

Solid waste management: A knotty problem for urban India



DR AMIYA KUMAR SAHU
President,
National Solid Waste
Association of India
(NSWA) &
Chairman, Environment
Sub-Committee Western
India, Confederation of
Indian Industry (CII)

In the present scenario, a major part of environmental concerns have more to deal with solid waste management, as it directly affects the functioning of any industry. The hospitality industry is also grappling with this knotty problem. Today, India's urban population is the second largest in the world after China. As per the 2001 Census, the urban population is 285.35 million or 27.87 per cent of the total population residing in 4378 cities/towns (Ministry of Urban Development and Poverty Alleviation). The population of the country has grown by three times in the last fifty years, while the urban population has grown by five times. The urban population has grown from 17.3 per cent of the total population in the year 1951 to 27.8 per cent in 2001.

A large percentage of India's population resides in the urban areas, which contributes 70 per cent of India's GDP (Gross Domestic Product). In spite of the prominent role of urban India in the economy, there is a huge and widened gap between demand and supply of essential services and infrastructure. Urban India is facing a serious problem of deterioration in the natural environment and quality of life due to indiscriminate population growth.

One of the major problems in the urban areas is that of inefficient solid waste management, which ultimately leads to littered streets, foul smells, transmission of microbial pathogens, illegal dumping, open burning and toxic gas emissions. It is estimated that waste generation in urban areas ranges from 300 gm to 600 gm, per capita, per day (National Environmental Engineering Research Institute). The total municipal solid waste generated by urban India is around 38 million tonnes, per year.



In most cities and towns, one can see overflowing waste community bins with the garbage lying around the roads. The bins are not designed according to the urban requirement. Despite having a dense population, the size of the waste bin has remained the same for years. If not collected for a long time, the waste starts rotting in the bin itself, and starts emitting a foul smell around public places. Citizens lack social responsibility and civic sense. This results in heaps of garbage lying on roads and other public places.

Furthermore, the backlogs in collection as well as the behavioural attitudes towards refuse, lead to blocking of storm drains and sewage networks. During monsoon, the clogged drains are found to be the major cause of flash floods in the cities.

Waste segregation

In India, hardly any waste is being segregated anywhere. Since dry and wet waste is not segregated, recyclable waste like plastic and paper lose their recycling value. At some places, it has been noticed that the segregation is carried out at the source, but the waste is mixed while transporting, and disposed off together. Such practices by the municipal authorities discourage local people to segregate the waste.

At present, household dry waste like paper and glass is sold to scrap merchants. However, it is a very unprofessional way of disposing waste. The waste should be collected in segregated form (dry and wet), and should be transported by separate vehicles to a decentralised centre. There should be adequate decentralised centres in a city. At these centres, dry waste will further be segregated into different categories like paper, glass, plastic, cloth, metals and electronic waste. From decentralised centres the segregated dry waste should be sent for recycling or reusing. Following this practice, it is possible to manage waste far better than the present way. Further, it would also help in minimising the amount of waste to final disposal.

Waste collection

The average collection efficiency for municipal solid waste in Indian cities is about 72.5 per cent, and around 70 per cent of the cities lack adequate waste transport capacities (Tata Energy and Resources Institute 1998). A recent survey by the National Institute of Urban Affairs found that solid waste management staff constitutes 30 to 50 per cent of the total municipal staff, and solid waste management expenditure constitutes 20 to 50 per cent of municipal expenditure (Indo-US Financial Institutions Report). Yet, the service is not so efficient. Urban Local Bodies (ULB) spend between Rs 500 to Rs 1000 per tonne on solid waste management, of which 60 per cent to 70 per cent is spent on collection alone; 20 per cent to 30 per cent on transportation, and less than five per cent on treatment and disposal. 100 per cent waste collection existed in 32 per cent of towns. Collection efficiency is better in metros as it is up to 91 per cent, followed by 85 per cent in class I cities, and 75 per cent in class II cities. (R. Sethuraman 2007).



The waste is transported from community bins to disposal sites by vehicles which are not designed properly for the purpose. It was noticed that moisture drips from waste transport vehicles like open trucks and dumper placers. The transport system needs to function in a more organised way, as the municipal vehicles cannot enter the narrow lanes in the city many a time. Hence they cannot achieve 100 per cent waste collection efficiency.

Waste treatment

As far as treatment of waste is concerned, it is haphazardly done. Waste can be treated by various techniques like composting, bio-bin and waste-to-energy. Today, India recycles 28 per cent of its waste. 42 per cent of all paper, 40 per cent of all plastic soft drink bottles, 55 per cent of all beer and soft drink cans, 57 per cent of all steel packaging and 52 per cent of all major appliances are now recycled (PuducherryEnvis Center).

Waste treatment technologies like incineration, pyrolysis and gasification have failed because Indian garbage has low calorific value, high moisture content and high proportion of organic matter. The recent closure of plants at Vijayawada and Lucknow is a testimony to the fact. Indian garbage has a low calorific value of about 800 cal/kg. Therefore, it has to be burnt. Since Indian waste is 40 per cent biodegradable in nature, composting is becoming an acceptable technical solution for many cities in India. Composting is clean, safe and economical. It significantly reduces the amount of biodegradable waste. Composting is being practiced in 12 per cent of the ULBs. Bio-bin composting using BTM (Bio Trigger Mechanism) can accelerate the process of composting. Though composting seems to be a readily acceptable alternative for garbage processing, it is yet to be practiced extensively.



Proper disposal site

Municipal Solid Waste (MSW) can be disposed by three methods: open dumping, land reclamation and sanitary landfilling. In India, the method of disposal is mainly by open dumping in 76 per cent of the ULBs, while landfilling is done in 11 per cent cities (R. Sethuraman 2007).

Not having a proper disposal site in the urban areas is a big concern. The Government or Municipal Corporation does not earmark proper disposal sites in their development plan. It is absolutely necessary

to visualise the quantity of waste in the future. Depending on the city's development, the disposal site should be reserved accordingly, to avoid socio-politico-environmental conflicts.

MSW dumping grounds

The dumping is indiscriminately performed in open/low lying land. Once the low lying areas are filled with garbage, they are allowed to construct buildings for both commercial and residential purposes. This leads to emission of obnoxious gases like Hydrogen Sulphide, Mercaptans (from untreated garbage below the ground), which affects both the property and human health.

Along with household and market waste, electrical waste and automobile waste should not be ignored. It has to be disposed of in a scientific manner to avoid future ill effects. The most appropriate method of disposal of solid waste is the sanitary landfill which is a well-engineered system. It comprises of a collection of leachate and methane gas and is environmentally sound. This method helps obtain carbon credits, through the Clean Development Mechanism project.



The ultimate solution

The ultimate solution for urban garbage is Integrated Solid Waste Management (ISWM). The aim is to obtain alternative sources of collection, transportation and most importantly disposal, to ensure a healthy living environment in urban cities. Active involvement of all the stakeholders at each step and public-private participation can play a key role to achieve ISWM.

A sense of cooperation would help immensely in implementing proper SWM in urban India. To make it a success, the legislators have to come together, irrespective of their party affiliations and render full support to the civil administrator to make things work. Finally, it has to be remembered that waste is wealth, and a business package for sustenance of the scheme will be an incentive for the creation of a clean and healthy town or city.

Dr. Amiya Kumar Sahu is the President of National Solid Waste Association of India (NSWAI) and Chairman, Environment Sub-Committee Western India, Confederation of Indian Industry (CII).

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