

IN RURAL AREA “SOLID AND LIQUID WASTE MANAGEMENT”

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Abstract: In the rural waste management has been regularly voiced in India. With the emerging concern on large quantity of the waste being produced both in the form of solid and liquid waste, the concept of waste management becomes one of the key focus of sustainable development principles which is based on policies, and practices that are resource-conserving, follow standards that can be met in the long term, and respect values of equity in human access to resources. There are in Rural area there is the waste management is very important because the people are suffering serious problems including the growth of water borne diseases such as diarrhoea, malaria, dengue, cholera and typhoid. In definitional terms solid and liquid waste management (SLWM) is the collection, transport, processing, recycling or disposal of waste materials, usually ones produced by human activity, in an effort to reduce their effect on human health or local aesthetics or amenity.

Keywords: Solid Waste, Liquid Waste, Bio degradable, Non biodegradable, Waste Collection, Waste Transportation.

Introduction

In rural areas, waste is a severe threat to public health and cleanliness. Despite the waste generated being pre-dominantly organic, incorrect disposal can lead to serious problems including the growth of water borne diseases such as diarrhoea, malaria, dengue, cholera and typhoid. It is estimated that people in rural India are generating 0.3 to 0.4 million metric tons of organic/recyclable solid waste per day and that 88% of the total disease burden is due to a lack of clean water, sanitation and improper solid waste management.

Waste problem in rural area in India

In India especially in rural areas, waste is a severe threat to the public health concern and cleanliness. Though, the form of waste (both solid and liquid) generated in rural areas is predominantly organic and biodegradable yet becoming a major problem to the overall sustainability of the ecological balance. For e.g. it is estimated that rural people in India are generating liquid waste (greywater) of the order of 15,000 to 18,000 million liters and solid waste (organic/recyclable) 0.3 to 0.4 million metric tons per day respectively.

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As a result, in the absence of proper disposal of solid and liquid waste (greywater and waste water from the hand pump), they are leading to vector born diseases such as diarrhoea, Malaria, Polio, Dengue, Cholera, Typhoid, and other water borne infections such as schistosomiasis. Close to 88% of the total disease load is due to lack of clean water and sanitation and the improper solid and liquid waste management-which intensify their occurrence.



Fig.1 [Solid and liquid waste]

Objectives of the study

- To protect human health and improve quality of life among people living in rural areas.
- To reduce environment pollution and make rural areas clean.
- To promote recycling and reuse of both solid and liquid waste.
- To convert bio waste into energy for ensuring greater energy security at village level.
- To generate employment for rural poor by offering new opportunities in waste management by adopting cost effective and environmentally sound waste water and solid waste treatment technologies.

Scope of study

- Analyze the existing waste management situation.
- Data Collection and Analysis for accurate quantification and characterization of waste

- Design waste management hierarchy, planning and design of systems, technology selection.
- Preparation of plan for transportation of solid waste.
- Preparation of plan for disposal on land i.e. environmentally safe and sustainable disposal in landfills.
- Implement the action plan and monitor the results.

LITERATURE REVIEW

Dr. Sneha Palnitkar “Manual on solid waste management” (2000) –

The manual begins with a description of the types, sources and characteristics of municipal solid wastes, as well as quantities and rates of waste generation in India. What follows are operational aspects of key functions of the process of solid waste management – street sweeping, door-to-door collection of waste, storage of wastes, transportation and treatment of wastes. The operational aspects focus on man-power requirements, equipment design, norms to measure performance of workers, and work systems for different types of locations – commercial, residential, high-rise buildings, slums and so on.

Rashmi Shah, U.S. Sharma and Abhay Tiwari “Sustainable Solid Waste Management in Rural Areas” (2012) IJTAS

In this paper we have studied solid waste management in a cluster of villages near Tekanpur area on NH-75. The study is based on a cluster of six villages. Our study shows that about 287gms of residential/agriculture solid waste per capita is generated in these villages every day. We found that street sweeping, grass cutting, agricultural waste, cattle dung, drain and public toilet cleaning contribute most to waste generation in these villages. Most common practices of waste processing are uncontrolled dumping which causes mainly water and soil pollution. The qualities of both solid & liquid wastes are increasing and if the wastes are disposed in an uncontrolled manner these may cause adverse impact on public health & environment. Therefore, the solid wastages are still a major problem in these rural areas. To overcome these problems, we have proposed to implement vermicomposting.

National Environmental Engineering Research Institute (NEERI), Nagpur, India (1996)

The introduction and historical perspective on solid waste provides the reader with some interesting facts on the generation of waste in different countries and their socio-economic criteria. There is a detailed explanation of a methodology to quantify and classify waste. Also there is an explanation of why quantification of waste is important: the data are

important (for example, the density of waste generated in India) for the planning and design of a cost effective collection and disposal system. An added useful component is the seasonal variations in the quantity of waste generated. This again has a bearing on the design of the collection system. The chapter on industrial waste briefly describes the generation and treatment of several types of waste including waste from oil refineries and steel plants.

