Educational Administration: Theory and Practice
2024, 30(1), 3223-3231
ISSN: 2148-2403
https://kuey.net/

Research Article

Turning Trash To Treasure: Legal Strategies For Sustainable Waste Management In India

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Citation: Prof. (Dr.) Namita Vyas Joshi, et al (2024), Turning Trash To Treasure: Legal Strategies For Sustainable Waste Management In India, *Educational Administration: Theory and Practice, 30(1),* 3223-3231
Doi: 10.53555/kuey.v30i1.7076

ARTICLE INFO

ABSTRACT

The term solid waste means the material which is in solid form and which has been discarded or abandoned. Solid waste can be seen in the from of residential as well as non-residential waste. The domestic waste, industrial waste, sanitary waste, market waste, agricultural waste, horticulture waste, radio active waste, bio medical waste as well as dairy waste are the various examples of solid waste. The solid waste includes various elements such as physical, reactive, biological, explosive, chemical, corrosive, flammable, toxic and so on which pose danger to our health as well as to the environment. Under the system of solid waste management, the solid waste is collected, treated and then disposed off as per the process laid down under particular rules dealing with the same. There are various environmental laws which lay down rules and guiding principles as to management of solid waste. The Environment Protection Act, 1986, the Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2008, the Plastic (Manufacture, Usage and Waste Management) Rules, 2009, the Biological Waste Management) Rules, 2016 and so on are the laws regulating solid waste management in India. Besides these laws, at international level, there are various guiding principles which have been laid down to regulate the same. The main purpose of all these initiatives is three-fold which is; REDUCE, RECYCLE and REUSE. The present research is based on doctrinal legal research method under which the concept of solid waste, environment protection laws has been studied. Along with the doctrinal research method, analytical and descriptive research methods have been used. Under the descriptive research, the existing international as well as national solid waste management laws, its evolution, present developments have been studied. The analytical research method has assisted in critically evaluating the solid waste management laws. The data for the present study has been gathered from the primary and secondary sources. In the collection of data, reliance has been made on text books, reports, journals, seminar papers etc. The primary sources of research has been the international treaties, national laws and policies and other instruments. The secondary sources had been the relevant books, journals, articles, reports etc.

Key Words: solid, waste, management, sustainable, environment, hazardous.

I. INTRODUCTION

The issue of waste management poses a significant challenge to society, as it is often overlooked in the realm of environmental concerns. This negligence not only jeopardizes the health of human beings, but also poses a threat to other living organisms. Solid waste, in broad terms, encompasses waste generated from households, streets, public areas, shops, offices, hospitals, and more. To address the proper disposal of these wastes, an efficient waste management system is essential. This system entails a well-planned approach to effectively control the production, storage, collection, transportation, processing, and disposal or utilization of solid waste. Within the Constitution of India, various fundamental rights are outlined, with the right to a pollution-free environment being of utmost importance. The Indian Judiciary has been instrumental in safeguarding the environment through legal interpretation. The Environment Protection Act, 1986, and the Municipal Solid Waste (Management & Handling) Rule, 2000 have been implemented to establish guidelines for solid waste

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management. The waste management process typically involves generation, segregation, storage and collection, transportation, treatment, and disposal. However, the prevalent practice of open dumping in many cities has been identified as a major contributor to environmental degradation and public health concerns. Solid waste disposal was not given much attention in rural India in the past. This was mainly due to the abundance of unused land, leading people to simply discard their waste in open areas and streets. Moreover, the type of waste produced during that time was significantly different from the trash we see today. As development progressed in various fields, the nature of garbage underwent a complete transformation. In ancient times, there were no soft drinks, televisions, toxic toys and games, or computers, which are now commonly found everywhere, even in households. In every city, a substantial amount of solid waste is being generated, posing a challenge for the authorities responsible for its management. Properly managing solid waste is crucial for every country in order to establish a healthy and clean environment.[i] The principal objective of solid waste management is to mitigate and eradicate the detrimental effects of waste materials on human health and the environment. This endeavor supports economic development and enhances the quality of life. It is imperative that these goals are achieved with optimal efficiency, minimizing costs and preventing waste accumulation.

