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Theoretical Study on Solid Waste Management

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Abstract: *There are many types of waste found in our surrounding environment such as liquid waste and solid waste. Paper waste, plastic waste, glass pieces, medical waste, e-waste comes in solid waste, some solid waste becomes degradable, like clothes or paper waste, degradable waste can be converted into compost, This pollutes the environment very little. But such waste which is not degradable like polythene, glass pieces, e-waste, pollutes the soil and environment. We will study this solid waste management method in our research that how to use this solid waste so that it does not have bad effect on environment, humans and animals.*

Key Word: *polythene, glass pieces, e-waste, solid waste, pollution, Degradable.*

I.INTRODUCTION

Solid waste is unwanted or unusable solid material generated from human activities in residential, laboratory, hospital and industrial areas. It can be classified into three types. according to this- 1.Origin (domestic, industrial, commercial, manufacturing or institutional), 2.Contents/Material (organic material, glass, metal, plastic, paper etc.) and 3.Hazard potential (toxic, non-toxic, flammable, radioactive, infectious, etc.). Solid waste management minimizes or eliminates adverse effects on the environment and human health. There are many processes involved in managing waste effectively for a municipality. These include monitoring, collection, transportation, processing, recycling and disposal [1].

1.1 Sources of solid waste: The main sources of solid waste are- Medical Center, The laboratory, Factory, Workshop, Food stores, Dining Center, Food Distribution Point, Slaughter Zone, Warehouse, Agency Premises, Market and Domestic sector.

1.2 Risk from solid waste

Disease transmission-Decomposing organic waste attracts insects and flies. Flies can play a major role in the transmission of fecal-oral diseases, especially where household waste contains faces which can increase the transmission of diseases. Mosquitoes grow from organic waste, feces, due to which diseases like malaria, typhoid and cholera can increase. Solid waste can also provide a breeding ground for mosquitoes. Mosquitoes of the genus Aedes lay eggs in water stored in discarded items such as tins and drums, They are responsible for the spread of dengue and yellow fever. Such conditions can also attract mosquitoes of the genus Anopheles, which transmit malaria.

Pollution-Improper collection and management of solid waste can lead to leaching pollution of surface water or ground water. If the waste contains toxic substances and is in the vicinity of water sources that are being used, this can cause significant problems. And similarly where dry waste is stored in large quantities in areas with hot climates, it can create a fire hazard. In related hazards, there can be loss of life along with smoke pollution.

II.STUDY OF LITERATURE

1. In 2019, Shweta Choudhary "A Research Paper on Solid Waste Management" according to this paper - Solid garbage is the unwanted, harmful, and wasted substance arising from day-to-day civic events. Management of the solid wastes can be described as the methodology of managing solid waste generation, storage, collection, transport, treatment and disposal. A country's growth status can be defined in several forms. As regards its effect on solid waste management, the growth status of thispublication is classified according to the availability of economic capital and the degree of industrialization development. Economic growth status is more a function of the new economic environment than of the current economic situation (recession vs prosperity). The degree of industrialization is expressed in terms of the extent to which technical tools are mechanized and usable. The words "developed" and "industrialization" are often used interchangeably, justifiably or not. In so far as solid waste management is concerned, it is difficult to impose a specific structural definition due to regional shifts in the degree of growth within each region. For example, in a developed country, a large metropolitan population (typically the provincial capital and surrounding area) might be at a level of growth well above that of the rest of the nation. On the other hand, such

groups are not absolutely resistant to the restrictions enforced by the nation's position. It is important to remember that while the material provided in this paper refers specifically to developing nations, some of it can even refer to a transforming country, or even to an advanced or developed world. The human-environmental relationships are a dynamic phenomenon. The ability of the Planet to sustain human beings is determined not only by the specific food needs, but also by our resource use rates, the volume of waste production, the technology employed in various applications. With the population growth and the growing trend of resource use, we have in effect exceeded the planet's carrying power[2].

2. In 2015, Patrick Akata Nwofe " Management and Disposal of Municipal Solid Wastes in Abakaliki Metropolis, Ebonyi State, Nigeria" according to this paper – Proper waste management is a fundamental key to environmental sustainability. In this study, the municipal solid waste management and disposal methods in Abakaliki Metropolis, Ebonyi State, Nigeria is presented. The characteristics and composition of these wastes and the environmental issues associated with its management are also investigated. Structured questionnaires were used to obtain primary data from a random size of population in the areas that have the highest accumulation of heaps of solid wastes in the Governmentdesignated waste dumping sites and open spaces on the major streets within the metropolis. Environmental and health issues arising from the unsustainable management of the wastes were assessed from oral interviews and field observations in the study areas. The results indicates that the waste dump sites (designated and non-designated) on the major streets and several open spaces are left unattended for long periods such that the rubbish heaps; encroach on the roads thereby limiting the road users access, generate serious air pollution issues, constitute significant nuisance when blown over by winds, and distorts the aesthetic view of the metropolis. The results also show that the composition of the wastes in the metropolis is heterogeneous because it contains both biodegradable and non-biodegradable materials such as e-wastes, plastic, polythene materials, hospital wastes, and hair designers wastes amongst others. The study strongly recommend that Ebonyi State Environmental Protection Agency (EBSEPA) be made to sit up on their functions while Government should strongly consider introducing "waste to energy" as a way of curbing the menace of waste management and simultaneously solving the energy needs of the State[3].

