

# Effective Solid Waste Management of Roha (Varse) City

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**Abstract**— The solid waste collected every-day is either dumped or burned, instead of that we have focused on reusing the solid waste to produce various materials like organic fertilizer, plastic flakes. Processing the solid waste results in reduction of pollution caused by open dumping which leads to decrease in diseases caused by contamination of air, ground water by solid waste, as we reuse most of the solid waste the storage of solid waste is reduced to maximum extent. As per our proposed plan collected solid waste will be reused and it will reduce the load on waste disposal. Solid waste refers to the range of garbage materials arising from animal and human activities that are discarded as unwanted and useless. Solid waste is generated from industrial, residential, and commercial activities in a given area, and maybe handled in a variety of ways landfills are typically classified as sanitary, municipal, construction and demolition, or industrial waste sites.

**Keywords:** Solid Waste Management

## I. INTRODUCTION

The organic content of Solid Waste tends to decompose leading to various smell and odor problems. It also leads to pollution of the environment. To ensure a safe disposal of the solid waste it is desirable to reduce its pollution potential and several processing methods are proposed for this purpose. Composting process is quite commonly used and results in production of a stable product - compost which depending upon its quality can be used as a low grade manure and soil conditioner. The process results in conservation of natural resources and is an important processing method, especially in agricultural and horticultural areas. In the case of individual households, small establishments and colonies, vermi-composting which involves the stabilization of organic solid waste through earthworm consumption for conversion of the organic material to worm casting is being increasingly preferred.

- Methodology.
- Literature survey
- Questionnaire survey and data collection
- Data analysis
- Results
- Find out best solution
- Suggestions
- Conclusion of project

## II. MAIN AREA OF FOCUS

### A. Solving the E-Waste Problem (STEP) Initiative:

Solving the E-waste Problem is a membership organization that is part of United Nations University and was created to develop solutions to address issues associated with electronic waste. Some of the most eminent players in the fields of Production, Reuse and Recycling of Electrical and Electronic

Equipment (EEE), government agencies and NGOs as well as UN Organizations count themselves among its members. STEP encourages the collaboration of all stakeholders connected with e-waste, emphasizing a holistic, scientific yet applicable approach to the problem.

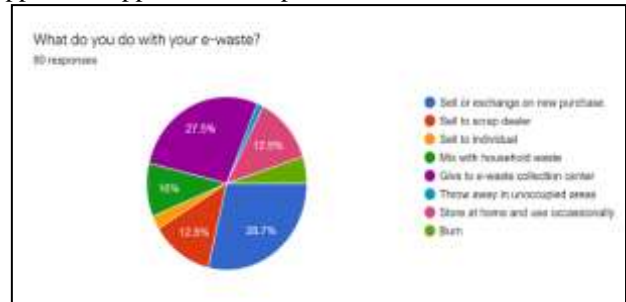


Fig. 1: Statistical data of E-Waste Survey.

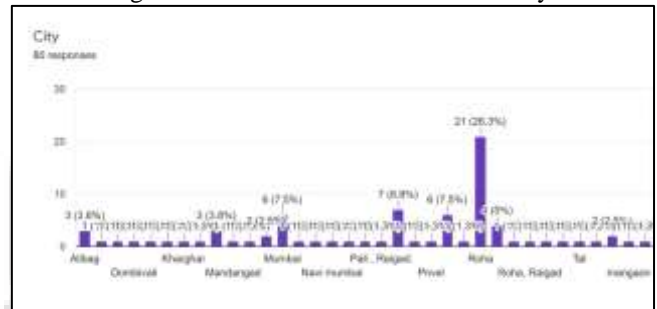


Fig. 2: Graphical data of E-Waste Survey.



Fig. 3: Electronics found in waste.



Fig. 4: Cellphone parts found in waste.



Fig. 5: Open Burning of these waste.