II. INTERNATIONAL CONVENTIONS

At international level, various efforts have been made to protect environment and to prevent environment pollution. Following are the various international documents which lay down the guiding principles which are to be followed by the law-abiding countries so that the environment pollution which is the concern at world level can be controlled with cooperation.

The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, 1989

The Conference of Plenipotentiaries, held in Basel, Switzerland on 22 March 1989, adopted the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal. This significant convention became effective on 5 May 1992. The primary aim of the Basel Convention is to safeguard human health and the environment from the detrimental impacts of hazardous wastes. It encompasses a broad spectrum of wastes categorized as "hazardous wastes" due to their source, composition, and characteristics.[ii] Another category of waste identified is referred to as "miscellaneous wastes," encompassing household waste and incinerator ash.[iii] The Basel Convention regulates the transportation of hazardous waste across borders, and India is a signatory to this agreement. While the import of hazardous waste for disposal is strictly prohibited by law in India, there are certain restrictions in place that allow for its import for the purpose of reuse, recovery as an energy source, and recycling. India permits the export of hazardous waste, but only with the prior informed consent of the importing country.

The initial objective is achieved by implementing various general regulations that mandate States to adhere to the core principles of environmentally friendly waste management. Several restrictions are put in place to achieve the secondary objective: hazardous wastes cannot be sent to Antarctica, to a country that is not a member of the Basel Convention, or to a nation that has prohibited the import of hazardous wastes.[iv] Parties have the option to engage in bilateral or multilateral agreements regarding the management of hazardous waste with either other parties or non-parties. It is crucial, however, that these agreements fulfil the requirement of being "no less environmentally sound" than the Basel Convention.[v] In all instances where cross-border movement is not explicitly prohibited, it can only occur if it presents an environmentally sound solution, adheres to the principles of environmentally sound management and non-discrimination, and follows the regulatory system outlined in the Convention. The regulatory system serves as the foundation of the Basel Convention, as originally adopted. Built upon the principle of prior informed consent, it mandates that the authorities of the exporting country must notify the authorities of the prospective importing and transit countries, providing them with comprehensive information about the intended movement. The movement can only proceed once all concerned countries have given their written consent. Additionally, the Basel Convention facilitates cooperation among parties, encompassing the exchange of information on matters relevant to the Convention's implementation and the provision of technical assistance, particularly to developing nations.[vi] The Secretariat must assist and bolster this collaboration, serving as a central hub.[vii] If hazardous wastes are illegally transported across borders.[viii] If the task cannot be accomplished as planned, the Convention assigns responsibility to one or more of the States involved and mandates the obligation to guarantee secure disposal, either through re-importation into the State of origin or by alternative means.[ix]

The Convention also includes provisions for the creation of training and technology transfer centers at regional or sub-regional levels. These centres aim to address the unique requirements of various regions and subregions in terms of managing hazardous wastes, other wastes, and reducing their production.[x] Fourteen centers of this kind have been established, where they conduct training and capacity building activities in various regions.

ii. The Rotterdam Convention on the prior informed consent procedure for certain Hazardous Chemicals and Pesticides in International Trade, 2004

The Rotterdam Convention, which focuses on the prior informed consent procedure for specific Hazardous Chemicals and Pesticides in International Trade, came into effect on 24th February 2004. India ratified the convention on 24th May 2005, and it was put into operation on 23rd August 2005. The main goal of this Convention is to encourage shared responsibility and collaborative efforts among Parties involved in the global trade of certain hazardous chemicals. This is done to safeguard human health and the environment from potential harm and to promote their safe use by exchanging information about their properties, establishing a national decision-making process for their import and export, and sharing these decisions with the Parties involved.

During the interim period, different countries have designated their departments and institutes as Designated National Authorities (DNAs) to carry out the necessary administrative tasks as required by the Convention.[xi] In the case of India, the Designated National Authorities are located in the Ministry of Chemicals and Fertilizers, as well as the Ministry of Agriculture and Cooperation. The Ministry of Environment, Forests, and Climate Change has been assigned as the Official Contact Points. Annex III of this Convention contains a list of 47 chemicals, including 33 pesticides and 14 industrial chemicals, which have been banned or heavily restricted due to health or environmental concerns. These chemicals are subject to the Prior Informed Consent (PIC) procedure.[xii]

iii. The Stockholm Convention on Persistent Organic Pollutants, 2001

The Stockholm Convention on Persistent Organic Pollutants (POPs) is an international agreement aimed at safeguarding human health and the environment from the harmful effects of POPs. Initially targeting 12 chemicals for regulation or elimination of their production and release, the Convention now encompasses 23 chemicals. Adopted in May 2001, the Convention became effective on 17th May 2004. India ratified the Convention on 13th January 2006, with it entering into force on 12th April 2006. The Convention outlines strategies to minimize or eradicate intentional releases from production and usage.[xiii]

