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## **Inertization, immobilization and safe disposal of incineration residues**

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Combustion of coal and municipal solid waste (MSW) causes air pollution and produces solid residues which contain high levels of toxic elements. The toxic characteristics of residues generated from combustion of MSW in waste-to-energy plants are strictly controlled by Federal and State Waste Management Regulations. According to Resource Conservation and Recovery Act (RCRA), residue generated from combustion of MSW is considered hazardous and must be tested according to EPA Toxic Characteristics Leaching Procedure (TCLP) Method 1311 and suitably treated for its safe disposal to landfills. Experiments with various treatment chemicals as primary independent variable had earlier been conducted by several agencies and facilities. The author has successfully developed two new cost-effective solutions for stabilizing heavy metals in MSW residues to cover the gap between the leachability concentrations of toxic elements observed in residues and the leachability toxicity limits as per EPA's regulatory threshold. These methods include treating MSW residue fly ash (FA) with 2% dolomitic lime by weight or by injecting aqueous (39% concentration) sodium sulfide at a controlled rate. The extensive full scale experimental study was carried out at 240 t/day capacity Hampton/NASA waste-to-energy mass burn MSW incinerator (MSWI). This process has showed savings to the extent of \$150,000 per year by treating the plant's combustion residues with aqueous sodium sulfide over the use of dolomitic lime for ash treatment. The treatment method invented has also shown better control of the leachability of toxic heavy metals than previously used chemical treatment methods. Comparative study showing the level of leachability of toxic heavy metals with different treatment methods has also been studied and the best management practices for use and disposal of such wastes have been discussed.

### **Biography**

Anil Mehrotra is pursuing his DEng from Old Dominion University, Virginia. He is a distinguished alumnus of Indian Institute of Technology, Roorkee, India and over 45 years of experience in conventional and alternate energy technologies. He has been working as SH and E Specialist and Engineer at Hampton/NASA waste-to-energy facility for last 17 years.

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