DETAILS	PERCENTAGES
Sell or exchange on new purchase	28.7%
Sell to scrap dealer	12.5%
Sell to individual	2.5%
Mix with household waste	10%
Give to e-waste collection center	27.5%
Throw away in unoccupied areas	1.2%
Store at home and use occassionally	12.5%
Burn	5%

Table 1: Statistical data collected from survey.

**B. Multi-Layer Plastic (MLP):**

In many applications, plastic is virtually irreplaceable because it is cheap, strong, lightweight, and resistant to corrosion. The most common uses of plastic are in packaging and building components, such as piping. In the medical industry, plastic is often key to contamination and infection control. Syringes, pipettes and gloves used in healthcare and biomedical research cannot be reused. While the excessive use of plastic packaging is concerning, some form of packaging is often necessary to maintain the hygiene or freshness of food, or maintain the integrity of a product during freight. Small or travel-size toiletries and personal hygiene products are sometimes seen as wasteful, but are vital in providing affordable sanitation options for some of our most vulnerable communities, such as the homeless or low-income families. With an estimated 70% of the world’s population living on less than US\$10 a day, toiletries in single-serve sachets provide an affordable sanitation option in developing markets.

While plastic is durable, this also means plastic waste can be trapped in our environment for centuries, if not managed well. While plastics deteriorate into fragments easily through wear and tear, their polymer chains only break down into other smaller components at very high temperatures, such as during some chemical recycling processes. However, today only recycled. The world still largely operates on the ‘linear economy’ model sometimes known as ‘take-make-discard’ where raw materials are used to manufacture products, only to be disposed of at the end of their short lifetimes.

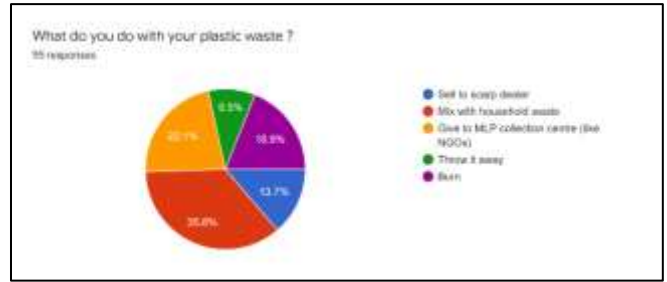


Fig. 6: Statistical data of Plastic Waste Survey.

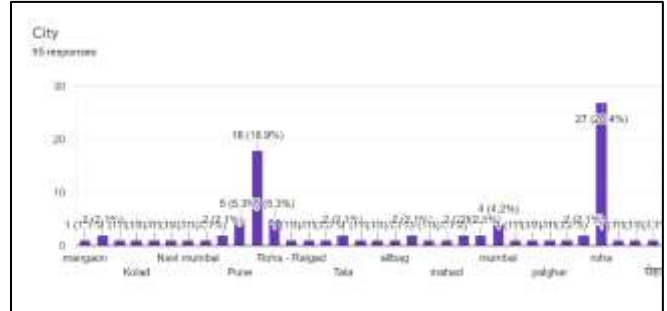


Fig. 7: Graphical Survey of City



Fig. 8: Amount of Plastic waste found



Fig. 9: Amount of Plastic waste found

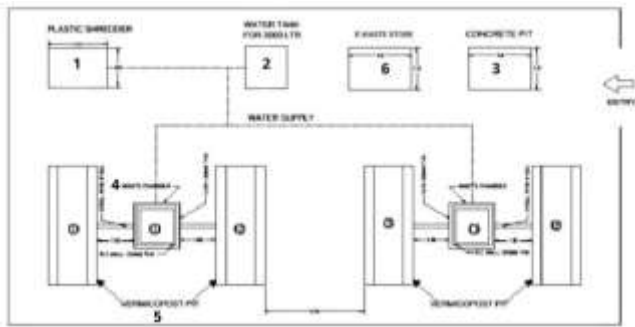


Fig. 10: Layout of Advanced Dumping Yard:

Advance dumping yard is the practice of trans frontier shipment of waste (household waste) from door-to-door collection. The goal is to take the waste to a yard that has less strict environmental laws, or environmental laws that are not strictly enforced. The economic benefit of this practice is cheap disposal or recycling of waste without the economic regulations of the original city.

