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Solid Waste Management and Issues in India- Review Article

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***Abstract:** Municipal solid waste (MSW) is one of the major areas of concern all over the world. In developing country like India. There is rapid increase in municipal solid waste due to urbanization and population growth. India faces major environmental challenges associated with waste generation and inadequate waste collection , transport, treatment and disposal. Current systems in India cannot faces the volumes of waste generated by an increasing urban population, and this impacts on the environment and public health. Waste segregation at sources and use of specialized waste processing facilities to separate recyclable materials has a key rote. Disposal of residual waste after extraction of material resources needs engineered landfill sites or investment in waste to energy facilities. Waste dumps have adverse impacts on the environment and public health. More than 90% of municipal solid waste collected disposed in open dumps. Open dumps release methane from decomposition of biodegradable waste under anaerobic conditions. This paper gives the current scenario of municipal solid waste quantity and its management .*
***Keywords:** Solid waste Management.*

I. INTRODUCTION

India rapidly moving from agricultural based nation to industries.31.2% peoples now living in urban areas. Rapid industrialization and population growth in India led to migrate people from villages to cities. From all this the amount of municipal solid waste generation in thousands of tones daily. In India, there are three mega cities :- Mumbai, Delhi, and Kolkata having more than 10 million population. Big cities are the major sources of increasing the Municipal solid waste. Poor collection and transportation are responsible for the accumulation of MSW at every place. The management of MSW is going througha critical condition. Due to the facilities for treat and disposal are not available for the amount of waste which generates daily in the India cities. Improper disposal of MSW causes an adverse impact on all components of the environment and human health. MSWM is one of the major environmental problems of Indian cities. Which undergoes activities like generation, storage, collection, transportation, processing and disposal of solid waste. Generally, MSW is disposed to the low lying areas without taking any precautions, safety and operational activities. Due to that solid waste is people which are living nearby to the disposal sites. Landfills can also causes various issue. Poorly maintained landfill sites are responsible for the ground water pollution, because of the leachate production. Open dumps of solid waste causes breeding of mosquitoes. Flies and various types of pests which are responsible for causing various diseases. It can also cause air pollution in the surrounded area. Direct handling of the solid waste result in the various types of infection to the workers. Proper solid waste management reduces the adverse impact on the environment and human health. various processes are involved for managing waste which includes monitoring,collection, transport, processing, recycling and disposal. India suffers from the increasing rates of solid waste generation per capita. plastic waste is also become the current issue in India. it is one of the major toxic pollutants of present time. Plastic can be pollute the earth. it can be leads to air pollution and water pollution.this can be also harmful for the environment and human health. 15,000 tones of plastic waste is generated in very small amount of total plastic production is effectively recycled. the remaining sent to the landfill. where it is disposed where it's toxic compoundssprewd to the atmosphere. it causes harmful impact to the human and environment.

II. RESULT

The result of increasing solid waste in urban areas are major factor in the developing countries due to urbanization. In2017, estimated that total population in India is approximately 1.32 billion people. It has the second largest population in the world. Every year, In India people added than any other nation in the world. In 2018, estimated that India having 1.34 billion people is the second most populous country in the world.

ByR.C.Trivedi(2007):-studied the waste management status in Delhi, according to his study population and urbanization are the main factors which directly increase the rate of solid waste. problems like financing,infrastructure,suitable planning are the main obstacles in the solid waste management. The rate of solid waste generated (CPCB,2000)municipal population in Delhi are 8,419,084 Municipal solid waste (t/day) 4000 and per capita waste generation (kg/day) 0.475. He studied the per capita generation

rate is high in some states (Gujarat, Delhi and TamilNadu)and cities (Madras,Kanpur, Lucknow and Ahmedabad). Which was due to high living standards and urbanization in these states and cities However, the per capita generation rate observed to be low in other state(Meghalaya,Assam,Manipur and Tripura) and cities (Nagpur , Pune and Indore).