The parties must adhere to the following obligations:

1. They must prohibit and implement the necessary legal and administrative measures to eradicate the production and utilization of hazardous chemicals.
2. They must regulate the import and export of these chemicals.
3. They must limit the production and usage of these chemicals.
4. They must guarantee the environmentally responsible disposal of chemicals.[xiv]

According to this document,[xv] parties to the Convention were mandated to create a National Implementation Plan (NIP) outlining the execution of their commitments to the Convention, with the NIP being funded by the Global Environment Facility (GEF). The Ministry of Environment, Forests and Climate Change acts as the main contact for GEF and the Stockholm Convention within the nation. The designated national authorities are located within the Ministry of Agriculture and Cooperation, as well as the Ministry of Chemicals and Petrochemicals. India has officially approved 12 chemicals that were initially listed.

iv. Strategic Approach to International Chemicals Management, 2006

In February 2006, more than 190 countries, including India, joined the Strategic Approach to International Chemicals Management (SAICM), a global policy framework aimed at promoting the responsible handling of chemicals. The initial efforts under SAICM involved the creation or revision of national chemicals profiles, the enhancement of institutions, and the integration of sound chemical management into national strategies. In line with these objectives, India took the initiative to develop the National Chemicals Management Profile, which aimed to evaluate the country's infrastructure and capabilities in chemical management. Additionally, the Ministry undertook various other measures.

(i) Commenced research on the inventory of lead, cadmium, mercury, and arsenic in paints, distemper, and pigments within the nation.
(ii) Initiated dialogues with prominent national laboratories.
(iii) Officially announced the E-Waste (Management and Handling) Rules, 2012 to regulate the handling of electronic waste.
(iv) Concluded the preliminary version of the Dangerous Goods (Classification, Packaging, and Labelling) Rules, 2013, aligning with the principles of the Globally Harmonized System.

v. Minamata Convention on Mercury, 2013

The "Minamata Convention on Mercury" was officially adopted at the Conference of Plenipotentiaries held in Minamata and Kumamoto, Japan, from 9th-11th October 2013. This global treaty aims to safeguard human health and the environment from the harmful effects of mercury by addressing anthropogenic emissions and releases of mercury and its compounds. The convention encompasses various measures throughout the entire life cycle of mercury, including controls and reductions in products, processes, and industries where mercury is used, released, or emitted. It also covers aspects such as direct mining of mercury, its export and import, safe

storage, and proper disposal as waste. Implementation of the convention will not only help identify and treat mercury-related effects but also focus on at-risk populations, enhance medical care, and provide better training for healthcare professionals. In the context of this convention, mercury wastes refer to substances or objects that contain mercury or its compounds, exceed the relevant thresholds defined by the Conference of the Parties, and are intended or required to be disposed of according to national law or the provisions of this convention. This definition excludes overburden, waste rock, and tailings from mining, except in cases of primary mercury mining where they contain mercury or its compounds above the thresholds set by the Conference of the Parties.[xvi]

III. WASTE MANAGEMENT LAWS IN INDIA

The generation of waste is often overlooked despite the increasing industrial growth and development. Failure to regulate and manage the disposal of such waste can result in significant environmental problems. It is crucial to establish a strong waste management system in accordance with the principle that development and sustainability should go hand-in-hand. In our country, the Ministry of Environment, Forest and Climate Change (MoEF) collaborates with State Pollution Control Boards in various states to govern waste management. Additionally, there are specific laws in place to regulate waste in India. The National Environment Policy of 2006 not only emphasizes waste disposal but also highlights the importance of recycling and treating waste.[xvii]

