WASTE MANAGEMENT: STRATEGY FOR THE WELL-BEING OF KERALITES

[1]Thejuswini,
[1]UG, Student, 2nd year (3rd Semester), School of Law
[1]B.A. LLB (Hons.)
[1]Presidency University, Bengaluru, India

Abstract: In our day to day life, we use many items and each and every item which we use generates waste in some manner or other. The drastic increase in human population has resulted in the increase of the amounts of waste generated. Hence there is a need to manage the amount of waste that has been disposed by the people. Waste is defined as those materials which has been discarded by someone. But the waste which has been discarded shall be useful for somebody else in some other manner. Thus, with the help of this statement we can come to a conclusion that waste can be changed into something which can be useful for some other useful purposes. The main purpose of writing this research paper is to find out the different strategies used in Kerala to reduce the amount of waste and study the different methods by which bio-degradable wastes are converted into manure and how solid wastes are converted into something useful. This paper also deals with the different legislations (union as well as state legislations) which regulate the actions of the people (littering biodegradable and non-biodegradable wastes) by compensations, fines and punishments.

Keywords **– Waste management, bio- degradable waste, solid waste, legislations, regulations, Kerala.**

I. INTRODUCTION

The goods and items produced by different units and firms are used only to an extent or limit. This extent or limit can be defined as a situation where a particular thing cannot be used anymore by some set of living organisms but the same thing which has turned out to be useless for some organisms can turn out to be used by some other organisms. United Nations Environment Programme (UNEP) is an initiative or an agency which lends a helping hand to the developing countries in implementing different policies which ensures the safety of our environment and UNEP has defined wastes **"as substances or objects, which are disposed of or are intended to be disposed of or are required to be disposed of by the provisions of national law".**

The increase in the amount of waste materials in our surroundings has resulted in polluting and destroying our environment in numerous ways. Moreover, it also results in causing health related issues to the people who are living in the society. For example, the raise of waste materials in the society results in the contamination of water bodies during heavy rainfalls, which in turn results in the destruction of marine ecosystems. In addition to this, consuming contaminated water is also a threat to human beings as it causes harmful diseases like cholera, typhoid, jaundice diarrhea etc.

Alarming rise in the use of plastic and littering the same at places results in clogging of drains at the time of rainfall. It also results in death of animals when they consume it unknowingly. Hence in order to reduce the amount of waste generated in the surroundings Union Government as well as State Governments of different states in India have come up with different legislations and different ideas. This paper mainly gives an idea regarding the concept of waste. This paper also deals with the Union Legislations as well as the State legislations of Kerala. It also throws light on the different ideas which has been introduced by different cities in Kerala so as to reduce the amount of waste in their respective cities.

II. RESEARCH METHODOLOGY

Exploratory research methodology has been followed by the researcher throughout the research work. Secondary sources like books, articles, websites, newspapers, research papers etc. have been referred by the researcher for completing this research paper.

III. SCOPE OF THE RESEARCH

The whole research paper deals with the concept of waste and prevention of waste in the state of Kerala, India. This paper also deals with the current scenario of accumulation of solid waste and also the challenges faced by the people in Kerala. In addition, it also throws light on the measures which have been introduced by the state governments as well as local governments to prevent the same.

IV. AN OUTLINE OF KERALA'S GEOGRAPHICAL BACKGROUND

Kerala, popularly known as the God's Own Country is a coastal state located in the south-western part of the peninsular India. It lies between the latitudes 8°18' and 12°48' North and longitudes 72°52' and 77°24' East. It constitutes 1% of the total area of the country. It borders other states to the north and east, namely Karnataka and Tamil Nadu. While going through the historical background of Kerala a person will get an idea regarding the diversity of cultures within the state. This happened because Kerala was exposed to different foreign states or countries in the ancient period. Though it has diverse cultures it has its own colloquial language i.e. Malayalam. Kerala is a state comprising of 14 districts namely Thiruvananthapuram, Kollam, Pathanamthitta, Alappuzha, Kottayam, Idukki, Ernakulam, Thrissur, Palakkad, Malappuram, Kozhikode, Wayanad, Kannur and Kasaragod. It covers an are of 15,005 square miles i.e. 38,863 square kilometers. The population as per 2011 censes is 33,387,677.