By Rajkumar Joshi(2016):- According to his study ,uncontrolled growth rate of population are main reason for MSW to became an acute problem. Data ofCPCB(2000b,2013)Municipalsolid waste generated (TPD)(2009-2011) In Gujarat 7379,In Delhi 7384 and In Punjab 2794 TPD. The aim of this study is to present the status of MSW and the changes for integrated solid waste management. In the developing countries it is important to plan low cost solid waste managementstrategies.the solution of this problem is adaption of appropriate technologies are needed.

By Sunil Kumar (2016):- According to his study,the current situation in India which relies on inadequate waste infrastructure, the informal sector and waste dumping. Major issues are associated with public participation in waste management and lack of responsibility towards the waste in the community. There is Need for cultivate community awareness and change attitudes of people towards waste, this is fundamental to sustainable waste management systems. By the development of engineered landfill and waste to energy facilities safe disposal can be done. Landfill sites associated with different Indian cities In Ahmedabad only 1 landfill site was available which covered 84 hectares area. In Delhi 3 Landfill sites are available which covered 66.4 hectares area. In Greater Mumbai 3 landfill sites which covers 140 hectares area.

From the rapid urbanization and population growth the solid waste is increasing day by day and these are main reason for the problems of solid waste management. Process of product consumption then after it results in the waste in the cities or areas . The material or product which are of no use are identified as waste. which are collected for the disposal. The population of India was 1252 million in 2013, which was 1028 million in 2001.Mumbai and Delhi which generate around 9000 metric tones and 8300 metric tones waste per day.

In This, the activities related with on site handling, storage and processing of waste at the generation point. In the handling of waste activities with the management of waste until it placed in the storage containers. There are two types of storage facilities- The first one which temporary done at house for storage and the second one is community bins storage system in which bins placed in area for storage of solid waste.

The process of collection consist of the picking the waste from the collection points. After the collection it will be loaded into the vehicle and transported for the processing facilities or for disposal. only 68% of the garbage generated in country is collected of which 28% is treated by the municipal authorities

In this activity wastes transfer from public storage facilities to collection vehicle and after to the disposal site. Various methods of transportations for solid waste management are:-Trucks,Tractors, Tailors,Dumpers,Bullock carts etc. If the transportation will not be proper disposal rate of the waste will be reduce.

In India, waste is generated is usually directly dumped to the low lying areas. Due to the open dumping it is very much cause of the contamination of water. Lechate formation causes ground water contamination. landfilling is widely accepted in the major states like Delhi ,Mumbai , Kolkata. But having limited availability of land according to CPCB. Due to the lack of dumping space problem of waste disposal is increase day by day. The main factors which are responsible for it are:-financial constrains and inadequate capacity of the urban local bodies. plastic waste is increasing day by day and its disposal had become a serious problem.Increase in the population, urbanization it causes increase in the plastic waste more than 15,000 tones of plastic waste are generated in India everyday. In India, more than 45 million tones of waste is disposed untreated by municipal authorities.

Major cities in India per capita waste generation data (2000-2011). Source–CPCB report 2011.

Name of Metro city	Population(2011)*10^6	Total waste generate in tones per day	Waste Generation (kg/capita/day)
Delhi	16.3	5800	0.41
Banglore	8.4	3700	0.44
Mumbai	18.4	6500	0.35
Ahmedabad	6.3	2300	0.36
Kolkata	14.1	3670	0.26

III. CONCLUSION

From all the points it can be conclude that the solid waste management is the difficult problem to the world. Rapid development is responsible for the generation of solid waste. The waste creates problems to public health, drainage of the cities. people should be educated to realize the waste management system. The proper way for collection , segregation, handling, storage,transportation and disposal is needed. it can be reduce the impacts of the management of waste. from this way waste can be minimized and issue of the waste management will be decrease.I concluded that waste generation from the last 5 years increased 10% due to the population growth and urbanization. solid waste can be managed by implementing the modern facilities and proper treatment.

