

Hazardous Waste Management in INDIA

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Abstract:- harmful waste is the waste that includes important or potential threats to public health or the surroundings. Therefore, to decrease environmental poisonous element proper attention is required during dumping of such waste, as it cannot be dumped of by common means like other by products of our daily lives. Rapidly growing industries in the country have contributed in the production of large part of hazardous waste material. The sources of hazardous waste are basically agricultural and agro industries, medical amenities, commercial hubs, household and the unceremonious sectors. In India though there are certain rules and regulation cited by the central government for reduction of hazardous waste and for the minimization of hazardous effect on the environment still hazardous wastes are stored, transported, disposed or managed unsystematically causing health and environmental (soil, water, air) related problems. This study makes a specialty of the fundamental steps involved in the Comprehensive HWM. The physical models advanced by using the authors for ranking of TSDF web sites based on the Guidelines available are discussed. The present day reput in India relating era of HW and the TSDF web sites is likewise addressed.

Keywords: E-waste, Sustainable development, Informal disposal, E-waste management.

INTRODUCTION

Hazardous waste management is an main issue in our country now days. inappropriate dumping of poisonous waste and most effective few secured landfill sites present in the country for dumping of hazardous waste in an environmentally sound manner posed serious risk to the environment system. fast development in last few years have increased to the reduction of natural resources and increase in pollution in the country. This industrialization has also augment to the production of huge amounts of hazardous waste which causes sewer environmental problems. Therefore systematic treatment and systematic disposal of generated waste is required. Ministry of Environment and Forest (MoEF) passed the hazardous waste (managing and treatment) Rules on 1989 as per provision of the Environment Protection Act, 1986. In September 2008 the stated guidelines were repeated and new rules entitled “Hazardous waste Rule, 2008” these policies have been similarly amended in 12 months 2009 & 2010 for proper management and handling of hazardous waste in the country (CPCB, 2010-2011). India has additionally ratified the Basel convection on transboundary movement of unsafe waste within the year 1992 (Dutta SK, 2006). It is an worldwide treaty that changed into designed to reduce the actions of unsafe waste among international locations, besides where it's miles appeared to be according with principles of environmentally waste management. In this paper an attempt has been made to focus on actions required for effective management of dangerous waste so, as to keep away from environmental pollution and adverse health consequences due to its incorrect managing and disposal.

Characteristics of Hazardous Wastes

Many wastes are labeled as hazardous due to the fact they display one or more hazardous traits— ignitability, corrosivity, reactivity, and toxicity. Such “function” wastes are diagnosed with the aid of a “D” accompanied through a three-digit class code. Any waste that is ignitable, as an example, might convey a D001 designation. There are four unsafe traits. These are indexed and defined under.

- Ignitability (D001). Waste that has a flash factor of less than a hundred and forty levels F (without difficulty combustible or flammable). Examples: fuel, diesel gasoline, a few degreasers, a few different solvents.
- Corrossivity (D002). Liquid waste that has a pH of 2 or much less (very acidic) or 12.5 or greater (very robust base), or any liquid waste that corrodes metal at a certain precise fee. Examples: waste from rust remover, acid or alkaline cleansing fluid, and battery acid. Reactivity (D003). Waste this is risky or undergoes a rapid, violent chemical response with water or other substances.
- Toxicity. Any waste that leaches one or more constituents in concentrations at or above a dangerous threshold exact by means of the EPA. For example, 5 mg/L is the threshold for leaching of lead and incorporates a D008 waste code. The leaching price is decided by using laboratory trying out on a sample of waste. This take a look at, called the toxicity function leaching manner (TCLP), is offered by way of analytical laboratories for a rate.

