iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 6 **Issue:** VI **Month of publication:** June 2018

DOI: http://doi.org/10.22214/ijraset.2018.6203

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 6.887
Volume 6 Issue VI, June 2018- Available at www.ijraset.com

Review: Study of Waste Problem in India, focusing on Bio-Non Degradable Waste (Plastic)

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Abstract: ***India is a deloping country. the developed countries' love of plastics,and India is heading towards the developed nation the fact that there is no comprehensive mechanism in place yet to manage the plastic waste we generate should be reason enough to work on its solution.More than 15,000 tonnes of plastic waste are generated in India everyday, of which 6,000 tonnes remain uncollected. As per the CPCB report in 2014-15, 51.4 million tonnes of solid waste were generated in the country, of which 91 per cent was collected, and 27 per cent was treated and remaining 73 per cent disposed of at dump sites.Central Pollution Control Board has estimated the generation of 15,342 tonnes of plastic waste in the country, out of which, 9,205 tonnes were reported to be recycled and leaving 6,137 tonnes uncollected and littered. We will try to have a knowledge about types of plastic and their daily life example so that one can know how to Recycle or Reuse a specific product.***
Keywords: PET, Plastic, Waste, Recycle, Reuse, Landfills, Pollution, Landfills

I. INTRODUCTION

Waste is defined as discarded material which has no value in normal use or for ordinary use. Solid wastes are those undesirable, useless and unwanted materials and substances that come from human and animal activities. Generation of wastes is inevitable. solid waste can be classified into biodegradable and non biodegradable waste.

1. Biodegradable waste, that are completely decomposed by biological processes either in presence or in absence of air are called biodegradable. Eg. Kitchen waste, animal dung, agricultural waste etc.

2.Non-Biodegradable waste, which cannot be decomposed by biological processes is called non- biodegradable waste. eg. Plastic, Metal waste, Synthetic Fibers, Chemical waste etc.

here we will discus about the impact of non biodegradable waste on the environment and also focus on its safe disposal methods possible at domestic or small level. The real challenge is to improve plastic waste management systems

II. LITERATURE SURVEY

A. Indians throw out 15,342 tonnes of plastic waste every day, of which about 60% is recycled, most of it in the informal sector. While the recycling rate in India is considerably higher than the global average of 14%, there are still over 6,100 tonnes of plastic which are either landfilled or end up polluting streams or groundwater resources. some kinds of plastic do not decompose at all, oand could take up to 500 years to break down, it's a severe problem to address.[1]

B. Plastic Waste Management Rules, 2016 has Increased minimum thickness of plastic carry bags from 40 to 50 microns and stipulate minimum thickness of 50 micron for plastic sheets also to facilitate collection and recycle of plastic waste. To bring in the responsibilities of producers and generators, both in plastic waste management system and to introduce collect back system of plastic waste by the producers/brand owners, as per extended producers responsibility also to introduce collection of plastic waste management fee through pre-registration of the producers, importers of plastic carry bags/multilayered packaging and vendors selling the same for establishing the waste management system because An eco-friendly product, which is a complete substitute of the plastic in all uses, has not been found till date[2

C. Tetra Pak cartoons are made from paper. 75% of the PAPERBOARD, 20% of POLYETHYLENE and 5% of ALUMINIUM. These are lightweight,easy to transport and FULLY RECYCLABLE.The aspetic technology allows the product inside to stay fresh, without the need of preservatives.They are fully Recyclable.They are recycled into paper products and remaining into plastic and aluminium are recycled to roof sheets and panel boards etc.[

D. This paper shows possibilities of PET bottles to be used as building construction material. clear relationship between density and the compressive strength of PETE bottles was found. Still much research and experiment have to be done in this area because it may effect human safety who is living inside house. So for now it is not suggested to use bottles or any waste plastic in constructions.[4]