V. CLIMATIC CHANGE IN KERALA

The climate change in Kerala is on the basis of the location of the state, its topography, land, drainage and relief features. Four seasons are identified in general i.e. Summer, Winter, Autumn and Spring. But in Kerala there are only three major seasons. They are **Summer** experienced in the months of **February to May**, **Monsoon** in the months of **June to August** and **October to November** and **Winter** in the months of **December and January**. In addition to this a person can experience a sort of **mild weather** during the months of **August**

and October. The variations of climate in Kerala is less when it is compared with the variation of climate in other states. The temperature of the state rises from low 70s F (low 20s C) into 80s F (27 to 32°C) on a daily basis. Kerala receives rainfall from both South-West monsoon winds (July to September) and as well as North-East (Reverse) monsoon winds (October and November). The average annual precipitation of the whole state is about 115 inches (3,000 mm), with some cities which receive more than 200 inches (5,000 mm.)

VI. Waste Management: Challenges Faced in Kerala

i. The first and foremost challenge faced by the state is due to the climate. Constant fluctuation in climatic conditions especially during the south-west monsoon and north-east (reverse) monsoon makes it more tough for the residents of Kerala to manage the waste discarded within the state itself. Due to heavy rainfall the waste becomes more stinky.
ii. People are careless when it comes to throwing of waste. They do not throw wastes on the places which are assigned for the same.
iii. Lack of knowledge with the households regarding disposal of waste.
iv. Non availability of land as well as a proper place to set up a particular building or an infrastructure so as to store the bio-degradable for a long time.
v. Failure of expensive projects due to corruption and poor engineering.
vi. Though Kerala High Court has come up with different orders to ban the act of dumping waste, it is of no use as those orders are totally ignored in many areas.
vii. Disappearance of forests (especially mangroves) due to contamination of water. Though the state government issues orders on a regular basis, but these orders are not implemented in a proper manner.
viii. Due to growing population of the state there is an alarming rise in the demand over items sold which has resulted in the accumulation of waste and the condition still continues.

VII. Classification of Waste

Waste can be broadly classified into **four** and they are **Urban waste, Industrial waste, Bio-Medical waste and E-Waste.**

a) Urban Waste

Urban waste includes municipal solid waste, construction and demolition waste and sewage and sludge.

i. Municipal Solid Waste

Municipal Solid Waste comprises of **bio-degradable waste** (kitchen waste, vegetable waste and garden waste)**; recyclable waste** (plastic, paper, glass, tin, can and metals)**; inert** (sand, pebbles and gravels)

ii. Construction And Demolition Waste

Construction waste (civil infrastructure waste)**; demolition waste** (demolition of building and maintenance)**; road waste** (construction and maintenance)**; excavation soil and rock waste** (digging activities and earth works)

iii. Sewage and Sludge

Sewage: It refers to the waste water which is disposed off from the toilets and washers from houses, firms etc. It includes all the contaminants from sewer.
Sludge: During the time of waste water treatment a semi-solid precipitate is formed. As the treatment includes physical and chemical processes, the sludge contains particles of heavy metals, micro-organisms (bacteria, viruses etc.) and other biodegradable particles in the waste water. Though they come under the sub-head of urban waste water, they have greater amount of nutrients like phosphorous and nitrogen. It also contains valuable organic matter which are useful when there is depletion of soil or soil erosion.

b) Industrial Waste

It comprises of **solid industrial waste** (hazardous and non-hazardous waste)**; liquid industrial waste** (industrial waste water)

i. Hazardous Industrial Waste

It consists of **listed waste** [**F- lists** (non-specific source waste)**, K-lists** (source-specific waste)**, P-lists** and **U-lists** (discarded commercial chemical products)]**; characteristic waste** (ignitability, corrosivity, reactivity and toxicity)**; universal waste** (battery, pesticides, mercury-containing and bulb)**; mixed waste** (radioactive, hazardous waste component)

ii. Non- Hazardous Industrial Waste

It is also known as **ordinary industrial waste**. It refers to those waste which cannot be categorized under sewage. They can be both recyclable as well as non-recyclable. For example: fly ash, packaging waste, lime sludge, metal scrap, glass etc.

