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GENERATION, COMPOSITION AND MANAGEMENT OF SOLIDWASTE IN WARD NO. 11, TILAK NAGAR REWA (M.P.)

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Abstract:-The purpose of this research is to elaborate and increase readers awareness on the potential solid waste (hazardous, nonhazardous and mixed waste) disposal poses to human health and the environment. The study was carried over a period of two months viz., May and June (2014) through field study in which waste was collected over a period of 24 hours daily. The values of different constituents of the waste collected were then taken to estimate the amount of total waste generated during the study period. The collected waste was then segregated and weighed with the help of digital balance. The findings revealed that there was a maximum share of biodegradable waste (71.94%) which consists of vegetable (30.13%), food (10.16%), fruit (21.96%), paper/cardboard (10.62%) and textile (1.09%), followed by non-biodegradable waste (25.25%) which consists of plastic (16.25%), metal (2.54%) and glass (5.44%) and inert material (2.81%) which consists of hair (0.73%) and dust (2.09%). It is concluded that for management of solid waste we have to follow 5 R's (reduce, reuse, refuse, recycle and reform).

Keywords:Solid waste, biodegradable waste, non-biodegradable waste and inert material.

INTRODUCTION

Planet earth has been sustaining life for billions of years due to its equilibrium. Nothing comes into earth and nothing goes out, one element changes into another but remains on earth forever. Human civilization and development has altered this equilibrium by overuse of resources and dumping of waste indiscriminately. The natural assimilative capacity of earth is unable to cope up with the mounds of waste dumped, thereby leading to loss of equilibrium. Such a situation has led to famine, floods, climate change, epidemics, water scarcity, polluted air and water, fallow lands and inequity among people. Development and environment are two sides of a coin, if one is welcomed other is lost. Still humanity proposes sustainable development, a method where environment is protected along with developmental activities, as the panacea for this. Despite this, equity among men remains unattainable; the poor are still getting poorer and the rich becoming richer. The basis of sustainable development is REDUCE, REUSE, RECYCLE, which can be true for any perishable goods manufactured on earth. Notwithstanding the existence of awareness about industrial, agricultural and commercial wastes, this paper deals with the magnitude of generation of e-waste in India and abroad and the institutional measures undertaken to overcome the problem based on the available information.

Land is our most valuable asset; our old literature abounds in hymns and praised “mother earth”, the land. However, with the advancement of human civilization, urbanization, industrialization and population increases, the valuable assets are being constantly contaminated and deteriorated. Pollution has assumed monstrous proportions and land has become a universal sink for what the civilized man thinks as waste or refuse.

The environmental problems created by solid waste are becoming more acute day by day. There is an urgent need to protect the environment from further deterioration by efficient management and disposal of solid waste. The environment protection is one of the issues to which the whole world including the developed countries like USA has focused its attention. Most of the countries have adapted this issue as one of the socio-economic policy matters. The residential solid waste remains one of the major areas of concern because of its immediate effects on the people living near the operating dumping sites or nallahs.

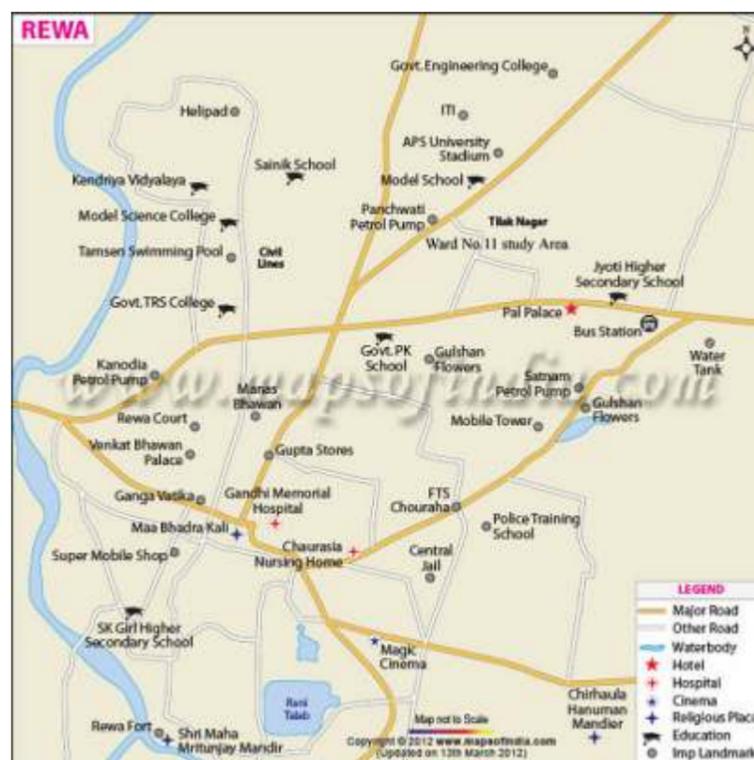
The term solid waste now used internationally to describe non-liquid waste materials arising from domestic, trade, commercial, industrial, agricultural and mining activities and from public services. “Non-liquid” is a relative term because sludge of certain kinds fall within the scope of solid waste management. These arise primarily from sewage and industrial effluent treatment plants. Though a lot of work has been done on solid waste generation, and its composition in various parts of India by various workers e.g. Dutta et al. (1999), Aggarwal et al. (2000), Garg and Prasad (2003), Bhide et al. (2004), Rampal and Sharma (2006), Jayalakshmi (2007) but not much attention seems to have been paid to this rapidly growing menace of solid wastes from this subtropical part of the country except some preliminary efforts made by Rampal and Kour (2002), Sharma (2008), Dubey (2006).

