

USE OF RECYCLED MATERIALS IN CONSTRUCTION

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ABSTRACT

Nearly 4.2 billion tons of non-hazardous by-products are generated from agricultural, domestic, industrial, and mineral sources. The amounts of by-product materials generated are 2,100 million tons from agricultural sources, 200 million tons from domestic sources, 400 million tons from industrial sources, and 1,800 million tons from mineral sources (Collins and Ciesielski 1994). Legislation has been passed by federal lawmakers to encourage beneficial use of by-product materials generated from various sources. The Federal Resource Recovery Act of 1970 was the first law which encouraged recycling, resource recovery, and energy recovery of by-product materials. These laws were later replaced by the Federal Resource Conservation and Recovery Act of 1976 (RCRA). This law requires selection of appropriate disposal of solid residue in order to avoid any injury to human health as well as the environment. Further amendments to the RCRA were made in 1980 and 1984, with a greater emphasis on suitable disposal of waste materials and resource recovery. The law further encourages recycling of waste materials. Large amounts of wastes generated from industrial and domestic sources are currently landfilled due to non-availability of economically attractive use options. Landfilling is undesirable because it causes not only huge financial burdens to producers of by-products, but also makes them responsible for unknown future environmental liabilities. Additionally, due to shrinking landfill space and increased environmental restrictions, cost of landfilling is escalating. To address these problems it has become essential to find cost-effective solutions to waste disposal problems. Recycling of by-product materials generated from various sources must provide innovative solutions to the above problems.