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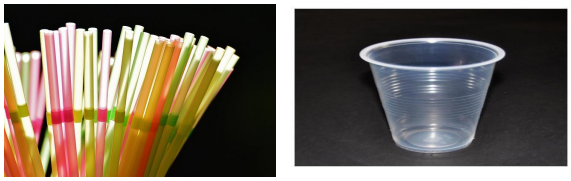
E. Process of conversion of plastic to gas or liquid is not new.By Pyrolysis process waste plastic,tyre are heated up from 200-600 degree Celsius range then the heated gas is cooled down and passed through pipe line then it condensed in form of oil. Which can be used as fuel oil. Over the past 10 years there has been an increase in the amount of research into the conversion of plastic into oil, as the oil prices have increased and waste collection and sorting methods have improved there are many possibilities are arising.[

F. Decentralised systems however run on smaller, but manageable scales. In this paper, case study of Mumbai and adjoining area of Thane is doen, where various attempts are made by citizens and organisations to make an effort to manage their waste in a decentralised manner. . Centralised mechanisms have known to fail at scale, largely because of the complexity that linear system poses. The door-to-door collection to mere dumping of waste in over-flooded landfills leaves very little space for effective management of mixed type of waste.[6]

III. TYPES OF PLASTIC

Society of the Plastic Industry (SPI) suggested classification system in 1988 to help customers and the industry to manufacture and identify types and plastic.It is also important to know their Use, Recyclability,Reusability,Toxicity and Alternatives in daily life.There are generally 7 types of plastic from which daily life stuffs are made namely PET,HDPE,PVC,LDPE,PP,PS, and Others which donot falls on 6 categiries mentioned.Now in tabular form we will try to explore these types with some details.

TABLE I. TYPES OF PLASTIC, SIGN, EXAMPLE

SYMBOL	POLYMER NAME	USE	RECYCLABLE or NOT
1 PET	Polyethylene Terephthalate		YES
2 HDPE	High-Density Polyethylene		YES
3 PVC	Poly Vinyl Chloride		YES,But not easy
4 LDPE	Low Density Polyethylene		YES,But not easy
5 PP	Poly Propylene		YES,But not easy

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6 PS	Poly Styrene		Approximately NO
7 OTHER	N/A		Approximately NO

It is estimated that for every ton of plastic that is recycled an 6-7 yards of land fill space may be saved. Recycling is an important way to ensure sustainability and a green planet for future generations.

IV. POSSIBLE SOLUTIONS OF PLASTIC WASTE CONCLUSION

Choice of the recycling method depends on the market; without a strong market, there is no profit to collecters and recyclables or manufacture products made from recycled materials. Recycling should be done as often and as much as possible, if this is not possible,then try to extract heat, electricity, gas or fuel oil. It will take time to establish a national recycling infrastructure. but, we are committed to working with stakeholders throughout the plastics and electronic supply chains to advance the responsible and cost-effective management of the plastic materials.There is always 3R's of waste management which is Reduce, Recycle, and Reuse. Including these 3 we will suggest 2 more to fight with plastic waste problems.

A. Reduce: find options, metal cans, take bags(jhola) from home whenever going to market, paper bag, cotton bags, less use plastic
B. Reuse: furniture making, design properly to use it in other forms, scrap use, fiber and cloth making
C. Recycle: bottling, smaller usable parts, extract as much usable parts as possible
D. Standardization: mention type, label, no of recyle on the product
E. Legislative Laws: strict laws, better implementation, positive political response