### III. COMPONENTS OF ADVANCED DUMPING YARD:

- 1) Plastic shredder
- 2) Water tank
- 3) Concrete pit
- 4) Waste chamber 1, 2.
- 5) Vermicompost pit 1, 2, 3, and 4.
- 6) E-Waste Store.

#### 1) Plastic Shredder:

In this unit plastic waste like plastic, rubber & other reusable waste are separated from overall waste which is further send to plastic shredder to turn it into small flaky fragments which will be used later as a raw material for plastic industry & can be used for experimental projects like plastic roads. The average rate of shredded plastic in industries is 1.5 R. /kg. Whereas polythene is of 3 RS./kg

#### 2) Water Tank:

Water tanks are used to provide storage of water for use in many applications, drinking water, irrigation agriculture, fire suppression, agricultural farming, both for plants and livestock, chemical manufacturing, food preparation as well as many other uses.

A water storage tank collects water and stores it for later use and timely access. When you turn on your kitchen faucet, water is carried from the tank to your tap, providing you with fresh water on demand.

#### 3) Concrete pit:

Concrete pit can be generally used for packing and storage of goods (compost). Compartments can be used as restroom. Primary storage of equipments.

#### 4) Waste Chamber 1, 2:

Waste Chamber is the base platform where the collected waste will be kept and separated for further process. After that waste is separate and further processed by their category and plastic is transfer to plastic shredder unit

#### 5) Vermicompost pit 1, 2, 3 and 4:

Vermicomposting pits are mainly used by farmers. These farmers dig a large hole that serves the purpose of burying worms and organic waste material. Pits made for vermicomposting are usually 1 m deep and 1.5 m wide. This method can allow some worms to escape into the soil; hence

precaution has to be taken by lining the pit before adding the worms and the bedding into the pit.

#### 6) E-Waste Store:

E-Waste store is a separate store where only Electronic waste will be dismantle and collected seperatedly and packed for further process.

## IV. RESULTS AND DISCUSSION

For the collection of waste like E-Waste, we can provide separate community bins in area of Roha (Varse) as it is comparatively small so we can provide less numbers of community bins this can reduce the E-Waste at collections.

For biodegradable Waste, we can use newly invented technologies and some conventional methods like Vermicomposting (Bio composter).

For plastic waste we can use the plastic waste as an admixture for road construction making it sustainable

Providing Advance Dumping Yard (With Business plan).

## V. CONCLUSION

Questionnaire survey and collect current solid waste data of Roha city (Varse).

Analyze wastage data and find-out best solutions considering waste.

Proposed best ideas or schemes to collect E-Waste from sources.

Design or plan for business models for consumes wastage.

Suggested effective disposal system for Roha city (Varse).

## REFERENCES

### Technical Papers:

- [1] Rajkumar Joshi, Sirajuddin Ahmed, "Status and challenges of municipal solid waste management in India", Jan 2016.
- [2] Abhishek Nandan, Bikarama Prasad Yadhav, Soumyadeep Bakshi, Debajyoti Bose "Recent senerio of solid waste management in India" Jan 2017.
- [3] Ashish Mishra, Solid waste management case study" Aug 2020.
- [4] Akhilesh Kumar, Avlokita Agarwal, "Recent trends in solid waste management status, challenges and potential for future Indian cities" Septembert 2020.
- [5] Sarangan .B, (International Journal Of Engineering Research And Techno.[IJERT]), "E-waste Management",Jan 2018.
- [6] Abhishek Kumar,(Current Research in Environment Sustainability)" Problems faced in SWM ", Jan 2015.
- [7] S. K. Gosh, (Search)" E-waste Supply Chain and Challenges in India using QFD as tool", Aug 2014.
- [8] Kuldip Singh Sangwan" E-waste management for environmental sustainability", Feb 2014.
- [9] P. S. Anusree , P. Balasubramanian," Awareness and disposal of e-waste in Kochi city", June 2014.