i.The Constitution of India

The Constitution of India, as the highest law of the land, ensures numerous rights, including the right to a pollution-free environment. It also requires all Indian citizens to safeguard and enhance the natural environment. Waste management falls under the State List of the Seventh Schedule, making it the responsibility of the States to address waste management issues. Integrated solid waste management is a fundamental principle of environmental sanitation. The Indian Judiciary has played a significant role in environmental protection through its legal pronouncements. Therefore, it is the duty of the State to provide a clean environment free from pollution to all individuals. Proper management of solid waste is essential for this purpose. The Environment (Protection) Act of 1986 has led to the formulation of the Municipal Solid Wastes (Management and Handling) Rules of 2000 by the Central government of India. These rules apply to every municipal authority responsible for the collection, segregation, storage, transportation, processing, and disposal of solid waste. The aim of these rules is to hold every municipal authority accountable for implementing the provisions within its jurisdiction and to establish an efficient infrastructure for solid waste collection, storage, segregation, transportation, processing, and disposal. Unfortunately, many municipalities continue to indiscriminately dump municipal solid waste in water bodies and low-lying areas without considering the environmental impact.

ii. The Environmental Protection Act, 1986

The Act was passed in 1986 with the objective of establishing an effective protection system. It grants the Central Government the authority to oversee and regulate all types of waste. This legislation plays a crucial role in safeguarding the environment and managing waste. Among its significant provisions, the Act strictly prohibits any individual from emitting or discharging environmental pollutants beyond the set standards, thus ensuring the preservation of our ecosystem.[xviii]

The legislation stipulates that in the event of any environmental harm caused by a foreseeable or unforeseeable incident, the individual accountable for the damage is obligated to take action to either prevent or mitigate the pollutants released as a consequence of said incident. Furthermore, the individual must notify the relevant authorities of the incident that could potentially harm the environment.[xix] The concept of the "Polluter Pays Principle" emphasizes that the individual accountable for environmental degradation should bear the cost of restoring the natural state of the environment. This notion of ongoing accountability holds significant importance.[xx] The Act also includes clauses that eliminate the corporate veil. If a company commits any environmental offense with the involvement or approval of any director, manager, secretary, or other company officer, they will be held individually accountable for their actions on behalf of the company. These rules, commonly referred to as the Environmental Protection Rules of 1986, were established by the government under the authority granted to them by the Environmental Protection Act. With these powers, the government has the ability to issue specific instructions without altering the main Act.

iii.The Batteries (Management and Handling) Rules, 2001

The implementation of the Batteries Rules was established to establish a system that addresses the proper disposal of lead acid batteries. These regulations are applicable to all manufacturers, recyclers, dealers, importers, assemblers, bulk consumers (such as organizations and departments that purchase more than 100 batteries), and individual consumers. It is mandatory for every consumer to return their used batteries to the dealer, manufacturer, recycler, or designated collection centers. Additionally, bulk consumers are obligated to submit semi- annual reports to the State Pollution Control Board regarding their battery usage.[xxi] In accordance with an additional regulation, prior to importing used batteries in India for recycling purposes, a

recycler is required to acquire Custom clearance.[xxii] Furthermore, the importation of batteries will solely be permitted upon the submission of a valid registration with the Reserve Bank of India and MoEF, accompanied by an undertaking in the prescribed format and a copy of the most recent half-yearly return.

iv. The Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008

Proper management of hazardous waste presents a highly intricate challenge. Compliance with specific rules and regulations is essential, collectively establishing the legal framework. These regulations mandate that the individual responsible for hazardous waste ensures its safe and proper handling within the environment. This individual is defined as the occupier of a facility, plant, or factory where hazardous waste is generated during its operations.[xxiii] The hazardous waste must be sold or dispatched by the occupier to an authorized re-processor or recycler appointed by the government, ensuring the safe disposal of the waste. Individuals involved in activities such as storage, packaging, collection, destruction, conversion, processing, and more are required to obtain authorization from the State Pollution Board.[xxiv] Those who engage in recycling, occupying, reusing, or reprocessing are permitted to store waste for a maximum period of 90 days.[xxv] The sale or transfer of hazardous waste can only be carried out once a valid registration form from the Central Pollution Control Board (CPCB) has been obtained. Similarly, the utilization of the waste as an energy source also necessitates registration from the CPCB.

v. The Plastic Waste (Management and Handling) Rules, 2011

The Plastic Waste Management Rules serve as a regulatory framework established to govern the utilization, production, and reprocessing of plastic waste. Plastic waste encompasses any discarded plastic item that has reached the end of its lifespan or has been discarded after use.

