

A STUDY ON RELEVANT, EFFECTIVE AND VALUABLE WASTE MANAGEMENT PRACTICES AND THE BENEFITS

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Introduction:

It is found that the annual waste generated worldwide is 2.01 billion tonnes and it stands to increase to 3.40 billion tonnes by the year 2050, Urban India generates 62 million tonnes of municipal solid waste each year of which about 60% – 70% is organic waste.

There are 2 types of waste generally produced in our society they are:

1. Dry waste

Dry waste is comparatively easy to manage and there are effective ways of recycling it except for a few wastes such as thermocol.

2. Wet waste

Wet waste is comparatively challenging to recycle or reuse, damp waste is usually dumped in landfills and allowed to decompose, and later converted to compost which can further be used for various purposes like fertilizer.

Waste can also be classified into further 2 more types

1. Organic waste

These are biodegradable waste that constitute an organic compound. Eg: Horticulture, Agriculture, Animals, and Household wastes.

2. Inorganic waste

These are-degradable waste that does not constitute any organic compounds. Eg: Plastic, Metal wastes.

Objectives:

Waste Management is a big challenge to any Building, City and Government to a large extent. People produce waste in two forms organic and non-organic and also industrial waste is very hazardous to the environment which needs serious attention. In this context, understanding the trends in waste management technologies and its practicality in the grass- root level, becomes very important. Therefore our study is focused on the trends of waste management practices and its benefits.

Annually about 31 million tonnes of municipal waste are dumped into landfills causing health and environmental hazards our objective is to reduce these landfills by alternate waste management techniques and practices.

Objectives of the study are listed below.

1. To understand the generation of waste and its impact on the environment.
2. To study the trends and technologies of waste management practices by visiting waste management project locations
3. To analyse the benefits of waste management practices and its importance in future

It is a chain of activities that is done from inception to disposal of waste, that is

1. Collection
2. Transportation
3. Treatment
4. Disposal

Waste management in today's era has had growing importance as the traditional ways of managing waste have been requiring a lot of storage space this is one of the main problems and limited resource waste management is required considering alternate options. "Segregation" is the mother of waste management.

Methodology:

Research design: Explorative research

Sampling technique: Purposive and convenience sampling

Sampling size: 5-7 Apartments and OEM

The Team is planning to visit few apartments/Buildings in Bangalore to understand the waste management practices

Also, the team is planning to visit few reputed waste management OEMs (Original Equipment Manufacturers) to understand the new technology and process involved in converting waste into useful products.

- "Waste is Gold" a waste management Company at Harohalli Industrial Area, Bangalore
- Few Municipal corporations

Waste management can be classified into 2 types:

- a. Centralized waste management
- b. Decentralized waste management

Centralized waste management:

In this method usually, landfills are used where all unsegregated waste is dumped and it is dried i.e moisture content is removed from the waste and a compost is created in approximately 30 days. This compost releases various gases such as methane, biogas (wet waste) and this is used to as incinerating(burning of waste) source for various factories.

Decentralized waste management:

At the time everyone is looking for the various means of waste management since the centralized process of waste management is requiring a huge investment and resources such as land space hence to reduce the impact of these factors decentralized methods are being adopted here mechanized ways are being implemented to convert the waste into a resource that can give a positive output, by this bio mechanized machines the factors such as time, space and health issues are reduced significantly.

Case study (Waste is gold and Prestige apartment):

We have conducted a study on one of the leading organizations in waste management waste is gold, situated in Bangalore to get to know what process they follow to manage the waste

Waste is gold has a vision of providing reliable, long-lasting 360-degree solutions for disposal and treatment of waste and reduction of landfills, they have been producing various organic waste composter machines for the conversion of organic waste to a composite that can be reused as a fertilizer. They follow a decentralized method of waste management they are the producers of bio-mechanized machines which convert the segregated wet waste into a composite that can be used as fertilizer.

Since it is government mandated now that if there is more than 50 kg of waste generated in a society then it is the responsibility of the residents to manage their waste.

We had visited one of the major real estate industries of India the prestige group apartment (prestige lake ridge apartment, Bangalore) on 18 – 6 – 2022 to find out how they dispose of the waste generated since they had about 1250 residential flats which generate about 450- 500 kg of waste every day (wet waste) the waste is the gold company had provided there 1-ton organic waste composter machine to convert the organic waste to compost in Jan 2021.

Process:

1. Segregation of organic and inorganic waste.
2. The segregated waste is then put into a shredder this process may be manual or automatic based on the type and technology of the machine, in the shredder the waste is shredded to a size of 1mm – 2mm.
3. The minute particulates are then collected from the shredder and put into the organic composter device along with a mixture of 30 % sawdust or dried leaves for increasing the efficiency of the composite.
4. The mixture is now put into the machine along with a bacteria culture (thermophilic bacteria) and temperature is maintained to around 40 – 45 centigrade and thoroughly mixed to speed the decomposition and proper aeration is provided with the help of hot air blowers and the composite is dried in the machine the decomposition occurs at the molecular level and usable composite is obtained within 10 to 15 days where it would have taken 30 – 45 days if left for natural decomposition.
5. The compost generation in the machine takes 8 hours per batch, here during the segregation and shredding 30% - 40% is directly reduced and a further 30 – 40% is again reduced during the aeration because the moisture is reduced on hot air blowing giving an output of 30% – 40% of the total initial waste as usable.

Result:

The compost obtained after completion of the process is mixed with soil and used as fertilizer for plantation/ vegetation in the apartment and is spared it is sold to vendors/ farmers hence converting the waste to a useful resource.

1. Understand the importance of waste management, practices and its benefits
2. Minimizing the generation of waste especially plastic and inorganic waste.
3. Create awareness about waste management and segregation of waste.
4. Motivating students/ people to have startup ideas/projects on waste management.

The study is focused on the technology and process of waste management and hence the sample size will be less, because there are only few OEMs manufactured in our country.



Waste Collection and Segregation



Segregation table



Shredder



Bio mechanized machine (Waste is gold)



Compost Collection



Use of compost as fertilizer



Plantation (Plants with the compost generated from the organic waste by waste is gold machines and Technology)