

AMEV-13 MUNICIPAL SOLID WASTE MANAGEMENT

OBJECTIVES:

To make the students conversant with different aspects of the types, sources, generation, storage, collection, transport, processing and disposal of municipal solid waste.

UNIT I SOURCES AND TYPES

Sources and types of municipal solid wastes-waste generation rates-factors affecting generation, characteristics-methods of sampling and characterization; Effects of improper disposal of solid wastes-Public health and environmental effects. Elements of solid waste management -Social and Financial aspects - Municipal solid waste (M&H) rules - integrated management-Public awareness; Role of NGO"s.

UNIT II ON-SITE STORAGE AND PROCESSING

On-site storage methods - Effect of storage, materials used for containers - segregation of solid wastes - Public health and economic aspects of open storage - waste segregation and storage - case studies under Indian conditions - source reduction of waste - Reduction, Reuse and Recycling.

UNIT III COLLECTION AND TRANSFER

Methods of Residential and commercial waste collection - Collection vehicles - Manpower- Collection routes - Analysis of collection systems; Transfer stations - Selection of location, operation & maintenance; options under Indian conditions - Field problems- solving.

UNIT IV OFF-SITE PROCESSING

Objectives of waste processing - Physical Processing techniques and Equipments; Resource recovery from solid waste composting and biomethanation; Thermal processing options - case studies under Indian conditions.

UNIT V DISPOSAL

Land disposal of solid waste; Sanitary landfills - site selection, design and operation of sanitary landfills - Landfill liners - Management of leachate and landfill gas-Landfill bioreactor- Dumpsite Rehabilitation

OUTCOMES:

The students completing the course will have

- an understanding of the nature and characteristics of municipal solid wastes and the regulatory requirements regarding municipal solid waste management
- ability to plan waste minimisation and design storage, collection, transport, processing and disposal of municipal solid waste

TEXTBOOKS:

- Tchobanoglous.G., Theisen, H. M., and Eliassen, R. Solid. Wastes: Engineering Principles and Management Issues. New York: McGraw Hill, 1-77.
- Vesilind, P.A. and Rimer, A.E., "Unit Operations in Resource Recovery Engineering", Prentice Hall, Inc., 1-81
- Paul T Willams, "Waste Treatment and Disposal", John Wiley and Sons, 2000

REFERENCES:

- Manual on Municipal Solid Waste Management, CPHEEO, Ministry of Urban Development, Government of India, New Delhi, 2000.
- Bhide A.D. and Sundaresan, B.B. Solid Waste Management Collection, Processing and Disposal, 2001
- Manser A.G.R. and Keeling A.A, "Practical Handbook of Processing and Recycling of Municipal solid Wastes", Lewis Publishers, CRC Press, 1--6
- George Tchobanoglous and Frank Kreith, Handbook of "Solid waste Management", McGraw Hill, New York, 2002