

## CASE STUDY 3: HAZARDOUS WASTE ISSUES IN INDIA

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### **Summary**

The Indian government promulgated the Environment (Protection) Act in 1986, which is umbrella legislation to protect and improve the environment and to regulate the management and handling of hazardous substances and chemicals. The Ministry of Environment and Forests continuously monitors the progress made by various state governments and union territories with respect to the implementation of India's Hazardous Wastes Rules. Of the 524 districts in 21 states and union territories in India for which information is available, 335 districts are characterized by 11 358 industrial units that generate hazardous waste. About 9.3 million MT (metric tons) of hazardous waste is generated in India, and 1.35 million MT of that is recyclable waste, 0.11 million MT is incinerable waste, and 0.49 million MT waste is sent away for secure disposal. There are 88 incinerators in the country and only two engineered landfill sites, both located in the State of Gujarat. Seventy-four sites have been identified in various states to establish common disposal facilities, and 14 of these sites have been notified of their identification. With regard to recycling units, 188 utilize indigenous hazardous waste as raw material, and 21 depend on imported recyclable waste. Experience in India

shows that most industries respond to environmental issues by complying with Government regulations, but if corporations do take an antagonistic position towards regulations, they continue to be burdened with ever-increasing regulations and adverse judicial pronouncements. In the future, the corporations need to be proactive and set voluntary standards for environmental protection and safety that minimize the chance that illogical and ill-conceived regulations and standards are adopted. This, in turn, requires a comprehensive, constructive and cooperative policy-making process to shape national environmental policies and regulations. Even after efforts to reduce waste are undertaken, some residuals will remain that warrant innovative treatment and disposal methods. For example, Industrial solid waste reduction and management could be combined through engineered bioremediation and phyto-remediation systems that harness the favorable climatic conditions in India, microbial metabolism, and plant-microorganism interactions.

## **1. Introduction**

Hazardous waste in India has been defined as “any substance, excluding domestic and radioactive wastes, which because of its quantity and/or corrosive, reactive, ignitable, toxic and infectious characteristics causes significant hazards to human health or environment when improperly treated, stored, transported and disposed”. In India, a comprehensive legislative framework has been in place for over a decade for addressing various issues related to hazardous waste management. However, on the implementation front there is a significant backlog. The present article discusses the status of hazardous waste generation and management in India, examines select case studies and identifies policy issues that warrant attention.

## **2. Legislation**

### **2.1. Legislative Framework**

India introduced an amendment into its constitution calling upon the state to protect and improve the environment to safeguard public health, forests and wildlife. The forty-second amendment to the Indian Constitution was adopted in 1976, and went into effect on January 3, 1977. The Directive Principles of State Policy (Article 47) in the Indian Constitution requires not only that the state protect the environment, but it also compels the state to seek the improvement of polluted environments. This allows the government to impose restrictions on potentially harmful entities such as polluting industries. The country has a long history of environmental legislation, including the passage and codification of the Indian Penal Code of 1860, the Criminal Procedure Code, the Bengal Nuisance Act of 1905, the Motor Vehicles Act of 1988, the Factories Act of 1950, The Indian Forest Act of 1927, The Forest (Conservation) Act of 1918, and the Public Liability Insurance Act 1991, to list a few.

The Indian government promulgated the Environment (Protection) Act in 1986 to protect and improve India’s environment and to regulate the management and handling of hazardous substances and chemicals. The act encompasses water, air and land in its definition of the environment, as well as the interrelationships between them and human beings, other living creatures, plants, microorganisms and property. The act prohibits

the emission or discharge of environmental pollutants in excess of prescribed standards, and it also sets mandatory procedural safeguards for handling hazardous substances. It has accorded wide-ranging powers to the national government to take all measures deemed necessary for protecting or improving the environment. These powers include:

- Laying down standards for emissions and discharges to maintain environmental quality;
- Restricting the siting of industries;
- Defining safeguards to prevent industrial accidents and concomitant remedial measures;
- Laying down standards for hazardous waste management, hazardous chemical transport and handling, and the import and export of hazardous wastes and chemicals;
- Inspection of polluting sources and direction to prevent, control and monitor pollution;
- Information collection and dissemination on pollution in the country in addition to the governmental efforts to control pollution

Lastly, the rules framed by the Indian government for hazardous waste management under the Environment (Protection) Act of 1986 are:

- Hazardous Waste (Management and Handling) Rules, 1989 (January 2000 amendment)
- Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989
- Rules for the Manufacture, Use, Import, Export and Storage of Hazardous Chemicals and Genetically Engineered Organisms or Cells, 1989

## **2.2. Hazardous Waste (Management and Handling) Rules (1989 and 2000)**

The Hazardous Waste (Management and Handling) Rules of 1989 were written by the Ministry of Environment and Forests (MoEF) under Section 6, 8 and 25 of the Environment (Protection) Act of 1986. These rules provide for the control of generation, collection, treatment, transport, import, storage and disposal of wastes listed in the schedule annexed to these rules. The state pollution control boards (SPCB) and the state governments implement these rules, which are applicable to 18 categories of wastes. In order to be subject to regulation, however, the rules set a threshold amount of hazardous waste in each category. No regulation applies at levels below the threshold.