International Journal of Innovative Research in Science, Engineering and Technology (2013)

Rapid industrialization and population explosion has led to the migration of people from villages to towns, which generate thousands of tons of MSW daily. One of the main functions of urban local bodies in developing countries is Municipal Solid Waste Management (MSWM). Forecasting of solid waste generation is a vital component of MSWM. This paper deals with modelling of solid waste generation in medium scale towns located in a developing country. Primary data is analyzed to identify independent variables to be used to predict solid waste generation. Different empirical models are used for population projection. Projected population is used to predict solid waste to be handled during the study period. Artificial neural network models are proposed for estimation of solid waste generation in medium scale towns located in the study area. Efficacy of the proposed modelling scheme for forecasting solid waste generation was successfully demonstrated with the help of validation data.

United Nations Environment Programme (UNEP)

Over the last three decades there has been increasing global concern over the public health impacts attributed to environmental pollution, in particular, the global burden of disease. The World Health Organization (WHO) estimates that about a quarter of the diseases facing mankind today occur due to prolonged exposure to environmental pollution. Most of these environment-related diseases are however not easily detected and may be acquired during childhood and manifested later in adulthood.

The aim of the waste hierarchy is to extract the maximum practical benefits from products and to generate the minimum amount of waste.

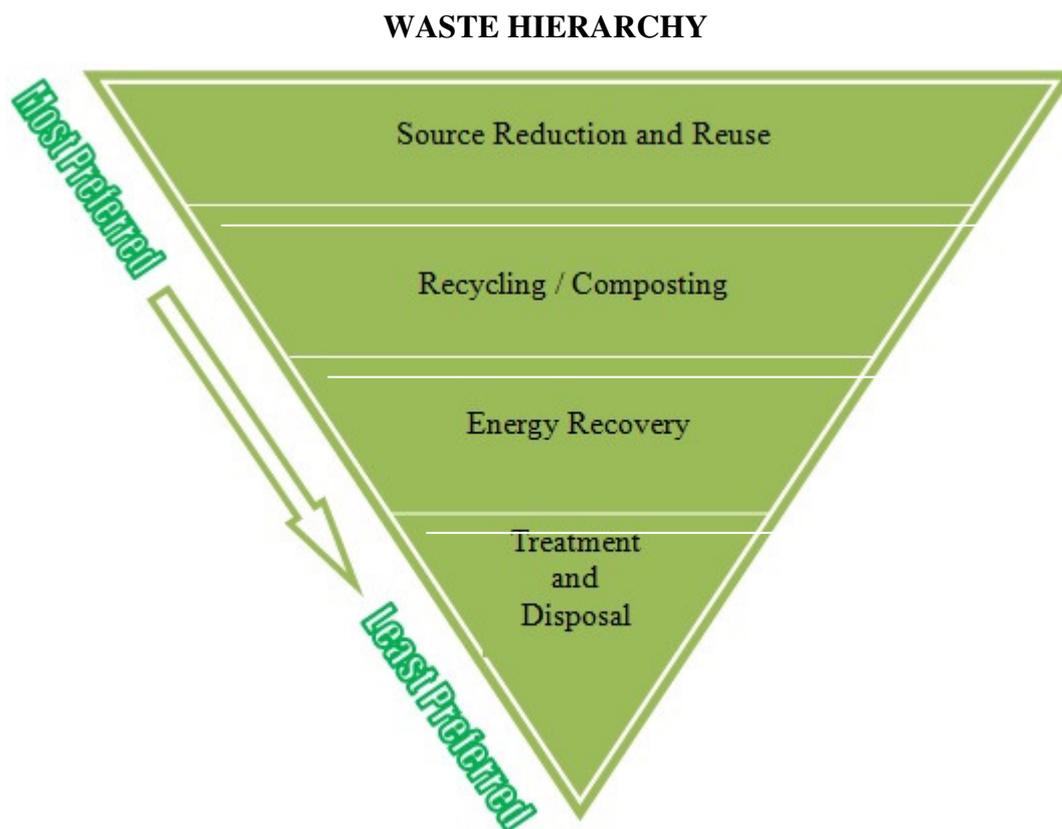


Fig 2 [Waste Hierarchy]

Conclusion

- There are in the rural area the waste management is important because without waste management the people is suffering from different type of diseases.
- The waste disposal needs immediate attention and strict monitoring.
- Many new techniques have been implemented for storage, collection, transfer and transportation.

References

- [1] A Technical Note solid waste management in rural area, by Government of India Ministry of Rural Development Department of Drinking Water Supply.
- [2] Guidelines on Solid and Liquid Waste Management (SLWM) in Rural Areas, (2014)
- [3] “Manual on solid waste management” by Dr. Sneha Palnitkar 2000
- [4] National Environmental Engineering Research Institute (NEERI), Nagpur – India
- [5] Sustainable Solid Waste Management in Rural Areas, by Rashmi Shah, U.S. Sharma and Abhay Tiwari (IJTAS)
- [6] Environmental Audit of Municipal Solid Waste Management TECHNICAL REPORT: 118 June 2006 b T.V. Ramachandra & Shruthi Bachamanda