Heavy metals in bottom ash from a medical-waste incinerator in Thailand

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ISSN: 1090-025X
Publisher: American Society of Civil Engineers

Abstract: Investigations were carried out to study the heavy metal content in the bottom ash from the medical-waste incinerator of Ratchasima-Thonburi Hospital in the northeastern city of Nakhon Ratchasima in Thailand. Relationship between particle size and heavy metal concentrations were determined in the bottom ash and in simulated leachate. The following four metals were selected for this study: lead, silver, iron, and zinc, in the four particle sizes >9.5 mm, 9.5-4.75 mm, 4.75-0.5 mm, and less than 0.5 mm, respectively. The average concentrations of lead, silver, iron, and zinc in bottom ash were 765.3, 327.9, 314, 121.2, and 18,710.7 mg/kg, respectively. The toxicity of leachate from bottom ash was investigated for these metals. The concentrations were compared with the U.S. EPA limits and Thailand's standards for heavy metals in the leachate of hazardous waste. The average concentrations of lead, silver, iron, and zinc in the simulated leachate were 0.1, 0.1, 0.2, and 0.3 mg/L, respectively, well below the limits set by EPA and Thai standards