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ROLE OF HAZARDOUS AND OTHER WASTES (MANAGEMENT AND TRANSBOUNDARY MOVEMENT) RULES, 2016

~ Mansi Gaur

ABSTRACT

India is an emerging country, with a clear foresight of growth and progress. After independence industrialization gained speed and in the recent decades it has been accelerated. Due to this exhaustion of natural resources and pollution has been increased. A large amount of waste is generated from these industries, a substantial quantity of which is hazardous in nature. Hazardous waste is harmful not only for the environment but also for human health. It creates a lot of problems and it's an important issue for the whole world. For the management of hazardous waste, India has policies and framework like Hazardous waste management Rules. At the global platform also various treaties and conventions have been ratified by the countries. Hazardous waste management rules in India are in compliance with international treaties and conventions, it has ratified to.

Keywords - Hazardous Waste, Basel Convention, Occupier, TSDFs

BACKGROUND

Dalai Lama in his book 'An open heart'¹ speaks about environment in following words:

“We must also care for our environment. This is our home, our only home. It is true that we hear scientists talk of the possibility of settling on Mars or the moon. If we are able to do so in a feasible,

¹ 14th DALAI LAMA ET. AL., AN OPEN HEART, (Back Bay Books 2002).

comfortable way, good; but somehow I think it might be difficult. We would need a lot of equipment simply to breathe there. I think our blue planet is very beautiful and dear to us. If we destroy it or if some terrible damage occurs because of our negligence, where would we go? So, taking care of our environment is in our own interest.”²

Purportedly, Rachel Carson's book *Silent Spring*³ was one of the first to brought the light on the perilous impact of hazardous substance on environment and human health. The affair gathered increased attentiveness backed by the scientific research uncovering that certain Hazardous Substances have Carcinogenic, mutagenic, teratogenic, neurotoxic properties, and in some cases, even instant death.⁴

Mishap occurred in the city of Bhopal on 2nd of December, 1984. Methyl Isocyanate (MIC), a highly noxious gas leaked out of one of the storage containers from the Union Carbide Plant positioned in a dense area. The lethal gas immediately put to death several thousands of people and caused disablement to several lakhs of people. 5.22 lakh persons are reported to have been exposed to the gas. Nothing Would compensate the pain and suffering undergone by these victims.⁵ After this incident only, the MoEF (Ministry of Environment and Forests) felt the need to manage the hazardous waste. The first step was the enactment of Environment (Protection) Act, 1986. The Hazardous Wastes (Mangement and Handling) rules, 1989 were notified under the provision of Environment (Protection) Act, 1986.

From the Gulf of Kutch where a Petro-chemical complex threatens the pirotine Marine Park and coastal Maharashtra where a copper smelter and a host of other lethal factories endanger mango orchards, and fish breeding grounds to Kerala, Tamil Nadu, Orissa and West Bengal, where five-star hotels and prawn farms compete to devastate once-pristine beach fronts, India lies wounded.⁶ Even after the enforcement of the hazardous waste rules in 1989, the performance remained badly off, as there was constant hike up in the industrialization due to liberalization policies. A number of amendments have been made to the Hazardous Waste (Management and Handling) Rules, 1989, for stricter compliance with environmental standards.

² T S DOABIA, ENVIRONMENTAL & POLLUTION LAWS IN INDIA, (4th Ed. 2023).

³ RACHEL CARSON, *SILENT SPRING*, (Mariner Books Classics 40th Anniversary ed. 2022).

⁴ C.M. Jariwala, Hazardous Substance and Waste Law: Lessons for India, 52(3/4) JILI 412, (2010).

⁵ V. Umakanth, *Regulation of Hazardous Substances: Law and Policy*, 37(4) JILI 508, (1995).

⁶ *Id.*

HAZARDOUS WASTE – CONCEPT

Basel Convention, which came into force in 1992, 191 countries are party to it, India being one of the first signatory countries. The Basel Convention regulates and manages the cross-border movement of hazardous waste and insists that member nations dispose of HW in an environmentally sound manner. Member should reduce the quantity and size of the transported waste and curtail waste generation at the source.⁷

Hazardous waste comes in different arrangements and is particularly generated by chemical production, manufacturing, and other industrial affairs.

