Proceedings of the 17th Biennial Waste Processing Conference
ASME 1996

COMPARISON OF AIR EMISSIONS FROM WASTE MANAGEMENT FACILITIES

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ABSTRACT

Landfilling remains the predominate disposal method for managing municipal solid waste (MSW) in the U.S. According to the U.S. EPA, in 1993 landfilling accounted for 62% of the management alternative for disposing of MSW while recycling and combustion account for 22% and 15% respectively. Recent actions such as limits on "flow control" and EPA's proposed Most Achievable Control Technology (MACT) rules for Municipal Waste Combustors (MWCs) most likely will increase the amount of MSW that will be landfilled.

The air emissions from landfill operations have in general been ignored and unregulated. This paper will make a comparison of air emissions from a landfill (Fresh Kills Landfill in NYC) and a modern MSW. The paper will present the emissions from landfill operations including "uncontrolled emissions", residual and secondary emissions from gas control systems, and emissions from diesel equipment at the landfill. The MWC emissions will include boiler pollutants and a comparison to fossil-fuel fired power plants.

INTRODUCTION

The integrated approach to the disposal and treatment of solid waste is increasing due to economic and regulatory pressure. The components of the integrated approach including recycling, composting, energy recovery, and landfilling should be combined into an overall waste management strategy that provides a balance between conservation of resources, beneficial use, community needs, and economics. Unfortunately, in the U.S. the regulatory and environmental impacts have not been fully considered in pursuing this balance.

In 1989, the U.S. Environmental Protection Agency (EPA) formally issued a national strategy for improved management of municipal solid waste (MSW). This strategy, called "integrated waste management," features a hierarchy of techniques:

- "Source Reduction" (i.e., reduce the MSW generation rate and toxicity)
- Recycling (includes composting)
- MSW Combustion (with energy recovery)
- Landfilling (Waste that cannot be practically recycled or combusted must be landfilled, likewise for the residues resulting from MSW, recycling, composting, and combustion.)

EPA placed source reduction and recycling at the top of the hierarchy. Then, for that fraction of MSW that cannot be recycled practically, EPA called for disposal by means of combustion with recovery of energy. Landfilling was designated by EPA for disposal of those waste types that cannot be recycled or combusted. EPA's ranking of waste-to-energy is consistent with the preference of other advanced, industrialized countries. For example, Switzerland has banned by law the landfilling of untreated MSW; also, such landfilling will be significantly restricted by law in Germany this decade. A comparison of U.S. solid waste disposal practices versus other developed nations is presented in Figure 1.

EPA noted that the four techniques above are complementary. No single management technique by itself is a panacea for waste management rather, an appropriate mix must be tailored to local needs.