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Arkansas Waste In Municipal Areas
Suitable For Highway Construction
Or Maintenance

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16. Abstract <p>The categories and quantities of municipal waste products are aggregates (2 million tons/yr), glass (2200 tons/yr), chemical wastes (3 million tons/yr), wood products and paper (50,000 tons/yr), rubber (2000 tons/yr), and textiles and miscellaneous (variable quantities).</p> <p>Aggregates, woodchip mulches, brown mud, dried sewage sludge, incinerator residues and hydrated lime are recommended for immediate application to Arkansas highways. Aggregates and incinerator residues can be used in fills and embankments. Woodchip mulches are effective in preventing erosion. Dried sewage sludge is an effective soil conditioner and fertilizer. Brown mud and hydrated lime can stabilize plastic clays.</p> <p>Rubber, brine, and acid hold promise for future use. Rubber holds promise as a viscoelastic layer to eliminate pavement cracking and as a plasticizer in wearing courses but the technology for this is not sufficiently developed. Brine, gypsum, and spent sulfuric acid appear to be good soil stabilizers and conditioners. Studies on the effect of brine and acid on the environment should be made before use.</p>					
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**ARKANSAS WASTE IN MUNICIPAL AREAS
SUITABLE FOR HIGHWAY CONSTRUCTION
OR MAINTENANCE**

by
Sam I. Thornton
Robert C. Welch

**FINAL REPORT
HIGHWAY RESEARCH PROJECT 35**

conducted for
The Arkansas State Highway Department
in cooperation with
The U.S. Department of Transportation
Federal Highway Administration

The opinions, findings, and conclusions expressed in this publication are those of the authors and not necessarily those of the Arkansas State Highway Department or the Federal Highway Administration.

JUNE, 1973

ABSTRACT

The categories and quantities of municipal waste products are aggregates (2 million tons/yr), glass (2200 tons/yr), chemical wastes (3 million tons/yr), wood products and paper (50,000 tons/yr), rubber (2000 tons/yr), and textiles and miscellaneous (variable quantities).

Aggregates, woodchip mulches, brown mud, dried sewage sludge, incinerator residues and hydrated lime are recommended for immediate application to Arkansas highways. Aggregates and incinerator residues can be used in fills and embankments. Woodchip mulches are effective in preventing erosion. Dried sewage sludge is an effective soil conditioner and fertilizer. Brown mud and hydrated lime can stabilize plastic clays.

Rubber, brine, and acid hold promise for future use. Rubber holds promise as a viscoelastic layer to eliminate pavement cracking and as a plasticizer in wearing courses but the technology for this is not sufficiently developed. Brine, gypsum, and spent sulfuric acid appear to be good soil stabilizers and conditioners. Studies on the effect of brine and acid on the environment should be made before use.

GAINS, FINDINGS, and CONCLUSIONS

This study shows that some of the waste products currently available in Arkansas can be used satisfactorily in highway construction and maintenance. Aggregates, woodchip mulches, brown mud, dried sewage sludge, incinerator residues and hydrated lime are recommended for immediate application to Arkansas highways. Aggregates and incinerator residues can be used in fills and embankments. Woodchip mulches are effective in preventing erosion. Dried sewage sludge is an effective soil conditioner and fertilizer. Brown mud and hydrated lime can stabilize plastic clays.

Other wastes such as rubber, brine, and acid hold promise for future use. Rubber may soon be used as a viscoelastic layer to eliminate pavement cracking and as a plasticizer in wearing courses. The technology for these rubber uses is not sufficiently developed. Brine and spent acid appear to be good soil stabilizers and conditioners. Studies on the effect of brine and acid on the environment should be made before use. Arkansas municipal waste products are aggregates (2 million tons/yr), glass (2200 tons/yr), chemical wastes (3 million tons/yr), wood products and paper (50,000 tons/yr), rubber (2000 tons/yr), and textiles and miscellaneous (variable quantities). Many of these wastes have applications which are not mentioned but the lack of quantity or the high cost of acquisition or handling makes their use impractical.

IMPLEMENTATION STATEMENT

Several of the waste products found in Arkansas have immediate application in highway construction and maintenance. These products are aggregates, woodchips and bark, brown mud, waste lime, and dried sewage sludge. The use of these products will be limited, however, by economic considerations, primarily the cost of transportation. Aggregates are recommended for non-critical fills, mulches of woodchips and bark are recommended for erosion protection, brown mud and waste lime are recommended as soil stabilizing agents, and the use of sewage sludge to aid in the establishment and maintenance of desirable vegetation is also recommended.

Brine, gypsum, and spent sulfuric acid show promise for use as soil stabilizers or conditioners but further study to determine the environmental hazards of their use is recommended.