

RMRC



Recycled
Materials
Resource
Center



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Research Project 79

Development of Engineering Criteria for Shredded Waste Tires in Highway Applications

Project Objectives

- Evaluate the concentrations of toxic substances in shredded tire leachate
- Use this information to determine appropriate ways of storing tire chips and using them in construction

Project Summary

From April 1990 until June 1992, 10 samples were collected from the East and West lysimeters installed beneath the test embankment. The samples were collected on a monthly basis originally, with gradually decreasing frequency.

The chemical analysis of the leachate samples was performed by the State Hygiene Laboratory. The parameters tested include COD, BOD, Cl, SO₄, pH, alkalinity, hardness, TDS, Ba, Fe, Mn, Zn, Pb and Na.

In 1990, duplicate EP toxicity and AFS leaching tests were performed on tire chip samples by the Laboratory of Hygiene. These results showed that shredded tire samples

show no likelihood of being a hazardous waste. They appeared to release no base-neutral regulated organics.

All substances showed detectable but very low release patterns for all substances tested, and declining concentrations for most substances. Ba, Fe, Mn and Zn showed increasing concentrations, however Ba and Zn were well below drinking water standards. Mn and Zn were at or above drinking water standards.

It is known that styrene-butadiene rubber absorbs large amounts of hazardous organic chemicals from the surrounding environment, which sets it apart from a lot of materials.

Project Partners

Wisconsin Department of Transportation, Wisconsin Department of Natural Resources,

End Results

The lysimeter data showed little or no likelihood of significant leaching of tire chips for substances that are a specific health concern, such as lead or barium. However, two metallic elements, manganese and zinc, showed some leaching potential.

Further Information

The Recycled Materials Resource Center (RMRC) is a national center that promotes the appropriate use of recycled materials in the highway environment. It focuses on the long-term performance and environmental implications of using recycled materials