University of Massachusetts
Transportation Center

Street Sweeping Reuse at MassHighway – Barriers, Economics, and Opportunities

Massachusetts Transportation Research Program

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16. Abstract

The Massachusetts Highway Department (MassHighway) is responsible for the disposal of approximately 30,000 cubic yards of street sweepings and catch basin cleanings every year. Existing Department of Environmental Protection policy allows for disposal of this material in a landfill or use as daily landfill cover. However, with rapidly shrinking landfill space and high cost of disposal (tipping fees), it is critical to consider reuse and recycle alternatives for this material. This study conducted an extensive analysis of the physical, chemical, and geotechnical properties of fresh, virgin sand, street sweepings and catch basin cleanings. Physical properties were examined including grain size, density, organic content, moisture content, uncompacted void content, and specific surface area. Chemical contaminants analyzed include RCRA-8 metals, volatile organics, polynuclear aromatic hydrocarbons, benzene, toluene, ethyl benzene and xylene, gasoline-range petroleum hydrocarbons and diesel-range petroleum hydrocarbons. Geotechnical characterization included image analysis for angularity, form and texture, uncompacted void content, and British Pendulum Number (BPN) test. The primary reuse options evaluated for street sweepings and catch basin cleanings include (a) reuse on pavements to provide traction and anti-skidding, (b) reuse as fine aggregates in bituminous concrete pavement, and (c) as a compost additive.

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