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Impact of chromated copper arsenate (CCA) in wood mulch

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Abstract

The production of landscape mulch is a major market for the recycling of yard trash and waste wood. When wood recovered from construction and demolition (C&D) debris is used as mulch, it sometimes contains chromated copper arsenate (CCA)-treated wood. The presence of CCA-treated wood may cause some potential environmental problems as a result of the chromium, copper, and arsenic present. Research was performed to examine the leachability of the three metals from a variety of processed wood mixtures in Florida. The mixtures tested included mixed wood from C&D debris recycling facilities and mulch purchased from retail outlets. The synthetic precipitation leaching procedure (SPLP) was performed to examine the leaching of chromium, copper and arsenic. Results were compared to Florida's groundwater cleanup target levels (GWCTLs). Eighteen of the 22 samples collected from C&D debris processing facilities leached arsenic at concentrations greater than Florida's GWCTL of 50 $\mu\text{g}/\text{l}$. The mean leachable arsenic concentration for the C&D debris samples was 153 $\mu\text{g}/\text{l}$ with a maximum of 558 $\mu\text{g}/\text{l}$. One of the colored mulch samples purchased from a retail outlet leached arsenic above 50 $\mu\text{g}/\text{l}$, while purchased mulch samples derived from virgin materials did not leach detectable arsenic (<5 $\mu\text{g}/\text{l}$). A mass balance approach was used to compute the potential metal concentrations (mg/kg) that would result from CCA-treated wood being present in wood mulch. Less than 0.1% CCA-treated wood would cause a mulch to exceed Florida's residential clean soil guideline for arsenic (0.8 mg/kg).

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Keywords: Mulch; CCA-treated wood; Construction and demolition (C&D) debris; Arsenic; Wood waste

1. Introduction

The production of mulch represents a major market for a number of recovered solid wastes. Wastes traditionally used for mulch include land-

clearing debris, yard trash, and vegetative wastes produced during landscaping and land maintenance activities. Scrap manufactured wood products are also recycled into mulch. Examples of scrap wood products include manufactured product debris (e.g. scrap from furniture production), discarded pallets and spools, and wood recovered from construction and demolition (C&D) debris. Discarded wood is often less desirable as a source of mulch because of its color, but the advent of coloring agents

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