Table 1: Characteristics of hazardous wastes

Sr. No. Hazardous characteristics	Potential hazards on living animals / environment
Flamable/ explosive	This kind of waste may also cause harm to the surroundings by way of Producing harmful gases at excessive temperature and pressure or by using causing fire risks.
Oxidizing	Types of wastes which could yield oxygen and thereby reason or make a contribution to the combustion of other materials.
Poisonous (Acute)	These waste have excessive capacity to reason dying, extreme injury or to damage health if swallowed, inhaled or by using pores and skin contact.
Infectious Substances	Toxic wastes including micro-organisms and their pollution, and answerable for infection in animals or people.
Corrosives	These wastes are chemically energetic and might motive extreme damage to the plants and fauna, or to the opposite materials by direct touch with them.
Eco-toxic	These wastes can also gift instant or not on time destructive influences to the environment by bioaccumulation and/or poisonous results upon biotic structures.
Toxic (Delayed or chronic)	These wastes, if inhaled or ingested or in the event that they penetrate the pores and skin, may also cause behind schedule or continual results, which include carcinogenicity.
Organic peroxides	these are organic waste containing bivalent-O-O- composition and may go through exothermic self-accelerating decomposition.

National Environment Policy

The "National Environment Policy 2006" has carried out administration aspects of hazardous wastes in the type of an action plan which consists:

- Develop and enhance possible arrangements of public-nonpublic partnerships for creation and working secure landfills, incinerators and different suitable techniques for the remedy and disposal of poisonous and toxic waste, each commercial and bio-medical, on payment with the help of users, taking the concerns of local communities into consideration.
- expand and enforce strategies for cleanup of toxic and unsafe waste dump legacies, specifically in business regions and deserted mines, and reclamation of such lands for destiny sustainable use..
- Survey and expand a national inventory of poisonous and dangerous waste dumps and an online monitoring gadget for movement of risky wastes. strengthen capacities of establishments accountable for monitoring and enforcement in recognize of poisonous and unsafe wastes.
- make stronger the legal preparations and response actions for addressing emergencies occurring out of transportation, dealing and disposal of hazardous wastes, as part of the chemical injuries regime.
- Give legal recognition to, and support the casual zone structures of collection and recycling of numerous materials. especially decorate their get right of entry to institutional finance and relevant technologies..
- develop and put in force guidelines and guidelines for management of e-waste, as part of dangerous waste regime.

Treatments of hazardous waste

According to the 2007 rule the definition of remedy is “a technique, approach or technique, designed to transform the physical, chemical or organic traits or composition of any toxic material so decrease its potential to cause effects .” current practices are moving towards fine use era, which attempts to reduce the quantity of risky waste produced inside the first place. Any that is formed is most usually damaged or detoxified by some of strategies with the ensuing residues then dumped of dangerous wastes may be handled to decrease their volume and make disposal of simpler, to render the waste much less toxic or dangerous, or to beautify or facilitate the restoration and reuse of the waste elements of a result. Treatments are classified as physical, chemical, biological or thermal these are follows:

Physical treatments: physical remedies are used to split solids from liquids via using substantial forces and mechanical machines.

Chemical treatments: Chemical remedies are used to neutralize (e.g., through mixing acids and bases), precipitate, oxidize or lessen chemical additives, or to motive a chemical alteration of a liquid section to supply a strong, vapour or altered liquid phase.

Biological treatments: biological handlings are used to biodegrade diluted natural wastes and biomedical wastes.

Thermal treatments: Thermal remedies are used to motive the vaporization, oxidation or different destruction of liquid or strong section additives. normally, multiple procedure is used for waste remedy, with a few bodily/chemical process frequently applied first to lessen the quantity of dilute aqueous answers. No unmarried technique is suitable for all categories of unsafe wastes and regularly several procedures are linked in a series or in a parallel configuration to shape a waste-specific treatment.

Results and summary of HWM

Proper treatment, storage prior to treatment or disposal and safe disposal of HWs is the need of the hour. However, the site(s) to be selected for this purpose should fulfill certain criteria. The methodology of site selection may differ from country to country. There is no proper secured landfill facility available in India to dispose of HW till 1997. Guidelines are available in India for Management and Handling of HWs..

