

## Characterization of Emissions from the open burning of Municipal Solid Waste (MSW) under Tropical Environment

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**Abstract :** The deliberate fires initiated by dump managers and human scavengers to reduce the volume of waste and recovery of valuable metals/materials are common at municipal solid waste (MSW) disposal sites in developed country. A large amount of toxic gases released due to this act is responsible for the deterioration of regional and local air quality, which causes visibility impairment and acute respiratory diseases. The present study was aimed at the characterization of MSW and emission characteristics of burning of MSW in the laboratory. MSW samples were collected directly from the one of the open dumpsite located in Chennai city. Solid waste sampling and laboratory analysis were carried out according to American Society of Testing and Materials (ASTM) standards. Results indicated the values of moisture content, volatile solids (VS) and calorific values of solid waste samples were 16.67%,8%,9.17MJ/kg, respectively. The elemental composition showed that the municipal solid waste contains 25.84% of carbon, 3.69% of hydrogen, 1.57% of nitrogen and 0.26% of sulphur. The calorific value of MSW was found to be 9.17 MJ/Kg which is sufficient to facilitate self-combustion of waste. The characterization of emissions from the burning of 1 kg of MSW in the test chamber showed a total of 90 mg/kg of PM10 and 243 mg/kg of PM2.5. The current research study results will be useful for municipal authorities to formulate guideline and policy structure regarding the MSW management to reduce the impact of air emissions at an open dump site.

**Keywords :** characterization, MSW, open burning, PM10, PM2.5

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