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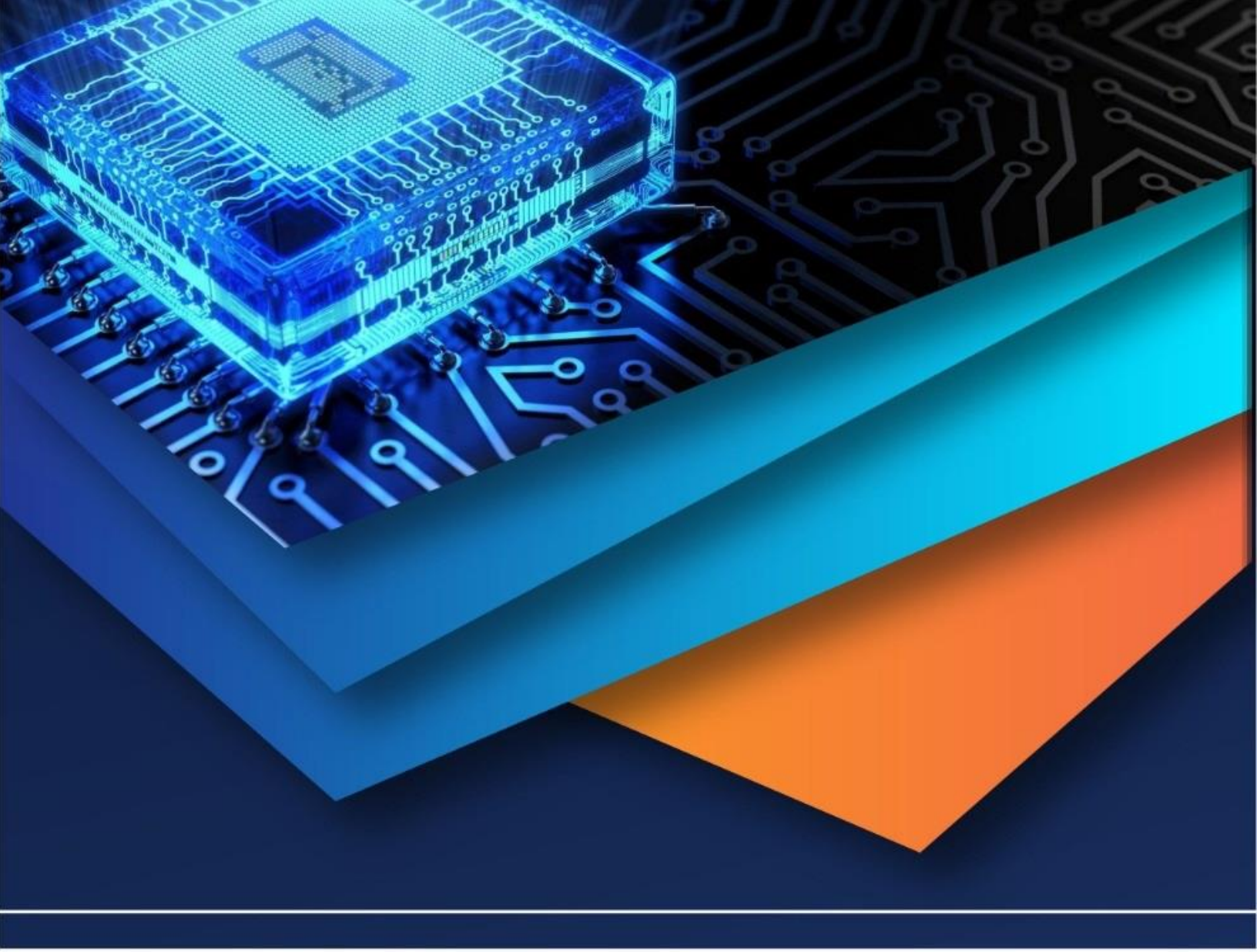

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