The implementing authorities, especially the State Pollution Control Boards (SPCBs), have had difficulties identifying hazardous waste generating units using the 18 categories listed in the Schedule to the Hazardous Waste Rules. The state governments were also unable to identify hazardous waste landfill sites, and this was given as the reason for the mismanagement of hazardous waste generated by industries. In view of this, after deliberations spanning over four years, amendments were finalized and authorities were notified on January 8, 2000. The following are the most salient features of the amended rules:

- Hazardous waste is defined as “all waste generated, stored, transported and

disposed having characteristics specified in Schedule 1 and detailed in Schedule 2, excluding radioactive wastes”.

- Schedule 1 delineates the processes generating hazardous wastes and streams that are covered by the definition. Installations that generate hazardous wastes in the processes described are covered under the rules
- A listing of concentration limits of constituents in the wastes is indicated in Schedule 2. These concentration limits are used as limits to classify the wastes.
- Schedule 3 introduces Lists A and B of the Basel Convention (see *International Issues in Hazardous Waste Management*), which were adopted as Annexure VIII and IX to the Convention in 1998, to enumerate substances subject to import and export regulation.
- Responsibility for identification of sites for common treatment, storage and disposal Facilities (CTSDF) and individual toxic substance disposal facilities (TSDF) is assigned not merely to the state government, but also to the industrial associations responsible for the waste generation.
- Provisions relating to import and export of hazardous waste for recycling are expanded to incorporate a streamlined procedure. In addition, requirements under the Basel Convention regarding illegal traffic have also been incorporated.
- Rules on design, setup and closing of landfill facilities are elaborated.
- A system for tracking hazardous wastes from the point of generation to the disposal site is introduced.
- A fee for authorization and import is prescribed.

The responsibilities of various authorities involved in the implementation of the Hazardous Waste Rules are summarized below.

Sr. No.	Activity	Authority			
		MoEF	SG	SPCB	CPCB
1.	Survey & inventorization of HW generators and processors			X	
2.	Grant authorization for handling HW to units and operators			X	
3.	Inspect facilities / infrastructures/ technical Capabilities in HW handling units			X	
4.	Suspend/refuse/cancel authorization for handling HW			X	
5.	Identify and notify sites for HW treatment/disposal facilities		X	X	
6.	Facilitate EIA studies before identifying sites		X	X	
7.	Collect, collate and publish list of abandoned HW dump sites		X		
8.	Establish a system for filing of annual returns, and reporting of accidents by the HW units and operators			X	
9.	Process and grant permits for import of HW to units			X	
10.	Examine and permit /refuse exporters request for HW import to India	X			
11.	Issue instructions to importers of HW			X	
12.	Inform port authorities to take appropriate steps for safe handling at ports	X		X	
13.	Inspect records of imports	X		X	X
14.	Process appeals		X		

MoEF:Ministry of Environment and Forests; SPCB:State Pollution Control Board;  
SG: State Government; CPCB:Central Pollution Control Board

Table 1. Responsibilities of Authorities in India for Implementation of Hazardous Waste Rules

### 2.3 Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989

These rules have been formulated to address the issues involved in manufacturing, storing and importing industrial hazardous chemicals. The rules specify that the occupier of the land on which hazardous substances will be handled is obliged to provide evidence that the major accident hazards have been identified and adequate steps have been taken to prevent such accidents and to limit their consequences to humans and the environment if they do occur. The occupier is also responsible for providing information, training, personal protective equipment and emergency medicine to ensure the safety of persons working within the industrial premises.

The rules specify the quantities of each chemical that can be stored, and the arrangements are reported to relevant authorities. Authorities, in turn, can inspect and ask for the report on the storage details and the chemicals being handled. The authorities should also be informed of any changes in the storage arrangements or threshold quantities of the chemical being stored. The occupier is responsible for making the first safety report and updating it on regular intervals.

The occupier is also responsible for preparing an on-site emergency plan, while the relevant authorities have been assigned the task of preparing off-site emergency preparations. The rule also specifies that the population outside the site should be informed about possible accident hazards and safety measures that have been undertaken. All the information in this regard should be made available to the people concerned. Lastly, the rules specify the protocol for the import of hazardous chemicals and the responsibilities of importers as well as authorities in this situation.

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