Basel Convention is the most immense and substantial international environmental engagement on hazardous waste, embracing e-waste as well. The Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016, has taken on a definition similar to the Basel Convention. The definition provided under the rules of 2016 by the Ministry of Environment, Forest and Climate Change (MoEF) is -

“hazardous waste” means any waste which by reason of characteristics such as physical, chemical, biological, reactive, toxic, flammable, explosive or corrosive, causes danger or is likely to cause danger to health or environment, whether alone or in contact with other wastes or substances, and shall include –

- (i) *waste specified under column (3) of Schedule I;*
- (ii) *waste having equal to or more than the concentration limits specified for the constituents in class A and class B of Schedule II or any of the characteristics as specified in class C of Schedule II; and*
- (iii) *wastes specified in Part A of Schedule III in respect of import or export of such wastes or the wastes not specified in Part A but exhibit hazardous characteristics specified in Part C of Schedule III;*⁸

The proper disposal of hazardous wastes generated from human activities has become a significant worldwide worry. These Hazardous wastes can be categorized into four types - solid, liquid, gaseous, and sludge. High Powered Committee in 2001 defines HW as any substance that serves no foreseeable purpose and possesses physical, chemical, reactive, toxic, flammable, explosive,

⁷ Aparna Singh, *The problems of e-waste management in India*, 2(2) JCLJ 299, (2022).

⁸ Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016, Rule 3(17).

corrosive, radioactive, or infectious characteristics that pose a danger or are likely to pose a threat to human health and environment. This classification should be considered when the waste is generated, handled, stored, transported, treated, or disposed of. The definition encompasses any product that emits hazardous substances at the end of its life when disposed of without discrimination. Due to its characteristics and properties, HW must be disposed of securely.⁹

KEY FEATURES

Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016, aims to minimize the generation of HW and encourage secured treatment, disposal, and storage.

The Rules were amended by MoEF in 2008 to include more stringent actions. It was further amended in 2016, which added 'Other Wastes' within the ambit of Hazardous Waste (Management, Handling & Transboundary Movement) Rules, 2008.

CHARACTERISTICS

Hazardous waste can be disposed of as used material, abandoned commercial product, liquid, solid, or contained gas.

Hazardous Waste has been classified on basis of various ways like leachable concentration limits [Toxicity Characteristic Leaching Procedure (TCLP) or Soluble Threshold Limit Concentration (STLC)], Total Threshold Limit Concentration (TTLC) and characteristics.¹⁰

In every industry that manages chemicals, when wastes are generated, they may have a possibility of being hazardous. The wastes must fit the properties and definition of 'hazardous waste'. The deduction of hazardous waste can be made by performing tests or having knowledge of the chemicals, processes, and properties.

The Rules of 2016 outline specific characteristics under Class 'C' of Schedule II and Part 'C' of Schedule III to ascertain whether or not waste contains hazardous characteristics and to identify hazardous waste. These characteristics are as follows:

- Flammable or ignitable

⁹ B.V. Babu and V. Ramakrishna, *Hazardous waste management in India*, Birla Institute of Technology and Science Pilani 333 31, (2012).

¹⁰ Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016, Schedule II.

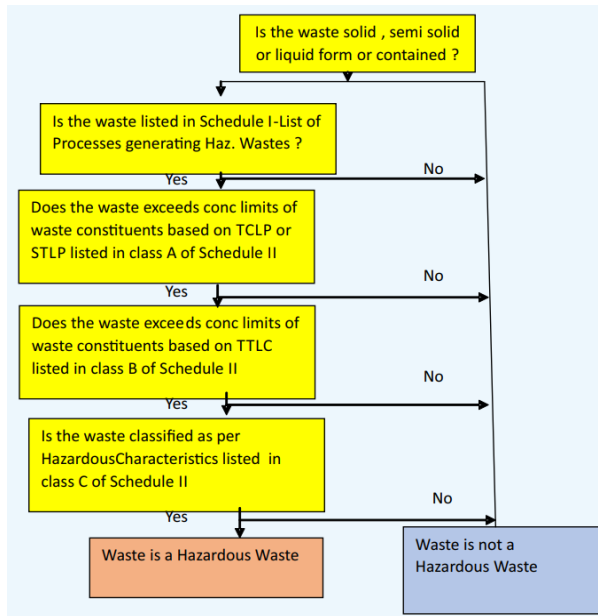
- Corrosive
- Toxic
- Reactive
- Substances or wastes liable to spontaneous Combustion
- Substances or wastes which, in contact with water emit flammable gases
- Oxidizing
- Organic Peroxide
- Poisons
- Infectious substances
- Liberation of toxic gases in contact with air or water
- Eco-toxic¹¹

IDENTIFICATION

The primary step in the management of hazardous waste is the identification of hazardous waste. It's the duty of occupier to determine and identify hazardous waste. The identification may be difficult as showing that the waste is potentially hazardous may take time.¹² But the process has been defined in the HWM rules,2016. The flowchart given below explains it according to HWM rules, 2016.