These Rules are universally applicable to all distributors, users, retailers, and manufacturers of plastic products. It is mandatory for every plastic product manufacturer and recycler to obtain registration from the State Pollution Control Board,[xxvi] with the registration requiring renewal every three years. Additionally, the Rules stipulate that retailers are prohibited from providing plastic bags free of charge. This measure is implemented to ensure responsible usage of plastic bags. The Plastic Waste Management Rules also outline specific details regarding plastic products, including their classification based on factors such as compostability, recyclability, or virgin plastic status, as well as specifications regarding thickness and color. The recycling of plastic products must adhere to a predetermined procedure established by the Bureau of Indian Standard Specification.

vi. The E- Waste (Management and Handling) Rules, 2011

The primary objective of the EWM is to establish a system that effectively manages e-waste in an eco-friendly manner by overseeing the recycling and disposal of electronic waste. E-waste management poses a significant challenge in India. As the economy expands and technology progresses, India is emerging as a key player in the IT industry. Consequently, there is a substantial increase in e-waste generation, necessitating proper disposal methods.[xxvii] Moreover, the illegal importation of e-waste into India exacerbates the issue. The E-waste Rules are applicable to both manufacturers and consumers, including bulk consumers of electronic products.[xxviii] Many large corporations have automated their operations and rely heavily on electronic devices to fulfill their needs. Factories are also classified as bulk consumers.[xxix]

E-waste, as per the Regulations, refers to electronic or electrical devices that have been disposed of or rejected after use. The discarded byproducts that arise during the manufacturing process are also included in this category. The manufacturer of electronic and electrical products is required to obtain permission from the State Pollution Control Board in accordance with the regulations.[xxx] The regulations on electronic waste also outline the duties of collection centers, consumers, large-scale consumers, dismantlers, and recyclers.

vii. Bio-Medical Waste (Management and Handling) Rules, 2016

The regulations concerning the management and handling of Bio-Medical Waste were revised in the years 2018 and 2019. Inadequate management of biomedical waste can have severe consequences on public health. Proper disposal of bio-medical waste is crucial to prevent the transmission of infectious diseases, cancer, fatal abnormalities, chronic cardio-pulmonaryailments, antibiotic resistance, endocrine disruptions, and contamination of the air, land, and water for future generations. It is imperative to adopt environmentally friendly and efficient methods for handling bio-medical waste. The primary objective of these regulations is to ensure the safe disposal of bio-medical waste. Bio-medical waste includes any waste or byproduct generated during the treatment, immunization, and research activities involving human beings or animals. Schedule I of the regulations categorizes biological waste into various types such as microbiological and biotechnological waste, human anatomical waste, animal anatomical waste, discarded medicines, chemical-related waste, etc. Medical waste, solid medical waste, liquid medical waste, and isolation waste are among the different forms of bio-medical waste. The Bio-Medical Waste Management Rules, 2016 stipulate that waste should be segregated using containers of different colours.[xxxi]

1. Yellow bags contain infectious non-plastic waste materials.
2. Red bags contain infectious plastic materials.

3. White sharp containers hold metal sharp objects.
4. Blue containers are for broken glass items and metal implants.

The Bio-Medical Waste (Management and Handling) Rules are applicable to various institutions such as nursing homes, animal houses, veterinary homes, blood banks, dispensaries, pathological laboratories, etc. These Rules strictly prohibit the mixing of biological waste with any other type of waste. It is mandated that bio-medical wastes should not be stored for more than 48 hours without undergoing treatment. Furthermore, the Rules necessitate that every occupier or institution dealing with biological waste must obtain authorization from the State Pollution Control Board.[xxxii] Additionally, as per the regulations, all establishments falling under the purview of the regulations must establish treatment amenities such as microwave systems, autoclaves, and so forth.[xxxiii]

viii. The Hazardous Substances Management Division (HSMD)

