consists of mixing of chemical binders with sludge with addition of water prior to dry curing of the cementitious mixture for several days. Established S/S binders include cement and lime, which contain high amount of calcium oxide, CaO, an ingredient essential to increase the pH of the mixture to facilitate precipitation. In order to enable a more cost-effective S/S treatment design, S/S specialists often substitute portions of S/S binders with industrial wastes such as incinerator bottom ash and coal fly ash. This talk shall focus on using alternative biomass-based S/S binders such as rice husk and oil palm ashes. Rice husk and oil palm wastes often present disposal problems due to their huge volume. Therefore, usage of these ashes represents a two–pronged approach in solving their disposal problem as well as providing a cost-effective cement replacement material.

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3:00 - 4:00 p.m.
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