¹¹ *Id.*

¹² National Productivity Council, *Toolkit for implementation of Hazardous Waste Management rules, 2016*, (1st ed 2019).



OCCUPIER'S RESPONSIBILITY

The occupier has the responsibility of handling the wastes. Occupier has been defined under Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016, as- *'occupier' in relation to any factory or premises, means a person who has, control over the affairs of the factory or the premises and includes in relation to any hazardous and other wastes, the person in possession of the hazardous or other waste.*¹³

The occupier (the person in charge of a plant or unit or factory producing hazardous waste due to their operation) is accountable for managing hazardous waste, including its prevention, minimization, reuse, recycling, recovery, and safe disposal.¹⁴

Under these rules, an occupier generating hazardous wastes exceeding the permissible limits should take all practical steps to ensure that such wastes are correctly handled and disposed of without any wretched effects.¹⁵ The occupier is required to fulfill following responsibilities and steps as follows-

¹³ Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016, Rule 3(21).

¹⁴ Ambalika Karmakar, *Regulatory Regime for Waste Management: A Study with Special Reference to India*, 5(6) IJLMH 937, (2022).

¹⁵ *Id.* at 5.

- pollution prevention;
- waste minimization;
- 3 R concept (reuse, recycle and recovery);
- Authorization - To handle the HW, every person must obtain authorization from the state Pollution Control Board (SPCB), provided that the applicant is fully qualified to handle hazardous waste. However, Rule 5(4) requires the board to issue the letter within 120 days from the date of the application, avoiding unnecessary delay in the usual official bureaucratic setup. The authorization is for five years and could be terminated or renewed by the SPCB.¹⁶
- Storage - The occupiers of facilities generating hazardous & other wastes may store for not more than ninety days and a maximum quantity of ten tonnes. The State Pollution Control Board may extend the said period of ninety days.

The occupier must mark the hazardous waste containers with the labels as specified in Form 8 (Appendix E) of the Rules with a fluorescent yellow color background written in RED words as 'HAZARDOUS WASTES' and 'HANDLE WITH CARE' in Hindi, English, and vernacular language.¹⁷

IMPORT AND EXPORT

The export and import of hazardous waste are the inescapable outcomes of industrialization and social change. Developed nations like the United States, Canada, and members of the European Union have accepted this given instance. As of 1987, approximately four hundred U.S. firms shipped hazardous waste to Canada. A similar number of Canadian companies exported HW for TSD facilities in the U.S. Developed nations have the habit of dumping hazardous waste in third-world and developing countries. This activity of taking advantage of one's position and exploiting developing countries' lack of expertise in technology in the management of HW has been criticized for putting the environment and citizen's health at risk.¹⁸

Therefore, HW is prohibited from being imported for disposal, but it is permissible for the purpose of recycling, reusing, repurposing, and co-processing. The MoEF has outlined provisions in the

¹⁶ Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016, Rule 5(4).

¹⁷ *Id.* at 12.

¹⁸ M. N. Semenoff, *Foreign Trade in Trash? Exporting Hazardous Waste*, 4(2) NR&E 14, (1989).

Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016, regarding the types of waste that can be imported and exported.

Facilities or individuals who aim to import hazardous and other wastes listed in Parts A and B of Schedule III must apply according to Form 5 and the required instruments to the Ministry of Environment, Forest and Climate Change. The application must also include informed consent from the country where the hazardous waste is imported.¹⁹

The applicant is also required to simultaneously submit a copy of the application to the concerned SPCB for acknowledgment. Then, the application and acknowledgment from the SPCB must be submitted to the MoEF.²⁰

Under the Hazardous Waste Management Rules of 2016 enforced in India by MoEF, importers are not required to obtain consent from MoEF to import other wastes, as listed in Part D of Schedule III. However, importers must provide the necessary information according to Form 6 to the customs authorities, including the documents specified in Schedule VIII.

But the ban and permission for import and export of HWs led to illegal trafficking of it. For which provisions are given under Rule 15 of HWM rules, 2016.

