

INNOVATIONS IN MWC ASH MANAGEMENT

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ABSTRACT

Solid waste managers continuously investigate alternative methods for waste management to meet and improve their practice. As part of this process, innovative management techniques and strategies have been implemented to address a wide range of solid waste issues. In recent years, innovative management strategies have been of particular interest to solid waste officials responsible for the management of municipal waste combustor (MWC) ash.

Historically, ash, a potentially reusable material, has been disposed of in monofill or co-disposal landfills. This practice has become costly to generators in terms of tipping fees and to landfill operators through the depletion of valuable landfill airspace. To address these concerns, solid waste managers in several states, including California, Florida, Pennsylvania, New York, and Tennessee, have implemented beneficial use programs in which ash is reused both within and outside of the landfill environment. To date, primary markets for ash include use as alternative landfill construction materials and as road base structural fill.

While recycling of ash has been studied extensively over the past few decades, the combination of available technologies, the state and federal regulatory framework, and project economics are driving MWC projects to evaluate and, where feasible, implement beneficial use as part of their ash management programs.

KEYWORDS: Municipal Waste Combustor; Ash; Beneficial Use; Recycling; Municipal Solid Waste

INTRODUCTION

Solid waste managers have long investigated opportunities to improve existing solid waste management practices. During the primary growth phase of the waste-to-energy industry in the United States through the 1980s, ash generated from the processing of municipal solid waste (MSW) was and still is largely disposed of in either monofill or co-disposal landfill facilities. This management practice is economically burdensome and requires significant amounts of disposal capacity. In recent years, owners and operators of municipal waste combustors (MWC), as well as federal and state regulatory agencies, have expanded routine solid waste management

initiatives for the management of ash to identify, develop, and implement innovative management techniques to improve existing ash management systems.

Municipal solid waste is generally managed as part of an integrated solid waste management system that incorporates waste reduction, reuse/recycling, energy recovery, and landfill disposal. Although unit activities can be, and often are operated separately from other activities in an integrated system, they must be managed as part of the overall system. To operate successful waste management systems, managers need to consider the impact of alternative management strategies on both the unit activity and the overall system.

Approximately 32 million tons of MSW are processed each year by currently operating MWCs. With the inclusion of the estimated 8 million tons of additional capacity expected to come on-line from projects in advanced stages of planning (those that have initiated permitting activities and/or developed construction schedules), annual ash generation in the United States will be expected to reach 12 million tons (Berenyi and Gould, 1993). With such a large residual waste stream to manage, the use of innovative techniques and strategies, including beneficial use programs, will allow solid waste managers to improve both the efficiency of existing ash management programs and the overall integrated waste management system.

BENEFICIAL ASH MANAGEMENT

With the advent of changing regulatory programs, technological advances, and improving economic scenarios, ash managers have begun to look beyond monofill or co-disposal landfilling as the only viable management alternatives for ash. Although ash has consistently passed required waste characterization testing, managers of ash have turned to treatment technologies to reduce the potential of contaminant leaching, primarily lead and cadmium, as a means to protect against the potential liabilities generally associated with landfill disposal. The development of treatment technologies has provided the means to pursue alternative management strategies. However, for beneficial ash management programs to be successful, several issues must be addressed, including: