ISSN: 2456-9348
Vol (02) _Issue (05) Impact Factor: 4.520

iJETRM
International Journal of Engineering Technology Research & Management

THE TITLE OF MANUSCRIPT TIMES NEW ROMAN SIZE 12 BOLD CAPS

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ABSTRACT
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This research focused on three methods of Solid Waste Disposals thus; Biological, Thermal and Physical technologies. Thermal treatment (Open burning), this uncontrolled burning of garbage releases many pollutants into the atmosphere which have many negative effects on both human health and the environment. These include dioxins, particulate matter, polycyclic aromatic compounds, volatile organic compounds, carbon monoxide, hexachlorobenzene and ash. All of these chemicals pose serious risks to human health. Biological treatment will require longer time than thermal conversion as biological processes takes days, weeks or even months to be carried out fully. These processes may be particularly suited for some MSW fractions i.e. niche applications and will therefore contribute to the expansion of the MSW treatment arsenal.

Keywords:
Municipal Solid Waste, Biological Treatment, Thermal Treatment, Physical Treatment

INTRODUCTION

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Solid waste is the unwanted or useless solid materials generated from combined residential, industrial and commercial activities in a given area. It may be categorised according to its origin (domestic, industrial, commercial, construction or institutional); according to its contents (organic material, glass, metal, plastic paper etc); or according to hazard potential (toxic, non-toxin, flammable, radioactive, infectious etc).

According to [1] waste is no more treated as the valueless garbage; waste is rather considered as a resource in the present time. Resource recovery is one of the prime objectives in sustainable waste management system. Different waste treatment options are available in the current time with different waste management capacities. There is no a single technology that can solve the waste management problem [2]. Integrated waste management system is commonly applied method in many developed countries. Integrated waste management system offers the flexibility of waste treatment option based on different waste fraction like plastic, glass, organic waste or combustible waste. Energy and resource recovery is also important and can be recovered through integrated waste management system. There are different system analysis tools [3] that are available at the present time for the decision makers. Technology or strategy can be analyzed by the environmental, social or environmental point of view. Different studies have already been done for MSW management options to analyze the benefits and problems associated with the processes. Some of the studies are done by [4].

Waste Water

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There are six general sources of waste generation, namely; domestic, commercial, industrial, agricultural, institutional and natural:.

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- Households are the highest producers of domestic waste. Domestic waste includes, among others, paper and cartons, plastics, glass, leftover food, cans.
- The main agents of commercial waste producers are stores, business premises, markets and restaurants.

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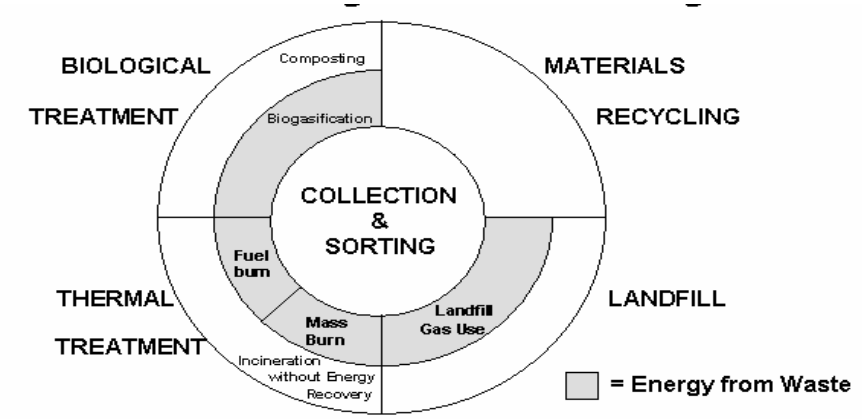

Fig. 1: Elements of Integrated Solid Waste Management [10]
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Table details come before table and size 10 time new roman bold italic center aligned
Table 1: Estimated Carbon and Nitrogen Content of Some Organic Materials [18]; [19].

Materials with High Nitrogen Values	
Materials	**C:N ratio**
Vegetable waste	12-20:1
Coffee grounds	20:1
Grass clippings	12-25:1
Cow manure	20:1
Horse manure	25:1
Horse manure w/ Litter	30-60:1
Poultry manure (Fresh)	10:1
Poultry manure (w/ Litter)	13-18:1
Pig manure	5-7:1
Materials with High Carbon Values	
Materials	**C:N ratio**
Foliage (Leaves)	30-80;1
Corn stalks	60:1
Straw	40-100:1
Bark	100-130:1
Papers	150-200:1
Wood chips and sawdust	100-500:1

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METHODOLOGY

The methodology adopted in this paper is an intensive literature review on the various types of technologies for solid waste disposal.

In traditional composting systems, organic material is just piled together and then left for a year; while more elaborated composting systems take 2 to 3 weeks for complete decomposition. This system necessitates that the materials to compost be chopped up, into small pieces, and carbon (C) to nitrogen (N) ratio not exceeding 30:1. It

CONCLUSION

Based on the research carried out on the three methods of Municipal Solid Waste Disposals thus; Biological, Thermal and Physical technologies. However, it was concluded that the most effective way to reduce waste is to prevent it from ever becoming waste in the first place. Waste prevention, is also known as source prevention, is the practice of designing, manufacturing, purchasing, or using materials (such as products and packaging) in ways that reduce the amount of toxicity of trash created. Reusing items is another way to stop waste at the source because it delays or prevents the entry of those items into the waste collection and disposal system. Methods of waste reduction, waste reuse and recycling are the preferred options when managing waste. There are many environmental benefits that can be derived from the use of these methods. They reduce or prevent green house gas emissions, reduce the release of pollutants, conserve resources, save energy and reduce the demand for waste treatment technology and landfill space

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ACKNOWLEDGEMENT

This research was supported/partially supported by [Name of Foundation, Grant maker, Donor]. We thank our colleagues from [Name of the supporting institution] who provided insight and expertise that greatly assisted the research, although they may not agree with all of the interpretations/conclusions of this paper. We thank [Name Surname, title] for assistance with [particular technique, methodology], and [Name Surname, position, institution name] for comments that greatly improved the manuscript.

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SEE BELOW FORMAT TO ARRANGE REFERENCES

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