TREATMENT OF HWs

With the aim of waste minimization from facilities, there should be a similar amount of interest toward the treatment, storage, and disposal of the already generated waste. Only some occupiers that produce hazardous waste can effectively manage waste; hence, the Treatment, Storage, and Disposal Facility (TSDF) is considered a very influential and unique option, where wastes are collected, treated per their characteristics, and eventually disposed of.

The three essential and functional areas under TSDF (treatment, storage and disposal) are:

- i. Treatment: It refers to any process that alter the characterization or composition of a hazardous waste to make it less hazardous or capable of volume reduction or resource recovery. Under Hazardous waste management rules, 2016, it is defined as-

¹⁹ Diksha Khiatani, *General Overview of The MoEF Rules Governing Hazardous waste import*, ENTER CLIMATE (May 28, 2024, 9:29 PM), <https://enterclimate.com>.

²⁰ *Id.*

*“treatment” means a method, technique or process, designed to modify the physical, chemical or biological characteristics or composition of any hazardous or other waste so as to reduce its potential to cause harm.*²¹

- ii. Storage: The temporary holding of hazardous wastes before treatment or disposal. It is defined under Rules of 2016 as –

*“storage” mean storing any hazardous or other waste for a temporary period, at the end of which such waste is processed or disposed of.*²²

- iii. Disposal: It refers to depositing a hazardous waste, which may either re-enter the environment or be safely and securely disposed of. Disposal is specified under Rules 2016 as –

*“disposal” means any operation which does not lead to reuse, recycling, recovery, utilisation including co-processing and includes physico-chemical treatment, biological treatment, incineration and disposal in secured landfill*²³

TSDF should be designed in accordance with the expected waste handling at the site. The site's layout and design must be based on the technical guidelines issued by CPCB every year, and the respective SPCB must approve it. It is essential to monitor the sites regularly during the post-closure period. The monitoring plan encompasses the overall environment quality and different actions related to the direct and indirect functions of TSDF, including amenity items, site inspections, habitat surveys, aftercare measures, and future planning.²⁴

The hierarchy in the management of hazardous waste is to reduce, reuse, recycle, and re-process, and the final option of waste disposal has no potential for value addition in disposal facilities in an environmentally sound manner. The disposal facilities may have only a secured landfill (SLF) or an incinerator alone for organic wastes or a combination of a secured landfill & incinerator. At present, there are 26 standard Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDFs) in operation spread across the Country in 13 States, namely Andhra Pradesh, Gujarat, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Punjab, Rajasthan, Tamil

²¹ Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016, Rule 3(35).

²² Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016, Rule 3(31).

²³ Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016, Rule 3(10).

²⁴ *Id.* at 9.

Nadu, Telangana, Uttar Pradesh, and West Bengal as well as in UT namely Daman, Diu, Dadra & Nagar Haveli. The respective State Governments have notified thirty-five new sites for developing TSDF, which are at different stages of development as stated by the Central Pollution Control Board in 2010.²⁵

INDIAN SCENARIO OF HAZARDOUS WASTE MANAGEMENT

Under Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016, An Occupier generating hazardous wastes beyond permissible limits must take all necessary measures to ensure that waste is managed correctly. The occupier is responsible for the appropriate collection, reception, treatment, storage, and disposal of these hazardous wastes. Further, a person can handle hazardous wastes only with the permission of the concerned authority, which is CPCB and SPCB. The government is to make an annual inventory of disposal sites and ensure reporting of accidents and follow-up operations. Moreover, import of hazardous substances into India for the purpose of dumping shall not be permitted.²⁶

The OECD Guiding Principles Relating to Accidental Pollution, 1989 instituted the 'polluter-pays' principle concerning hazardous substance accidents.²⁷ This implies that the "operators of hazardous installations have the full responsibility for the safe operation of their installations and for taking all appropriate measures to prevent accidents" and that "operators of hazardous installations should take all reasonable measures... to take emergency actions in case of an accident".²⁸

The Public Liability Act of 1991 was enacted for industries dealing with hazards to protect against accidents or damages resulting from the discharge of pollutants. The National Environmental Tribunal Act of 1995 offers quick remedies to those harmed by environmental offenses. The

²⁵ K. Syamala Devi, O. Sujana et al., *Hazardous Waste Management in India – A Review*, 6(1) IJCRT 1547, (2018).

²⁶ *Id.* at 5.

