

PLASTIC WASTE QUANTIFICATION, CHARACTERIZATION AND ITS MANAGEMENT IN DAVANAGERE CITY

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Abstract - Plastic use has been so common these days that it is no surprise to consider plastic as a fundamental compound without which human life today would become much more difficult. Our dependency on plastic is increasing day by day by day. Researches and latest technologies have achieved the invention of safer and newer plastic, but the darker side of plastic has never been resolved and adverse effects of plastic are increasing at an alerting speed. On managing the plastic waste along with finding solutions. This projects looks upon the characterization quantification and management of plastic waste generated within the Davanagere city it explain the importance of adoption of latest technology over conventional methods of plastic waste management and gives information about quantity and types of plastic waste generated within the Davanagere city some efforts are reported on this aspect of investigation there is a need to adopt some modification for better outcomes management of plastic waste.

Key Words: Characterization, Quantification, Management, Plastic waste

1. Introduction

The disposal of plastic waste is today a major environmental and health problem around the world, even more so in developing countries. Plastic waste management is a scientifically generated technology for collecting, transporting, storing and disposing of plastic waste. Therefore, the system must be properly planned for the long term. Today, cities generate a large amount of plastic waste due to improved living standards. Therefore, detailed information on the quantity and characterization of plastic waste is needed for the treatment of waste at different stages of management system. Currently, most local and municipal governments do not weigh or quantify waste.

1.1 Plastic waste

Collectively, plastic waste, or plastic pollution, is the accumulation of plastic objects (such as PET bottles) in the global environment, which negatively affects wildlife, habitats

and wildlife. Wild animals and people. This refers to a large amount of plastic. It is not recycled and will eventually end up in landfills or dumped in unregulated landfills in the developing world. In the UK, for example, more than 5 million tonnes of plastic is used each year, but only a quarter of that is recycled. Three-quarters that are not recycled will end up in our environment, polluting our oceans and damaging our ecosystems. In developing countries, most plastic waste ends up in the ocean, leaving marine animals especially vulnerable. Much of what we consume is made of plastic (like PET bottles and food containers) because it's cheap but durable. However, due to its chemical structure, plastic degrades slowly (over 400 years), which has become a major problem.

1.2 Impact of plastic on human health and environment:

Studies have found a causal link between plastic and problems with most systems in the human body (e.g. cardiovascular, respiratory, reproductive, digestive, etc.). Therefore, it has a huge impact on health. Cancer, diabetes, chronic inflammation and various immune disorders are just some of the serious problems that plastics and their toxic components can cause. Heavy substances released during mining and waste detention are closely related to the problems of the most vulnerable people such as children and pregnant women. Hydraulic drilling and fracturing operations produce chemicals known as endocrine disruptors. It has a very negative effect on the development, immunity, nervous system and reproductive system. In pregnant women, such effects on the developing fetus have been shown to increase the likelihood of birth defects of the brain, heart, and/or spine.

Waste causes serious environmental damage during production, use and disposal. Harmful synthetic formulations release plastic waste. Another major cause of the negative impact of plastics on nature is the impact on the environment and human health during the assembly process. Many synthetic formulations of carcinogens, neurotoxins and endocrine disruptors are standard transformations and by-products of plastic manufacturing

and inevitably enter our nature through through water, soil and air pollution.

2. Study area

Davanagere district is a city located in the western part of South India. The municipal organization of the city is overseen by the Davanagere Municipal (Municipal Corporation). According to the 2011 assessment, the town of Davanagere has a population of 4, 34,971.

India's urban cities will be created as a smart city in the Smart Cities mission. Originally among the first 20 cities selected, Davanagere was one of them.

3. Methodology

The method used is

- (1) Solid waste collection
- (2) Manual plastic separation
- (3) Data collection from the City Office and other relevant Offices
- (4) Surveys from predefined sampling locations (bus stations, railway stations, hotels, residential areas, etc.)