The Hazardous Substances Management Division (HSMD) serves as the central hub within the Ministry responsible for overseeing chemical emergencies and hazardous substances. Its primary goal is to advocate for the safe handling and utilization of hazardous substances, which includes hazardous chemicals and wastes, to prevent harm to both human health and the environment. Additionally, the Division acts as the focal point for four key International Conventions: the Basel Convention, the Rotterdam Convention, the Stockholm Convention, the Minamata Convention, and the Strategic Approach to International Chemicals Management.

ix. The Ministry of Environment, Forest and Climate Change

The Ministry of Environment, Forest and Climate Change has officially announced the implementation of the Manufacture, Storage and Import of Hazardous Chemicals (MSIHC) Rules, 1989 and the Chemical Accidents (Emergency Planning, Preparedness and Response) (CAEPPR) Rules, 1996. These rules have been put in place to ensure the safety of chemical handling in the country. They outline the criteria for identifying Major Accident Hazard (MAH) units. According to these rules, various crisis groups at different levels, including the Central Crisis Group, State Crisis Groups, District Crisis Groups, and Local Crisis Groups, must be established to manage accidents related to hazardous chemicals listed in the rules. Additionally, each district with a MAH unit must have an off-site emergency plan in order to minimize the impact of chemical accidents. Currently, there are 1,861 MAH units located in 303 districts across the country, as reported by various states and union territories. The Ministry has also implemented a sub-scheme called "Industrial Pocket wise Hazard Analysis" since the Eighth Five Year Plan. Under this scheme, financial assistance is provided to identified agencies for the preparation of off-site emergency plans, hazardous analysis, and rapid safety audit reports for 41 districts with MAH units. The received reports, including the off-site emergency plans, hazard analysis, and rapid safety reports, are currently being reviewed.

x. Data Analysis on Solid Waste

According to data provided by the Central Pollution Control Board (CPCB), there are approximately 41,523 industries in the country that produce around 7.90 million tonnes of hazardous waste every year. Out of this, about 3.32 million tonnes (42.02%) is waste that can be disposed of in landfills, 0.60 million tonnes (7.60%) is waste that can be incinerated, and
3.98 million tonnes (50.38%) is recyclable hazardous waste. The Ministry has also launched a project called GIS Based National Hazardous Waste Information System, which is a web-based system designed to provide information on the management of hazardous waste in the country. The database available on the website needs to be regularly updated by all State Pollution Control Boards to ensure that the information is always up to date. So far, the NHWIS has conducted surveys of 33,000 hazardous waste industries and entered data for approximately 27,500 hazardous waste industries.

IV. RESEARCH METHODOLOGY

The present research is based on doctrinal legal research method under which the concept of solid waste, environment protection laws has been studied. Along with the doctrinal research method, analytical and descriptive research methods have been used. Under the descriptive
research, the existing international as well as national solid waste management laws, its evolution, present developments have been studied. The analytical research method has assisted in critically evaluating the solid waste management laws. The data for the present
study has been gathered from the primary and secondary sources. In the collection of data, reliance has been made on text books, reports, journals, seminar papers etc. The primary
sources of research has been the international treaties, national laws and policies and other instruments. The secondary sources had been the relevant books, journals, articles, reports etc.

V. ROLE OF JUDICIARY IN SOLID WASTE MANAGEMENT

The Indian Judiciary, by making groundbreaking decisions, has significantly contributed to safeguarding the environment. In a Public Interest Litigation concerning waste management in Delhi, in the matter of *Dr. B. L. Wadhera* v. *Union of India and others*,[xxxiv] the Honorable Supreme Court, led by Justice Kuldip Singh, issued specific directives regarding municipal solid waste.

- The collection centers will have the garbage and waste removed on a daily basis and transported to the designated disposal site. It is essential to maintain cleanliness and tidiness at all the receptacles and collection centers every day. It is important to ensure that the garbage and rubbish are not scattered around the collection centers or on the roads.
- Regular inspection teams from the Central Pollution Control Board and the Delhi Pollution Committee will be sent to different areas of Delhi/New Delhi to ensure that the collection, transportation, and disposal of garbage and waste are carried out satisfactorily.
- The residents of Delhi will be educated through Doordarshan and local announcements about their responsibility to adhere to the provisions of the Act regarding the collection and disposal of garbage and other wastes. Violations will result in penalties.
- The municipality will construct or install additional garbage collection centers such as dhalaos, trolleys, or steel bins within four months.
- The NCT Delhi Administration, along with the Chief Secretary, MCD, and NDMC, will collaborate and engage an expert body like NEERI to explore alternative methods of garbage and solid waste disposal.