²⁷ OECD, *Recommendation of the Council concerning the Application of the Polluter-Pays Principle to Accidental Pollution*, OECD/LEGAL/0251.

²⁸ *Id.*

Community's Right to Know, 1996, has been put in place to increase public access to information about possible dangers of industrial activities.²⁹

Another legislation regarding management of wastes, The Manufacturing, Storage and Import of Hazardous Waste Chemical Rules, 1989, specifies that before undertaking any activity involving hazardous chemicals, the occupier has to submit a safety report containing the relevant information and also prepare an on-site emergency plan. There is stringent regulation of the import of hazardous substances under the Rules.

SPCBs and pollution control committees of state and UTs implement these rules. The scope of this rule has also extended to 'other wastes'. Solid Waste Management Rules, 2016 defines discarded paint drums, pesticide cans, CFL bulbs, tube lights, expired medicines, broken mercury thermometers, used batteries, used needles and syringes, etc., generated at the household level as a 'domestic hazardous waste'. The government has incorporated A waste management hierarchy, prioritizing prevention, minimization, reuse, recycling, recovery, co-processing, and safe disposal.³⁰

According to annual inventory published by CPCB for financial year 2022-23, There are 83,682 HW generating units, out of which 78,098 units possessing authorization and 16,881 units exempted from obtaining authorization. However, only 61,231 units (i.e. 73%) submitted annual return for the year 2022-23.³¹

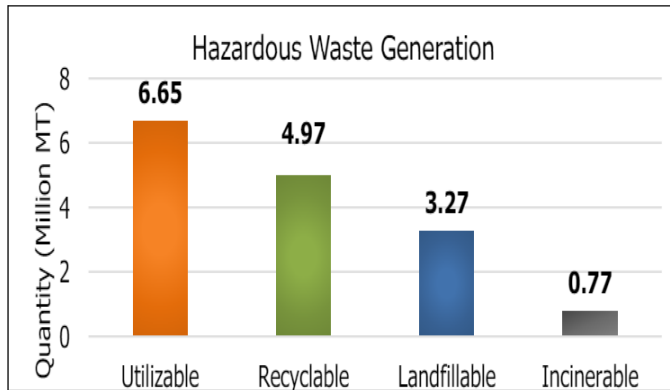
During 2022-23, about 15.66 million MT of HW generated (i.e. 30%) against the authorized capacity of about 51.91, million MT. Out of 15.66 million MT of generated HW, 42.49% is utilizable HW, 31.74% is recyclable HW, 20.89% is landfillable HW and 4.89% is incinerable HW. Category wise generation of hazardous waste is depicted in figure below:³²

²⁹ Tata Energy Research Institute, *Hazardous waste management in India*, Tech Monitor NSWAI 22, (2005), [https://www.nswai.org/docs/Hazardous%20waste%20management%20in%20India%20\(1\).pdf](https://www.nswai.org/docs/Hazardous%20waste%20management%20in%20India%20(1).pdf).

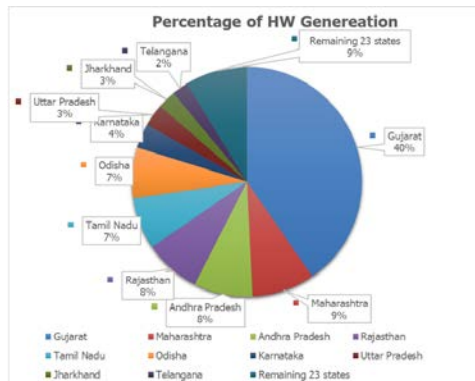
³⁰ Central Pollution Control Board, *Guidelines for preparation of inventory on hazardous waste management*, (2009), https://cpcb.nic.in/NGTMC/HW/Guidelines_Inventories_HW_21.06.2019.pdf.

³¹ Central Pollution Control Board, *National Inventory on Generation and Management of Hazardous and Other Wastes (2022-23)*, (2003), https://cpcb.nic.in/uploads/hwmd/Annual_Inventory2022-23.pdf.

³² *Id.*



Top 10 HW generating States are Gujarat (40.39%), Maharashtra (8.84%), Andhra Pradesh (8.26%), Rajasthan (7.92%), Tamil Nadu (7.28%), Odisha (7.12%), Karnataka (3.47%), Uttar Pradesh (3.14%), Jharkhand (2.55%) and Telangana (2.28%) which together contributes about 91.24% of total generation.³³



Experience in India indicates that the majority of industries address environmental concerns by adhering to government regulations. Still, if corporations aggressively oppose regulations, they will continue to face increasing regulations, unfavorable judicial pronouncements, and stringent actions.