Rewa lies between 24°18' and 25°12' north latitudes and 81°2' and 82°18' east longitudes in the north-east of the division of the same name. Rewa is the metrocity of the state. Consequently there is a generation of huge quantity of solid waste leading to its inadequate disposal. Tilak Nagar (Ward no. 11), the area covered under the investigation is situated at a distance of about 4 km. from University of Rewa and comes under the municipal limits of Rewa. There are 80 houses having 450 individuals.

MATERIAL AND METHODS

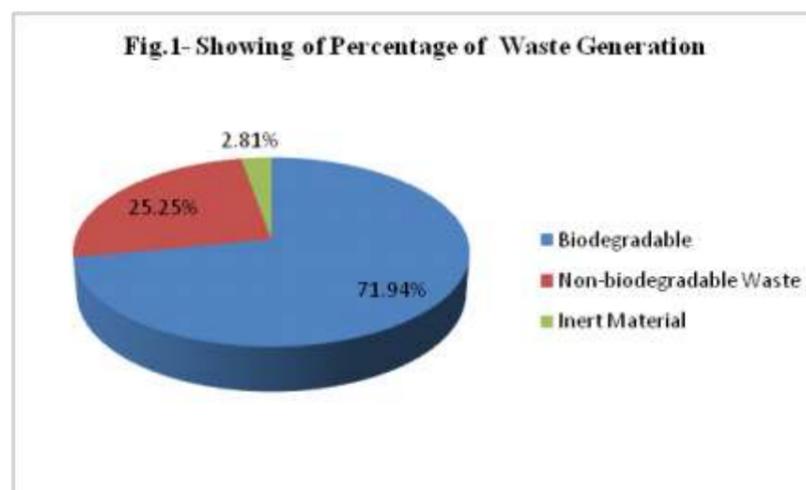
In the study area, twenty houses were randomly selected for the investigation on solid waste generation, composition and management. Samples of solid waste were obtained over a period of two months (May, 2014 to June, 2014) from selected 20 houses. Solid waste generated per house during 24 hours was collected in a paper bag and segregated into three broad categories viz., Biodegradable waste: It includes vegetables, food, fruit, textile, paper and cardboard. Non-biodegradable waste: It includes plastic, metal and glass inert material: It includes dust and hair.

All the categories of waste were weighed using Digital Balance. At the time of collection, number of family members was also recorded for analysis. The results of waste generation are expressed as mean waste generated/house/day, percentage waste generated /house/day, Mean waste generated /house/month and mean waste generated /house/ year in the study area.



RESULTS AND CONCLUSION

A random survey of qualitative and quantitative analysis of twenty five houses in Ward No.11 (Tilak Nagar.) of Rewa city area was conducted for domestic solid waste generation and the observation reveals the maximum percentage of biodegradable waste (71.94%) followed by non-biodegradable waste (25.25%), and inert material (2.81%) in the area (Fig. No.1). The information thus gathered throughout the study was then compared with some of the studies carried out previously e.g. Bhawna (2001), at Rehari area, found the highest percentage of biodegradable waste (58.6%), non-biodegradable waste (39.9%), and inert material (1.5%). Verma (2005) carried out study in Rajpura, and reported the maximum percentage of biodegradable waste (81.65%) followed by non-biodegradable waste (13.99%), and inert material was found out to be 4.36%. Anu (2008) while studying solid waste generation, composition and its management in Akhnoor, recorded the highest percentage of biodegradable waste (83.79%), non-biodegradable waste (16.50%), and inert material (0.30%). The findings, therefore, revealed that there has been a marked fluctuation in the solid waste generation rate over a period of time.



Solid waste disposal in Tilak Nagar is not done in a systematic way. People throw solid waste outside their houses and drains or some people put the same in the nearby nullah. Sweepers sweep the waste, collect and separate it into reusable and discarded materials. Most of the waste is dumped around the houses and burnt to fire. The smoke thus generated, drifted into nearby houses and becomes a severe air pollution problem. Decomposable materials generated from houses mostly from kitchen are also thrown around the drains which become a source of bad smell.