In India, the amount of HW is increasing rapidly due to the expansion and upgrading of its industrial base. At present, there is a relatively weak HW management system, with inadequate treatment and disposal facilities. The potential hazards arising from the waste problem can be minimized or eliminated through proper management practices involving private-sector participation. The steps needed toward solving the problems of sustainable waste management should be dealt with in priority order, like waste avoidance and reduction; recycling; establishing environmentally appropriate disposal of residual waste substrate; and minimizing pollution and costs produced by waste management processing. The government should recognize the importance of public in decision making and make efforts to encourage public participation in the early stages of planning of HW treatment projects. The public will then become allies of government in the municipal task of HW management and the problems of environment in India. Finally, a strategy for the future must be formulated to incorporate technologies that are developed on the principle of waste minimization and sustainable development as well as involvement of private sectors.

In this study find out the sources of hazardous waste management in the present status of generation and management of hazardous waste in the country is as below:

No of HW generating industries : 43938

Total generation of HW : 7.467 Million Tons Per Annum

Land fillable waste : 3.416Million Tons Per Annum

Incinerable waste : 0.695Million Tons Per Annum

Recyclable waste : 3.356 Million Tons Per Annum

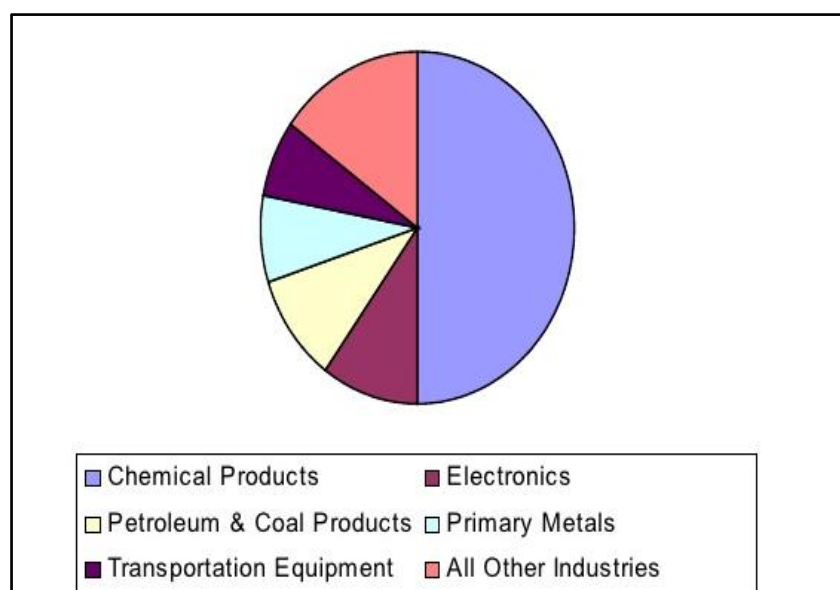


Figure 1: Waste Generation Rates by industries

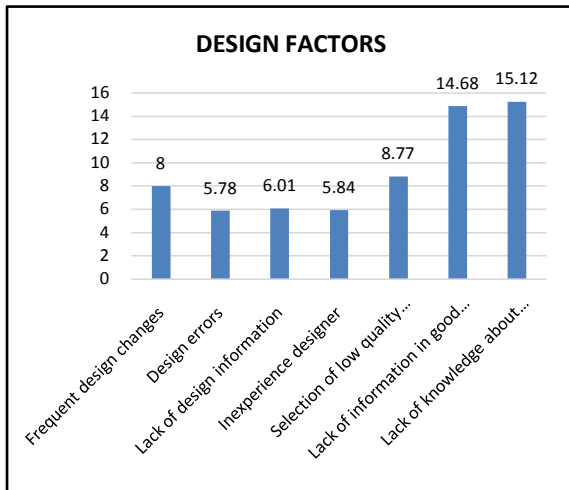


Figure 2: Graph of workers

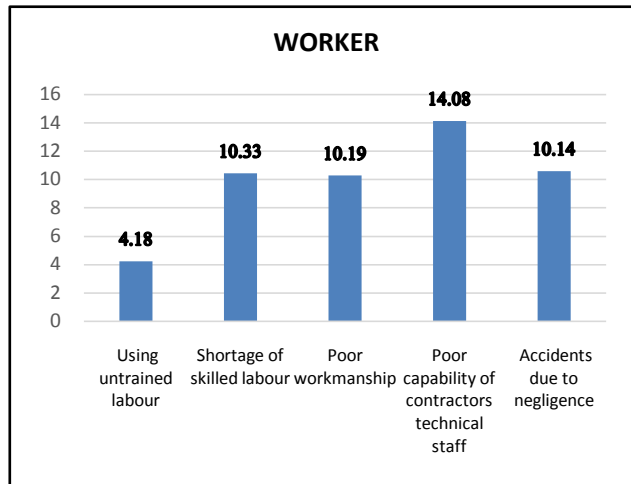


Figure 3: Graph of Design Factors

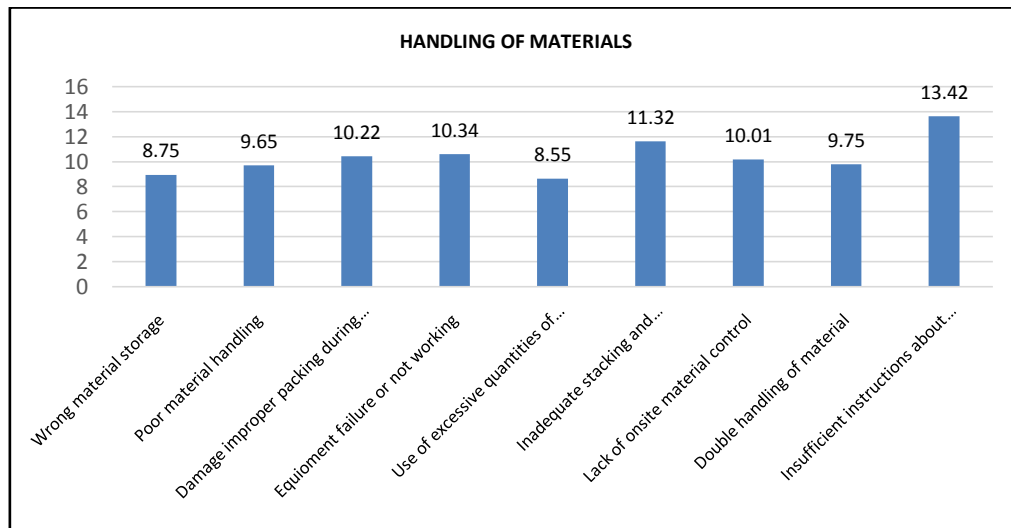