In the case of *Smt. C. Uma Devi* v. *Government of Andhra Pradesh and others,*[xxxv] the issue of Visakhapatnam Municipal Corporation dumping garbage in a green park was presented in court. The Hon'ble High Court decided that the Corporation must cease dumping garbage in the specified park or any other park. Additionally, the Corporation is required to restore the Green Park to its former state and ensure proper maintenance. The A.P. Pollution Control Board will oversee the upkeep of the Green Park regularly, and if it is found that the Corporation is not adhering to the rules outlined in the Municipal Wastes (Management & Handling) Rules, 1999, criminal proceedings may be initiated against the Corporation.

In the case of *Bombay Environment Action Group and others* v. *State of Maharashtra and others,*[xxxvi] concerning solid waste management in hill stations, the Court ordered the following:

- The Municipal Council of Mahabaleshwar must establish two sewage treatment plants and a solid waste management facility within six months of taking possession.
- Hoteliers and commercial institutions in Mahabaleshwar and Panchgani are instructed to have their own treatment facilities. The Maharashtra Pollution Control Board will inspect their effluents, and if they fail to meet the required standards, the Pollution Control Board will be expected to order the closure of their operations.

In the PIL filed by *Shelter Trust* v. *Union of India and others,*[xxxvii] regarding the dumping of mixed untreated garbage, including wet market waste, household glass, tins, plastics, papers, and carcasses, at a site in a Village directly above the drinking water source for the Town and in close proximity to the Tiger Shola Reserve Forest, the Court issued a writ of Mandamus. The Court noted that, considering the larger public interest, the writ petitioner is allowed to propose measures for the proper disposal of garbage at the proposed site without causing harm to the environment. It is emphasized that the suggestions made by the petitioner will be carefully considered by the seventh respondent and implemented in the best interest of the general public. The seventh respondent must also comply with all directives issued by the Pollution Control Board to date, as well as any future directives aimed at meeting pollution standards. The Pollution Control Board is responsible for monitoring the operations of the compost yard, identifying any shortcomings, and recommending necessary measures to the seventh respondent.

VI. CHALLENGES AND CONCLUSION

Single-use plastics have increasingly been recognized as a significant global threat due to their harmful and non-biodegradable nature. In urban environments, excessive plastic waste generation can lead to clogged drainage systems during monsoon seasons, resulting in urban flooding. Furthermore, micro-plastics blend with water bodies, thereby polluting rivers and oceans. Current research indicates that the presence of micro-plastics disrupts aquatic ecosystems and contributes to global warming, ultimately leading to the extinction of various indigenous species on Earth. According to a report published by the United Nations Development Programme (UNDP), approximately 300 million tonnes of plastic waste are produced annually worldwide. Of this amount, only about 9% is recycled, ~14% is collected for recycling purposes while the remaining bulk ends up in our oceans each year. With the rise in industrial activities, the importance of striking a balance between economic growth and environmental protection is becoming more crucial. Sustainable development is gaining more attention, aiming to achieve both goals simultaneously without compromising one over the other. Adhering to environmental regulations also enhances the organization's reputation. Furthermore, regulations concerning waste management and environmental protection have become stricter. There is no room for leniency when it

comes to operating in an eco-friendly manner. Failure to comply with these regulations may lead to the revocation of the organization's right to conduct business by the government. To avoid such penalties, it is essential for organizations to address environmental protection and waste management efficiently, contributing to the sustainable development of society in the long term.

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[xxix] The E- Waste (Management and Handling) Rules, 2011, Rule 3(k).
[xxx] *Id.*, Rule 4.
[xxxi] The Bio-Medical Waste (Management and Handling) Rules, 2016, Schedule I.
[xxxii] *Id.,* Rule 8(1).
[xxxiii] *Id.,* Rule 5(2).

[xxxiv] 1996 SCC (2) 594.
[xxxv] AIR 2001 AP 460.
[xxxvi] Writ Petition No. 7308 of 2002.
[xxxvii] 2008 Madras High Court.