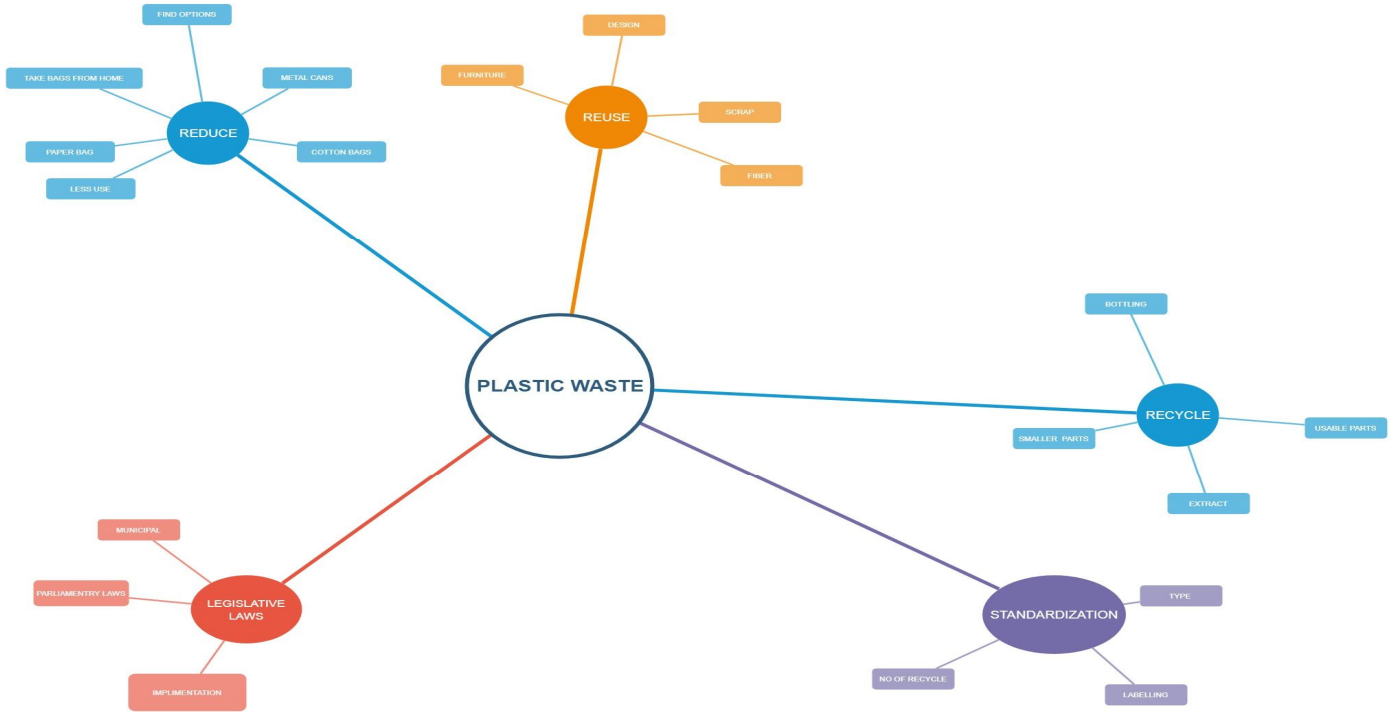

FIG. 1 Possible solution for Plastic waste

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V. CONCLUSION

If you wish to minimize waste and save money in the process, you must consume less and focus more on efficiency than on convenience. It requires a substantial amount of energy to manufacture, fill, ship, and recycle or destroy plastic water bottles. Washing and reusing plastic water bottles reduces waste and landfill, minimizes pollution, and conserves energy. Refilling your plastic water bottle with tap water is considerably less resource intensive than purchasing commercially purified and bottled water. Reusing plastic water bottles means less need to manufacture new bottles from virgin petroleum resin, and less trash that ends up in landfills, streams, and parks. Reusing plastic bottles can significantly reduce pollution, greenhouse gas emissions, and energy usage.In addition to the environmental benefits of reusing bottles, there are also direct and indirect financial benefits. When you can no longer use them, opt for recycling the containers instead of throwing them away. This practice will ensure the greatest environmental and financial benefits.Without help and awareness of society nothing is possible.

