

# Leaching of Mining Waste Aggregates



Recycled  
Materials  
Resource  
Center



University of New Hampshire



Federal Highway Administration

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## Project Objectives

To evaluate the environmental impacts of various beneficial uses of mining waste in transportation applications including use as roadbase, embankment fill, and aggregate in concrete and asphalt.

## Project Progress

It is estimated that the mining and processing of mineral ores generates approximately 1.6 billion metric tons of mineral processing waste each year in the United States. Past mining activities and accumulations of mineral wastes account for approximately 50 billion metric tons of material. Although many sources of mining wastes are located in remote areas, nearly every state has significant quantities of mineral processing wastes. There is growing interest in using recycled, secondary use and industrial byproduct materials as aggregate in beneficial use applications. Potential high volume applications of these materials include use as roadbase material, embankment fill, and as aggregate in concrete and asphalt. Physical characteristics and appropriate applications of these aggregates are currently being researched. This research characterizes the chemical properties and leaching characteristics of a number of mining wastes, including waste rock and fine-grained mill tailings from a suite of mining sectors, focusing on those with high beneficial use potential. Leaching tests simulating typical beneficial use scenarios as a function of pH and liquid-to-solid ratio (LS) will be performed. The results will then be assessed for potential risk to human health and the environment ensuing from the beneficial use of these mining wastes. Project tasks include a literature search, collection and physical characterization of samples, environmental sample



analysis and compilation of results including characterization of leaching with respect to beneficial use scenarios. Analyses to be performed include total metals, pH dependent leaching and LS ratio leaching through one or more batch leaching tests with various LS, column tests or other more similar field tests.

## Project Partners

Dr. Jeffrey Melton, UNH - RMRC Project 42: Characterization of Recycled Material Aggregates.

## End Products

By assessing and evaluating the leachability (and release of metals) from mine wastes under various conditions, guidance on the beneficial uses of these wastes can then be provided for state DOT and regulatory agencies while remaining protective of human health and the environment.

## Further Information

The Recycled Materials Resource Center (RMRC), a cooperative agreement between the University of New Hampshire and the Federal Highway Administration, is a national center that promotes the appropriate use of recycled materials in the highway environment. Its focus is on the long-term performance and environmental implications of using recycled materials.

For detailed quarterly progress reports for Project 40, as well as all RMRC-funded research projects, please see: <http://www.rmrc.unh.edu/Research/researchlevel2.asp>.