

## WASTE SEPARATION - DOES IT INFLUENCE MUNICIPAL WASTE COMBUSTOR EMISSIONS?

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### ABSTRACT

It has been suggested that MSW incinerator emissions show significant variations because of the heterogeneous nature of the waste fed to the furnace. This argument has even been used to propose banning certain materials from incinerators. However, data previously reported by the authors suggests that a large portion of the trace metals come from natural sources. Furthermore, full scale incinerator spiking experiments suggest that certain forms of trace metals have minimal effects on stack emissions. Similar studies with chlorinated plastics have failed to identify a significant effect on incinerator dioxin emissions.

The implication of segregating the lawn and garden waste and other fines from the furnace feed is explored using data from a 400 tpd mass burn facility equipped with a conditioning tower, dry reactor and fabric filter air pollution control system [APCS] preceded by an NRT separation system. The stack emissions have been tested periodically since commissioning to characterize emissions for various seasons using both processed fuel and raw MSW.

Front end processing to remove selected portions of the waste stream based upon size or physical properties, ie. fines, grass, or ferrous materials, did not result in a statistically significant difference in stack emissions. System operating regime, and in particular those that effect the effective air to cloth ratio in the fabric filter, appear to be the principal influence on emission levels.

### INTRODUCTION

Numerous suggestions about ways to improve municipal waste combustor emissions characteristics have been made over the last few years. Some people would have us believe that changing the amount of chlorinated plastic in the feed will reduce PCDD/F emissions; others have suggested that banning certain materials from the waste received at these facilities will reduce the trace metal emissions. While it is clear that if something is not put into the furnace it cannot come out, combustors are complex and can affect the chemical form and environmental availability of materials in the various waste streams. Hence, simply changing the amount of a substance or compound may increase, decrease or not affect specific releases in the stack emissions and the residue streams. Separating initiatives, however, could affect the products and materials used in society through bans imposed on the use of certain materials. Examples include the reformulation of products such as batteries to decrease the amount of cadmium, mercury and lead they contain. While thoughtful redesign is a positive aspect of the free market economy, outright bans are disruptive, costly and may produce little benefit. Installing separation equipment to remove materials and supposedly reduce emissions is also costly. The WASTE Program report (1993) and related papers examined the character of MSW and its trace metal composition. Unlike conventional wisdom that suggests trace metals in the waste stream are contributed by