3. In 2004, E. Pongrácz1, P. S. Phillips2 & R. L. Keiski1, Evolving the Theory of Waste Management:defining key concepts, according to this paper The Theory of Waste Management represents a more in-depth account of the domain and contains conceptual analyses of waste, the activity upon waste, and a holistic view of the goals of waste management. Waste Management Theory is founded on the expectation that waste management is to prevent waste causing harm to human health and the nvironment. The proper definition of waste is crucial to constructing a sustainable agenda of waste management. It is largely the case that current legislation attends to existing waste. Definitions emerging from this condition may, however, conflict with the goals of waste prevention, because something that already exists cannot be prevented from arising. When material is assigned the label of 'waste', it will be treated as such; consequently, despite its explicit wish of waste prevention, implicitly, legislation essentially amasses waste. The inherent philosophical implication of such definitions is that they are not able to facilitate a sustainable waste management system. Therefore, new, dynamic definitions for waste and waste management must be sought, which can explain why waste is created and can offer an intrinsic solution for the problem[4].

4. In 2020, R. Gajalakshmi, Dr. S.K. Manivannan "Solid Waste Management – A Case Study" *Test Engineering and Management* According to this paper Solid waste management has become one of the greatest challenges especially in developing counties. It is a place with increasing population and generates more waste particularly for food related items. Judiciously handling the environmental issues like solid waste management has become necessary for sustainable development of the society. Improper management of Solid waste causes various hazards to inhabitants. Food waste generated in India constitute huge amount of recyclables which can be recovered if we follow the proper solid waste management practices. Improper disposal of solid waste in open dumps and landfills creates lot of problems to Public Health and Environment. Especially the food waste improperly dumped will produce methane gas that produces 21 times greater impact on global warming than carbon dioxide. The main aim of the study is to find out the challenges in managing waste generation till recycling stage and also examines feasibility of technical, economic and environmental aspects of the waste management[5].

III.MATERIALS & METHODS

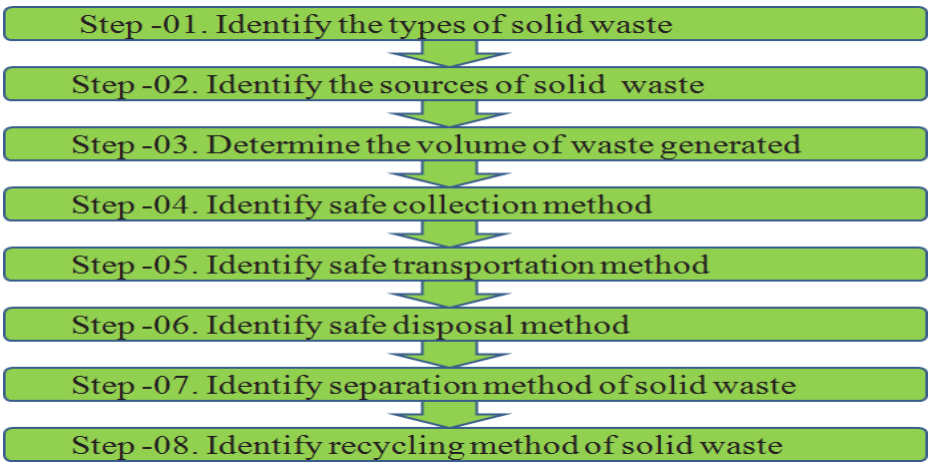
Management of household waste - All houses should have three types of dustbins, the first dustbin in which only wet waste such as vegetable peels and waste that can be composted are kept. Second dustbin in which dry waste should be kept like waste related to paper or cloth, which can be easily decomposed and converted into compost. The third dustbin in which polythene and plastic waste is kept, thus we will be able to manage domestic waste.

Comprehensive solid waste management-The following process should be used to establish effective solid waste management in the affected area:

Identify the type of solid waste-Before studying or managing any solid waste, it is necessary to find out what kind of waste it is.

Before studying or managing any solid waste, it is also necessary to find out what is the source of thatwaste, it can be normal, poisonous, or explosive waste.

Determine the volume of waste generated- Before studying or managing any solid waste, it is also necessary to determine the amount of waste generated.



Identify the safe collection method- It is also necessary to study any solid waste and identify a safe collection method related to its management.

Identify the safe transportation method - It is also necessary to study any solid waste and identify a safe transportation method related to its management. How to get this waste to the place where it can be recycled.

Identify the safe disposal method -It is also necessary to study any solid waste and identify a safe disposal method related to its management. How to get this waste to the place where it can be recycled.

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Collection Method

Transportation method

Disposal method

Separation method

Recycling method

IV.RESULT & DISCUSSION

It is clear from the research paper study that to keep our environment clean and healthy, such solidwaste which is not degradable should be kept separate from soil and water, and it should be recycled and used again. For this we all should try, we all should keep at least three types of dustbins in our homes, organic waste in one, plastic waste in the other, paper waste in the third and glass waste, electronic waste if any should be kept separately.

These wastes should be given separately when the vehicle carrying waste from the Municipal Corporation arrives. So that the waste which is degradable can be converted into compost and the waste which is not degradable can be recycled and reused.

V.CONCLUSION

It is the duty of all of us to keep our environment clean and healthy. And such solid waste which is not degradable, keep it separate from soil and water, and find a way to recycle it. For this we all have to make efforts. We all should have at least three types of dustbins in our homes, one for organic waste, second for plastic waste, third for paper waste and glass waste, electronic waste if any, must be kept separately. We should be given these solid waste separately when the vehicle carrying garbage from the Municipal Corporation arrives. And we have to cooperate with the waste management organization.

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