

Managing Municipal Solid Waste: Some Suggestions

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Introduction

Municipal Solid waste is a by-product of the lifestyles of the population of a city's inhabitants and with increasing consumption based economic activity and a growing population, the quantum of waste is showing a growing trend. The issues of waste management need to be effectively tackled, keeping in view the aspects of health, environment and quality of life.

The term municipal solid waste generally covers waste from households, including bulky waste, similar waste from commerce and trade, office buildings, institutions and small businesses, yard and garden, street sweepings, contents of litter containers, and market cleansing. Special waste whose collection and disposal needs separate arrangements, e.g. from hospitals etc., other toxic waste, waste from construction and building activities are not considered in this article. Waste generated from industries located in the urban area have to be dealt with separately. However, some of the desirable practices mentioned later in the article could be considered whenever feasible. (Waste from municipal sewage networks and treatment are excluded.)

Types

Waste generated can be broadly considered to be of two types- 'wet' waste (food/kitchen waste and other organic matter including yard and garden waste) and 'dry' solid waste-paper, cardboard, drink cans, glass or plastic bottles, wood, metal, sweepings and special wastes etc.

Now we consider the situation in Bengaluru. From the information put out by Bruhat Bengaluru MahanagaraPalike (BBMP) some time ago it appears that households contribute nearly 54% of the total waste, markets and function halls contribute about 20% and Commercial establishments contribute about 17 %. This situation may have changed to some extent in recent years, but the board picture seems to remain the same. As regards the composition of the waste it seems that vegetable matter, grass/leaves/wood and organic matter are a little more than half of the waste matter.

A major portion (70% or more) of the municipal solid waste activity, commencing from primary collection to disposal has been outsourced by BBMP. In general primary collection from households is taken to a common point i.e., secondary locations from where the waste is shifted to the treatment sites or landfills for final disposal. There are a few processing centres set up; most of the waste however goes to the landfill areas.

Until very recently, no serious attempts were made for segregation of waste at source or at the secondary point. Most of the waste (not segregated) thus went to the landfill areas or the few processing plants whose functioning was inadequate. There have been major problems faced, as the landfills get filled quickly and the landfill areas and surrounding areas stink and create health hazards. People in the landfill and surrounding areas have been protesting about the dismal state of affairs. However, efforts have been made at getting 'wet' and 'dry' waste segregated at the household or primary level and these efforts are continuing. Despite, success in this matter is still disappointing this apart the functioning of the dry waste collection centres needs to be vastly improved.

Advancement in technology has opened up new opportunities for efficient and quick disposal of 'wet' waste. Using new technology, some firms have developed waste to compost machines which can convert food waste and organic waste (including garden waste) to composition 24 hours or less. It is stated that the system employs high temperature microorganisms to decompose food waste and organic matter. This is accomplished without the need of repeated additions of microorganisms or other additives to the composting chamber. They claim to achieve a 85-90% volume reduction and produce high quality compost

fertilizer which can be used in farming and gardening. They are eco-friendly. The process is noiseless & odourless, with no harmful gases. The machines are automatic, compact in size and are claimed to have low operating and very little maintenance costs. They are available in varying capacities. Two such manufactures of the compost machines, located in Pune, Maharashtra, are 'BHOR Engineering private limited' and 'Urban Solutions' which makes 'The Schnell composter'. Bhor Engineering offers machines varying in capacity from 25 Kg to 2000 Kg while Urbans Solutions offers machines varying in capacity for 10 Kg to 1250 Kg. There are probably other manufacturers also in India who make such machines.

This development, therefore, enables an efficient decentralized system for management of the 'wet' waste which constitutes more than half the total waste generated. Also since the food and organic waste are converted to composite in less than 24 hours (unlike many older systems which needed several days or weeks for composting) the problems of storage and transport are reduced to the bare minimum; also no odours or adverse health effects due to the time taken for composting are a great advantage. The effort for attending to the system which takes weeks is also avoided.

Suggestions

It is suggested that the decentralized handling of the wet waste be implemented. Apartment complexes that have more than 25-30 apartments can be made mandated to install suitable waste to compost machines and avoid transport of the wet waste. This could start with new apartment constructions should be compelled to build it into the system when they construct. Existing apartment complexes can be given suitable time for implementation. Two or more apartment complexes can also have shared facilities. For the smaller residences etc., collection and disposal can be arranged by the City Corporation by setting up units at many locations in nearby areas after suitable planning of this. Large restaurants/ eating-places and malls can also set up their own units for treatment of the waste. Incentives like reduction in tax and making 50% of the compost output to those who bring the waste for treatment can also be considered. It is better to provide incentives than prescribe penalties.

In this connection, it is worth to mention here that in China large units for accelerated disposal of food waste and organic waste have been setup, where the waste to fertilizer conversion is done in ten hours. Specially manufactured enzymes are said to be used. It is stated that through its proprietary microorganism technology, Beijing Golden way Bio-Tech (BGB) in Beijing processes organic wastes (e.g. kitchen waste, expired food products) through high temperature aerobic fermentation, producing biofeed and bio-fertilizer additives that are highly viable with substantial protein and energy content. It is stated to have the capacity to produce 400 tons of fertilizer a day. Golden way has opened eight similar plants across China. It is claimed that the company's secret is its garbage-eating enzyme, developed in a lab in the Southern Chinese city of Chengdu. Efforts have been made in Hong Kong to develop a novel "bio-refinery" process that can effectively convert, using enzymes and bacteria, food waste into valuable chemicals (like Succinic acid), without carbon emission.

Conclusion

The State and Central governments in India should undertake and/or promote options like the above-mentioned examples, for quicker conversion of food and organic waste- new suitable enzymes and microorganisms should be found and machinery and equipment for use on a large scale developed. It is also suggested that every ward in Bangalore should have a dry waste centre for more effective handling of dry waste. This would also reduce transport effort and costs. Each centre should have a conveyor belt system so that segregation of the waste (cans, plastic or glass, paper etc.) can be more easily and effectively made. Recycle centers can also be set up. The quantum of waste to be sent to landfills can be greatly reduced.