4. RESULT AND DISCUSSION

Solid waste samples were collected from the Avaragolla landfill, quantification and characterization of the plastic waste was performed. The amount of plastic waste in the 25 kg solid waste sample is 11.3 kg and it is represented in chart-1

Table -1: Plastic waste Categorization

Plastic waste Categorization			
Plastic waste Code No.	Category	Plastic waste (kg)	Plastic waste (percentage)
01	PET	2.10	18.6
02 and 04	HDPE and LDPE	3.49	30.9
03	PVC	0.75	6.7
05	PP	0.71	6.3
06	PS	2.62	23.2
07	Others	1.61	14.3

The table shows the number of different types of plastic in the collected solid waste sample. It was found that out of 11.3 kg of plastic waste out of the 25 kg sample, 2.10 kg was PET, 3.49 kg was HDPE and LDPE, 0.75 kg was PVC, 0.71 kg was PP, 2, 62 kg are PS and 1.61 kg are other types. The same bar graph is shown in Chart -2.

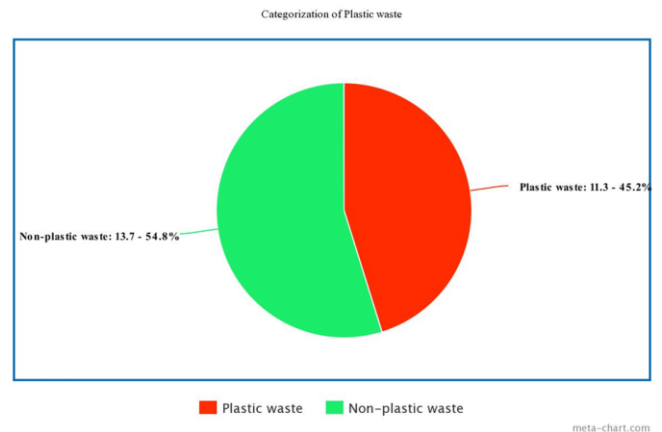


Chart-1: Plastic waste amount in sample

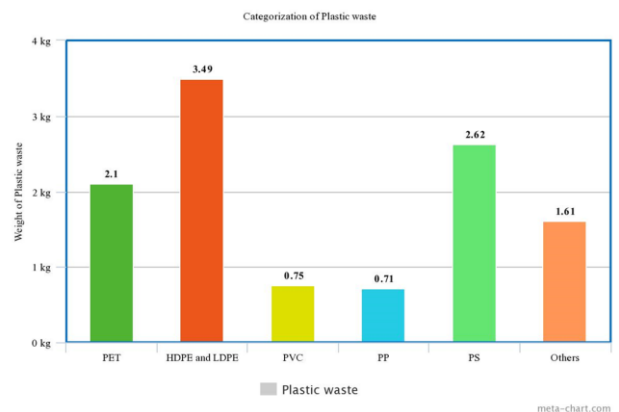


Chart -2: Graphical representation of plastic waste categorization

A Google Form was created and circulated asking me to fill out the same. The Google Forms consisted of a total of 14 questions that helped us understand people's behavior related to the generation of plastic waste. A door-to-door questionnaire visit interview was held. About 200 responses were collected. Sales data from a variety of general stores, supermarkets, stores, and hotels and restaurants are also collected to estimate the amount of plastic moving on a daily basis.

4. CONCLUSIONS

According to the 2011 census, the city of Davanagere has a total area of 68.63 km² and a total population of 4, 34,971. The population of the town of Davanagere has increased by 18.72% from 67,442 in 1991 to 1, 03,450 in 2001. The

average literacy rate is 85%, higher than the national average of 74.04 %. With the increase in population, there will certainly be an increase in the use of plastic, which leads to an increase in the production of plastic waste. Although the literacy rate is high, it is unfortunate to discover a pattern of plastic waste generation in the city. Based on the data collected and the results obtained, the following conclusion can be drawn as not all plastics are recyclable. Overall, only 4 types of plastic are recycled. They are made of polyethylene (PE) - high and low density polyethylene, polyvinyl chloride (PVC), polystyrene (PS) and polypropylene (PP). Therefore, Strictly implement existing policies for better plastic management, Educate consumers to improve the performance of the collection system, Promote all kinds of measures to reduce plastic waste, Establish a deposit system, especially for PET bottles, with the aim of minimizing pollution and maximizing the profits of the rPET market on the one hand, Invest in new industrial recycling infrastructure to ensure local demand is met, Help remanufacturers create recognizable, high-quality SPs and monitor performance with value-based metrics.

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