Stabilizing Metal-contaminated Sediments Using Biosolids Compost. (S11-huang205834-Oral)

Authors:

- J.W.Huang* Lockheed Martin
- A.Maxemchuk Lockheed Martin
- H.R.Compton US EPA

Abstract:

Heavy metal contamination of sediments poses significant risk to the aquatic environment. In this study, we investigated the role of biosolids compost in stabilizing metal-contaminated sediments in a wetland at Pinehurst, Idaho. Changes in toxicological characteristics were assessed for sediments after a biosolids compost cap had been applied to the sediments for 1-3 years. There was no detectable TCLP extractable Cd and Pb in samples collected from the biosolids cap layer. For untreated sediments, TCLP Cd was greater than 1 mg/L regulatory level, and TCLP Pb was 10-80 fold higher than the regulatory level (5 mg/L). TCLP extractable Zn was 1 mg/L or less for the samples from the biosolids cap layer. For untreated sediments, TCLP Zn was 25-45 mg/L. The results demonstrated that the biosolids cap was effective in preventing Cd, Pb and Zn migration from the sediment into the cap layer. Treated and untreated sediments were also tested for toxicity to the freshwater amphidpod Hyalella azeca. In a 14-day test, amphipods exposed to untreated sediments had 100% motaility. However, amphipods exposed to the biosolids treated sediments had a mortality of 40-43%. The results indicate that the biosolids treatment could reduce the risk of metal contaminated sediments to the aquatic life.

Corresponding Author Information:

Jianwei Huang Lockheed Martin 2890 Woodbridge Ave, Bld 209 Annex Edison, NJ 08837 phone: 7323214233 fax: 7324944021 e-mail: jianwei.huang@lmco.com

Presentation Information:

Presentation Date: Tuesday, November 12, 2002 Presentation Time: 1:45 pm

Keywords:

Wetland, Phytoremediation, Biosolids, Sediment