Figure 4: Graph of Handling of Materials

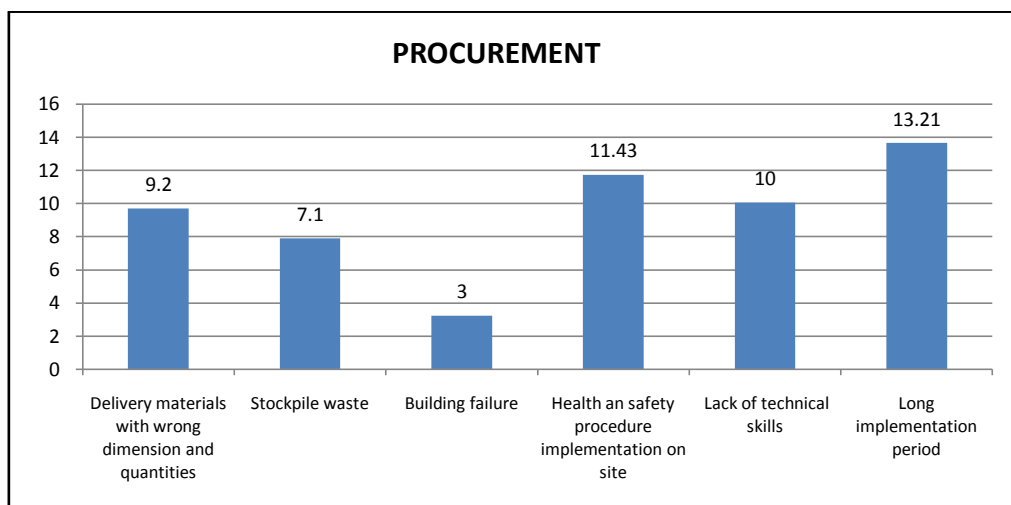


Figure 5: Graph of Procurement

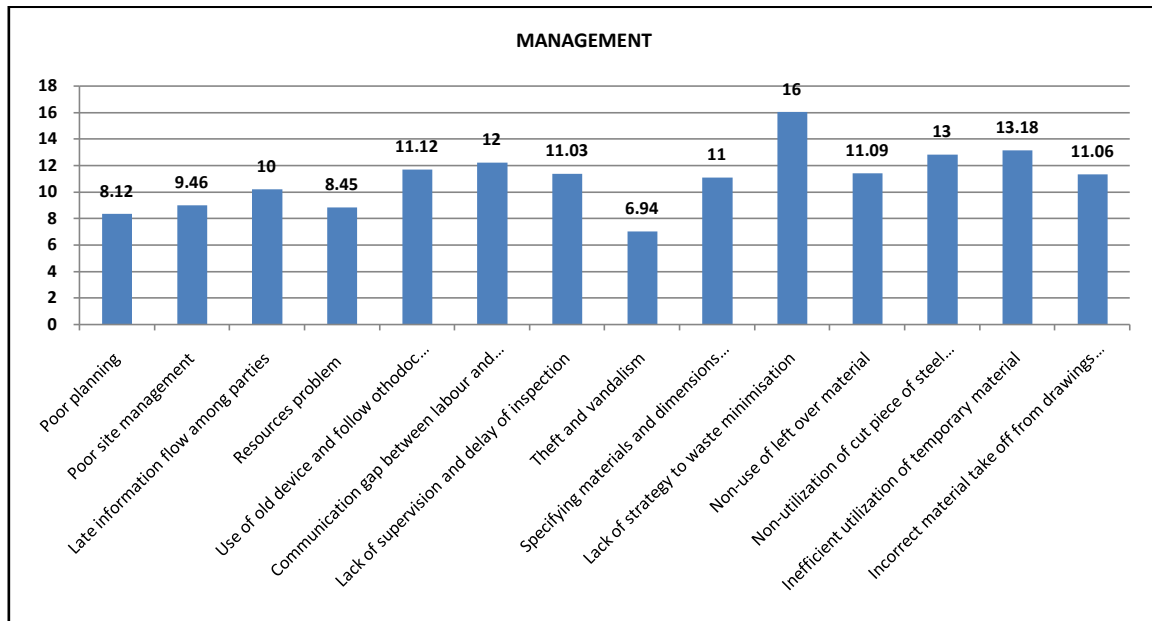


Figure 6: Graph of Management

CONCLUSION

Developing countries should learn from the experiences of developed nations regarding their Hazardous waste management system and its related problems and also keep searching for fresh and innovative solutions that achieve a better fit with the limited resources available to developing countries. This study recognized different behavior and dumping options of various toxic waste flow that contain physical & chemical management, landfill, organic, treatment, incineration etc. still secured landfill is the most used option for disposal of waste. Proper treatment, storage prior to treatment or disposal and safe disposal of hazardous waste is essential for environmental health.

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