Based on the findings, the following measures can be adopted for the management of the solid waste in the study area.

1. Use of small community containers would reduce the present practice of throwing refuse on the ground.
2. Use of low cost locally made pedal tricycles would reduce the requirements of vehicle and fuel.
3. Design of primary collector and containers should be such, so that, double handling of refuse can be avoided.

This would be helpful in reducing health risk, wastage of labour and waiting time of vehicle.

4. Small and manually operated sanitary land filling would be economically feasible and ecologically viable.
5. Composting of refuse would be the major option for disposal due to high organic content of waste.
6. Open dumping should be avoided as this method of disposal on one hand degrades the soil quality and on the other hand degrades the quality of the surface and ground water.
7. Burning should also not be preferred because burning method on one hand adds to the air pollution and on the other hand kills the micro flora and fauna of the soil thereby making the air unhealthy to breathe and making the land unfit for growing the crops.

Thus we need to move to safer and cleaner technologies for solid waste management. We have to learn to apply the environmental principles in our modern lives to achieve a sustainable lifestyle and save ourselves and our planet. The ideal solution for solid waste is by the self-realization of each and every person that we have only one earth and should not convert it into a dumping ground, considered as a house not as a hotel. Change in attitude is the biggest change which we have to bring into the society. It is the man who belongs to the earth and not the earth belongs to us. We should remember that we have only one earth.

RECOMMENDATIONS

Recommendations at authority level

1. Techniques like sanitary landfills, incineration, composting etc. should be adopted on regular basis

for proper management of solid waste.

2. Authority needs to place dustbins with lid at different locations as open dumping can cause health hazards to the human beings as well as animals which feed on the waste.

3. For transportation, mechanized and covered vehicles should be used. The workers should be provided with proper dresses to handle the solid waste must be educated about health hazards due to solid waste handling.

4. Authority should provide land for proper disposal of solid waste.

5. Awareness among masses should be carried regularly and repeatedly to impart their knowledge about clean and healthy environment and menace of wrong disposal of solid waste.

RECOMMENDATIONS AT PUBLIC LEVEL

1. People should reduce the waste generated at the source only by eliminating and avoiding the generation of any discarded material, before it is produced, thereby, reducing its quantity and toxicity.

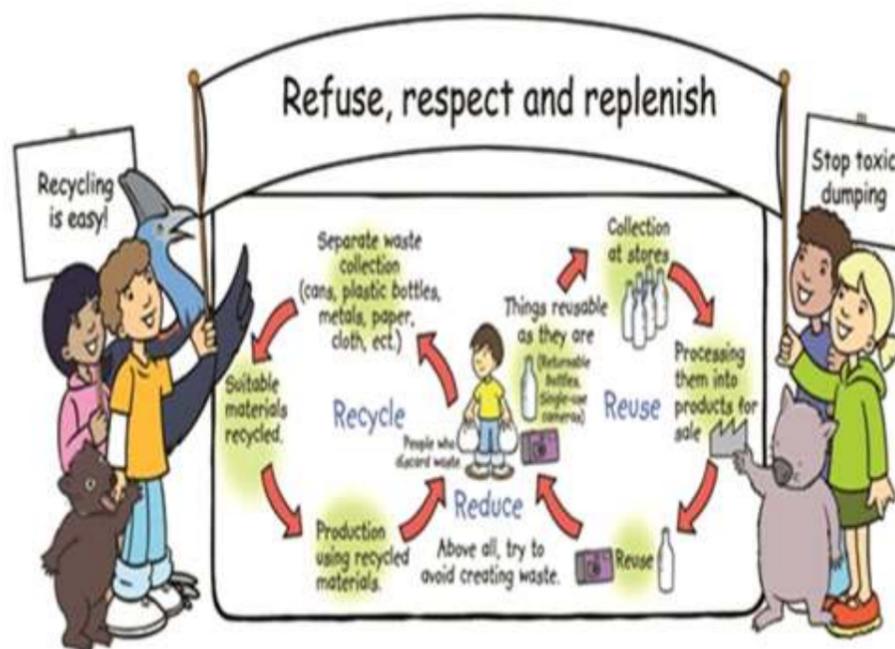
2. Waste should be segregated into non-biodegradable and biodegradable types. Biodegradable wastes can be converted to manure by vermicomposting and recyclable materials must be given to rag pickers or kabadiwallas for recycling.

3. Use of hand bags made of clothes instead of polythene bags for shopping.

4. A good housekeeping can play an important role in reducing the problem arising out of unmanaged solid waste to some extent.

5. Everyone must follow the environment philosophy of four R's (Reduce, Reuse, Refuse and Recycle).

Awareness among the masses should be carried out through mass media and print media, audio-visual aids and door to door campaign.



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