iii. Industrial Waste Water

The waste water which is disposed from the industries is known as industrial waste water. According to the nature of the pollutant Industrial waste water is classified into **four categories** viz.
Domestic waste: (Examples-Industrial waste water from industries dealing with diary production, distilleries tanneries etc.)
Dissolved Solids: (Example-Chemical Industry)
Toxic Chemicals: (Example-Coke-Oven Tannery and Dye)
Cooling Water from plants: (Example- Thermal Power Plants)

c) BIO- MEDICAL WASTE

Bio-medical waste are those wastes which are generated from hospitals, clinics, health care facilities and laboratories.

d) E-WASTE

E-waste refers to the waste formed from electrical or electronic devices. For example, discarded/broken electronic devices.

VIII. TECHNIQUES ADOPTED TO REDUCE WASTE IN KERALA

It has been directed by the Supreme Court of India that the states with the population of over ten lakhs should take up proper steps for ensuring proper disposal of wastes discarded in the state within the state itself. Though this directive had been given by the apex court of India, most of the local governments in India were not able to implement it in a proper manner. Kerala can be considered as one of those states which took this issue very seriously. So, in order to make Kerala clean, Kerala government introduced a mission in the year 2002 known as the Clean Kerala Mission.

The main aim of setting up this mission is to make Kerala garbage free. This also became a platform for setting up projects as well as implementing it to control Municipal Solid Waste within the state. Non- Governmental Organizations (NGOs), community organizations such as Kudumbashree also participated in this process to achieve the goal of garbage free Kerala.

In the first phase this project was implemented in a total of 5 corporations and 25 municipalities in which Self-Help Groups (SHGs) also participated. This was increased to 27 cities and 25 villages in the second phase.

In order to convert bio-degradable waste into compost different compost models were introduced in Kerala which are as follows: pit composting, trench composting, pot composting, pipe composting, ring composting, vermi-composting, portable composting, kitchen composting, bucket composting, bio-composter bin, anaerobic composting model (Tumburmuzhi) and Bio- Gas plant (Floating and fixed bio-gas plant). Every model is set up on the basis of the direction of the Urban Local Councilors of different locality. They set up different plants for the people of the locality to use by considering different things like population, the amount of waste discarded on a daily basis etc. For example: Alappuzha is a city in Kerala which adopted different methods suitable for their locality like the establishment of kitchen bins, bio-gas plants, pipe composting units and aerobic composting units. And now with the efforts of the public, in 2017 Alappuzha was recognized worldwide as one of the five model cities for successfully and sustainably managing solid waste

IX. LAWS IN RELATION WITH WASTE MANAGEMENT

i. THE ENVIRONMENT (PROTECTION) ACT (EPA), 1989

The Environment (Protection) Act is considered as the umbrella act as it deals with different legislations of state as well as the central governments which are related to the environment. There are many views stated by the public as to why such an Act was introduced. Some of them believe that it was the conference held by the United Nations (U.N.) in the year 1972 on human environment which led to the formation of this Act. Some others are of the opinion that the incident of Bhopal Gas Tragedy (Union Carbide Corporation v. Union of India) forced the government to introduce an Act named Environment (Protection) Act with a motive to protect our environment.

ii. WATER (PREVENTION AND CONTROL OF POLLUTION) ACT, 1974

Water (Prevention and Control of Pollution) Act was introduced in order to put a full stop to polluting of rivers. In other words, it was introduced to reduce the contamination of water bodies.

iii. AIR (PREVENTION AND CONTROL OF POLLUTION) ACT, 1981

Air (Prevention and control of pollution) Act is the first legislation introduced to deal with environmental issues. This Act was introduced in order to prevent all those activities done by the people which shall be the reason for polluting the quality of air present in our surroundings. The main objective of this legislation is to control air pollution.