GAPS IN POLICY IMPLEMENTATION

- First, All the laws based on hazardous and toxic substances must be consolidated and codified into a single comprehensive code, inclusive of everything. Laws that are piecemeal are invariably unsuccessful, lead to several authorities, and are inefficient. A

³³ *Id.* at 31.

pendulum-like situation exists between advances in trade and legal controls of HSW and, even in this competition, final winner is the trade.

- India was one of the first signatories of Basel Convention from the global south and ratified it in 1992. However, India still needs to ratify the amendment to the Basel Convention, which came into force in 2019 and more than 100 countries have ratified it.
- Within developing countries, the choice is to balance recycling (including composting) and landfills so that recycling efforts only use up resources as they save. Managing uncollected waste is essential in developing countries but needs more significance in industrialized ones. Policies must also encompass regulatory measures to ensure waste minimization and optimal disposal.³⁴
- Annual inventory is published by the CPCBs every financial year. Its content requires each SPCB/PCC to prepare a yearly inventory of their respective state and union territory according to provisions specified under Rule 20(3) of the Hazardous Waste Management Rules of 2016, and it should be submitted to the CPCB by 30th September of each financial year. Industries usually provide data about hazardous waste without the validation and inspection of SPCB. For the country's development, the industrial sector keeps on flourishing; hence, it necessitates perpetual inventory updates for effective techniques to incorporate in waste management strategies.³⁵
- Due to the absence of a clear cause-effect relationship, the standard of proof for justifying an action is extremely high.
- More expertise, knowledge, and information are required about the nature and characteristics of hazardous substances and their effect on human health and the environment.
- Regulation of hazardous substances generally incurs high costs and therefore, there is a tendency to ignore risks from low level exposures.
- Often, these substances turn out to be crucial for the development of the nation and this interest conflicts with that of protecting the health and environment.

³⁴ B. Chhibber, *Challenges And Policy Responses To Hazardous Waste Management*, 19(2) World Affairs J. Int. Iss. 86, (2015).

³⁵ *Id.*

- Even in cases where there is regulation, the process is generally marred by complex procedure, its attendant delays and frivolous litigation.³⁶

CONCLUSION

Today, we are at a time when the environment is at stake. Our actions are careless and ignorant, harming the environment on which our life and well-being depend. India is a fast-developing country where industrialization is at its peak. Humans must use their knowledge to build a better environment cooperating with nature to attain liberty in nature. Safeguarding and enhancing the environment for present and future generations has become one of humanity's most crucial objectives.³⁷

Developing nations should study and acquire knowledge of how developed countries manage hazardous waste. By seeking new and inventive solutions, they can find ways to utilize their limited resources to practical use. There is a need for updated technologies and evolved concepts for regulations to be more stringent. Law must be in pace with new technologies and evolution.

The Hazardous waste management rules, other guidelines and rules by Government and international conventions like The Basel conventions are designed for management of hazardous waste, its utilization, disposal, treatment, import-export, generation etc. These rules are made thinking of its effective approach but there are lots of gaps within it. Implementation of these rules at ground level on industries, urban and domestic space is the huge problem out there. Still, industries generate a significant quantity of hazardous waste.

In a developing country the idea of industrialization and profits is usually valued above the importance of environment protection and safety. But environment protection must be given the foremost priority as the environment provides a lifeline to humanity. Sustainable development is gaining popularity day by day as pollution, depletion of natural resources is increasing day by day. Implementation of regulations, managerial responsibilities, integrated policy and team effort and cooperation between industries and government agencies is needed.

In India, at least half of the waste produced could be recycled but this requires imaginative effort and intensive planning. This would not only conserve resources but would also lead to a cleaner

³⁶ *Id.* at 5.

³⁷ K. Kaur, *The Effects Of Environmental Pollution On Human Health*, 11(2) World Affairs J. Int. Iss. 22, (2007).

environment. Education is important at every level about policies and how to protect the environment. Awareness is required to be spread among the industries and society about management of wastes both hazardous and domestic. It takes "out of the box" thinking and a shift in people's attitudes to get desired results. There is still much to be done. Even though it is difficult, it could and should be done. Ultimately, it is essential for the survival of upcoming generations.