



## **RECOVERY, RECYCLING, REUSE & IMMOBILITY TECHNOLOGY FOR CONTROLLING MUNICIPAL SOLID WASTE – an overview**

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### **ABSTRACT**

Population growth, standard living improvement and industrial activities are increasing, consequently large amount of municipal solid waste (MSW) increase. However, the method of management and control of MSW are not yet effectively controlled and still offer a major problem in the area of environmental geotechnology. This paper presents a critical review of overall problems in four areas including: recovery, recycling, reuse and immobility technology focused on controlling municipal solid wastes. For the immobility further subdivision covers stabilization, solidification as well as landfill technology. In each case, criteria for recovery, recycling and reuse of MSW are outlined. Comparisons of advantages and disadvantages of each case are made in tabulated form. Five areas of MSW are emphasized in this paper as:

- (1) Classification and characterization of municipal solid waste (MSW), also includes radioactive nuclear waste, toxic heavy metals, and scrap non-ferrous metals.
- (2) Closely examines current MSW controlling methods including recovery, recycling, reuse and immobility technology.
- (3) Detailed review of landfill technology includes leachate controlling facilities and also points out the advantages and disadvantages using geotechnical approach for design and construction of landfill.
- (4) Review of current research activities such as: new type of slurry wall made of nanoscale iron particles, homoionic soils and scrap tire aggregates and other environmental geotechnical approaches for design and construction of landfill, and
- (5) Indirectly controlling landfill by reducing incoming wastes dumped into landfill, shrinking the landfill size by using fast-decomposing MSW wastes such as kitchen foods, yard wastes, agricultural by-products and wastes, animal by-products and diapers converting into recoverable and renewable energy such as gasohol and biomass energy. A preliminary plan and laboratory studies are discussed. Benefits and difficulties on various aspects are examined.

**Key words:** .