iv. NATIONAL GREEN TRIBUNAL ACT, 2010

The National Green Tribunal Act deals with all the environmental issues and gives effective and speedy remedy for the cases which has been filed under this tribunal. It is a body which mainly functions for resolving environmental disputes and this tribunal also deals with multi-disciplinary issues. They enforce legal right which has a connection with the environment. The cases dealt by the tribunal shall be mainly concerned with conservation and protection of forests, vegetations etc.

OTHER RELATED LAWS:

- The Water (Prevention and Control of Pollution) Rules, 1975
- The Water (Prevention and Control of Pollution) Cess Act, 1977
- The Water (Prevention and Control of Pollution) Cess Rules, 1978
- The Manufacture, Storage and Import of Hazardous Chemical Rules, 1989
- The Public Liability Insurance Act, 1991
- The National Environment Tribunal Act, 1995
- The National Environment Appellate Authority Act, 1997
- The Bio- Medical Waste (Management and Handling Rules), 1998
- Batteries (Management and Handling) Rules, 2001
- Hazardous Waste (Management, Handling and Transboundary Movement) Notified, 2008
- The Plastic Waste (Management and Handling) Rules, 2011
- E-Waste (Management and Handling) Rules, 2011
- Solid Waste Management Rules, 2016

- Plastic Waste Management Rules, 2016
- E-Waste Management Rules, 2016
- Bio-Medical Waste Management Rules, 2016
- Construction and Demolition Waste Management Rules, 2016

X. CONCLUSION

Environment is the abode of numerous organisms. And it is this environment which gives life to all living beings. Waste disposed by the people or the mankind acts as an evil against both human beings as well as animals, birds etc. It is high time that we take stringent measures to prevent waste formation. It is very necessary to prevent waste so as to save people from getting severe chronic diseases and deaths of animals. In order to make a place or locality clean, the public i.e. the human beings/ the mankind who discard waste should themselves take initiative to eradicate the same. The contribution that a person makes to the environment should come voluntarily from the people themselves instead of demanding them to do the same. They should understand that it is their moral duty to save the environment from getting accumulated with wastes.

Though some cities in Kerala have achieved the milestone by getting rid of solid wastes by implementing different waste management projects and got recognition from all over the world, still there are many cities and towns within Kerala itself which did not even achieve the quarter of the development what some cities have achieved. So, when Kerala is considered as a whole, it is still in the first stage of preventing waste formation.

XI. REFERENCES

[1] Government of Kerala, Acts and Rules, Suchitwa Mission, http://sanitation.kerala.govt.in/act-rules/
[2] News18.com, Kerala's strategy behind waste management sector, (August 12, 2015), http://www.google.com/amp/s/www.news18.com/amp/news/india/keralas-strategy-behind-waste-management-sector-1038787.html
[3] Raveesh Agarwal. Mona Chaudhary. Jayveer Singh. 2015. Waste Management Initiatives in India for Human Well Being. European Scientific Journal, 105-127
[4] Reenu Pawels. Asha P, Tom. 2013. Assessment of Technological Options for Solid Waste Treatment in Kerala. International Journal of Scientific and Research Publications, 3(8): 105-127.
[5]Sanchari Pal, How Kerala's 'Zero-Waste' Alappuzha Won a Spot Among Top 5 Cities in UN List (2017) http://www.google.com/amp/s/www.thebetterindia.com/126083/kerala-allapuzha-zero-waste-cleanest-city-india-un/amp/
[6] Suneel Pandey. 2014. Waste to Resources: A Waste Management Handbook 1-76.
[7]Perumal Koshy, Waste Management in Kerala- Private Sector Participation, Universal Ecoservices, http://www.universalecoservices.com/wastemanagement_in_kerala.cfm
[8] William, A. Noble, Kerala State, India, (Jan 24, 2019), https://www.britannica.com/place/Kerala