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[2] http://pib.nic.in/newsite/printrelease.aspx?relid=138144
[3] https://www.tetrapak.com/in/sustainability/good-for-you-good-for-the-earth/tetra-pak-cartons-fully-recyclable
[4] Kalumire kusimwiragi.2011.investigating the compressive strength of plastic bottles as masonry.
[5] Sam Haig, Liz Morrish, Roger Morton, Uchenna Onwuamaegbu, Peter Speller and Simon Wilkinson. Zero Waste Scotland works with businesses, individuals, communities and local authorities to help them reduce waste, recycle more and use resources sustainably. www.zerowastescotland.org.uk
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[7] Fig. 1 drawn online on www.draw.io

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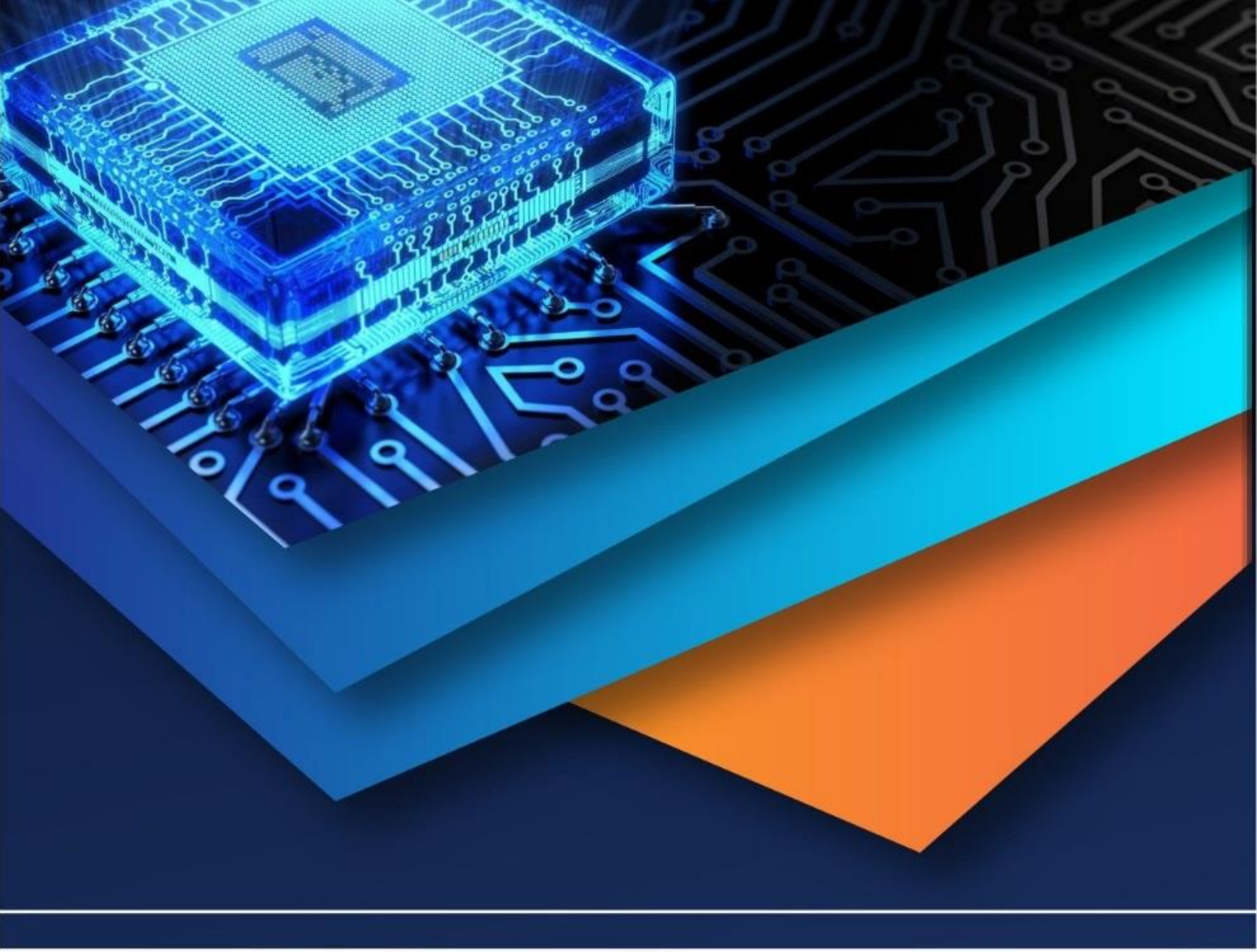

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