

GUIDELINES FOR TRANSPORTATION OF HAZARDOUS WASTES

1 PREAMBLE

Efficient management of hazardous wastes, whether on-site within the premises of the waste generator or off-site at the Treatment, Storage and Disposal Facility (TSDF), involves an integrated operation of proper segregation and characterization of the residue waste after utilization of the recyclables / recoverables for reuse, and immobilization of the waste through appropriate treatment / destruction by incineration, if required, before the residue waste is disposed off, so that its effect on the environment is minimal. However, there is an interface between the point of generation of the waste and its disposal sink, in terms of transportation, which is no less important either, to be grossly neglected.

The major obstacles in waste management in the country are more often institutional and behavioural rather than technical. The hazardous wastes (HW) are seldom segregated from the less-polluting / non-polluting / recyclable wastes, thus increasing the volume of waste as also increasing the cost of treatment, thus depriving themselves of the possible use of recoverables to minimize investment on raw materials.

Bulk of the waste currently generated is accounted for by industries in the small and medium scale sectors. In the absence of common disposal facilities, the waste generators have been accorded temporary permission to store waste in their premises except in areas serviced by common facilities that have come up in the States of Andhra Pradesh, Gujarat and Maharashtra. The lack of common facilities has been a major factor in mushrooming of illegal dump-sites since most of the units in the small and medium sector do not have adequate space within their premises to arrange for storage over several years, after rendering the pollutants immobile or taking necessary precautions to make it environmentally safe, and hence they develop the tendency to somehow get rid of the waste by dumping elsewhere.

2 REQUIREMENTS FOR OFF-SITE TRANSPORTATION OF HAZARDOUS WASTES FOR DISPOSAL IN TSDF

In view of its toxic, flammable, explosive or corrosive characteristics, the transportation of hazardous wastes (HW) has to be planned not to cause / likely to cause danger to health or environment, whether alone or when in contact with other wastes or substances during transportation. Hence, its transportation is expected to:

- (i) satisfy the needs of the occupier and handlers/ transporters, and
- (ii) meet national and, if necessary international, e.g. United Nation's, safety labelling requirements.

Transportation is one of the most important areas of concern associated with handling HW because the packaging and method of transporting HW will determine the likelihood of an accident or spillage to occur. Besides, proper and rapid identification of a spilled substance will determine how effectively and safely the situation can be controlled.

Spill risk is high during loading, transportation and unloading. This is the reason why the transportation of HW is required to be highly regulated. HW transportation regulations cover the transportation of HW outside of an installation, e.g. on the pathway from the waste generator's premises to the TSDF. **The off-site transportation requirements involve proper awareness about:**

- **Container:** to be of appropriate leak-proof material with mechanical stability;
- **Labelling of the container:** to identify the waste, describe the possible hazard, and the remedial measures / first-aid required in case of accidental spills;
- **Transportation vehicle:** to identify the waste displaying the possible hazard, the remedial measures / first-aid required in case of accidental spills, telephone number of the contact person / controlling agency in case of emergency etc. through labelling;
- **Collector / transporter selection:** to have technical competence and relevant skills and other requirements;

- **Licence / manifest:** to carry application and 'No objection certificate' documents;
- **Emergency procedures:** to have knowledge about actions to be taken in case of spills or accidents; and
- **Fees and fines:** to be paid for not having licence, or not abiding by the regulations

On-site transportation typically involves carrying of small amounts of materials over short distances. On-site transportation does, however, pose significant risks from the frequency of the activity and the lack of observance of prescribed regulations.

Regulatory requirements for packaging, labelling and transportation of hazardous wastes are provided under Rule 7 of the Hazardous Wastes (Management & Handling) Rules, 1989 as amended, and notified under the Environment (Protection) Act, 1986. It is the responsibility of the occupier or operator of a facility to ensure that the HWs are packaged, based on the composition in a manner suitable for handling, storage and transport. The labelling and packaging is required to be easily visible and be able to withstand physical conditions and climatic factors.

These guidelines are issued to facilitate safe transportation (on-site & off-site) of the hazardous wastes in compliance of the regulations.

3 PACKAGING

The containers must be able to withstand normal handling and retain integrity for a minimum period of six months. In general, packaging for hazardous substances must meet the following requirements:

- (i) **All packaging materials including containers** shall be of such strength, construction and type as not to break open or become defective during transportation.
- (ii) **All packaging materials including containers** shall be so packaged and sealed that spillages of hazardous wastes / substances are prevented during transportation due to jerks and vibrations caused by uneven road surface.
- (iii) Re-packaging materials including that used for fastening must not be affected by the contents or form a dangerous combination with them.

- (iv) **Packaging material should be such that there will be no significant chemical or galvanic action among any of the material in the package.**

The containers when used for packaging of the hazardous wastes shall meet the following requirements:

- Container shall be of mild steel with suitable corrosion-resistant coating and roll-on roll-off cover, which may either be handled by articulated crane or by a hook lift system comfortably for a large variety of wastes. Other modes of packaging, like collection in 200-litre plastic drums, cardboard cartons, PP and HDPE/LDPE containers etc., also work for variety of wastes. However, all such container should be amenable to mechanical handling.
- It should be leak proof.
- In general, the containers for liquid HW should be completely closed, in fact sealed. There should be no gas generation due to any chemical reaction within the container, and, hence, there should not be any need for air vents; expansion due to increase / decrease in temperature normally does not need air vents.
- Container should be covered with a solid lid or a canvas to avoid emissions of any sort including spillage, dust etc. and to minimize odour generation both at the point of loading as well as during transportation.
- **Container used for transportation of waste should be able to with stand the shock loads due to vibration effect/undulations of pavements etc.,**
- Container should be easy to handle during transportation and emptying.
- As far as possible, manual handling of containers should be minimized. Appropriate material handling equipment is to be used to load, transport and unload containers. This equipment includes drum, dollies, and forklifts, drum handling equipment, lift gates and pallets. Drums should not be rolled on or off vehicles.
- Where a **two-tier** or **three-tier** storage is envisaged, the frame should have adequate strength to hold the containers.
- **One-way containers (especially 160-litre drums) are also allowed.** The multi-use containers should be re-usable provided it should be cleaned and free from deterioration or defects.

- Loads are to be properly placed on vehicles. HW containers are not to overhang, perch, lean or be placed in other unstable base. Load should be secured with straps, clamps, braces or other measures to prevent movement and loss. Design of the container should be such that it can be safely accommodated on the transport vehicle.
- Dissimilar wastes shall not be collected in the same container. Wastes shall be segregated and packed separately. This is necessary to ensure that each waste finds its way to the right **disposal point**.
- Occupier / hazardous waste generator shall not resort to the dilution of wastes (predominantly organic wastes).

4 LABELLING

There are two types of labelling requirements:

- (i) Labelling of individual transport containers [ranging from a pint-size to a tank, and
- (ii) Labelling of transport vehicles.

All hazardous wastes containers must be clearly marked with current contents. The markings must be waterproof and firmly attached so that they cannot be removed. **Previous content labels shall be obliterated when the contents are different.** Proper marking of containers is essential.

Containers that contain HW shall be labelled with the words "HAZARDOUS WASTE" **in Vernacular language / Hindi / English**. The information on the label must include the code number of the waste, the waste type, the origin (name, address, telephone number of generator), hazardous property (e.g. flammable), and the symbol for the hazardous property (e.g. the red square with flame symbol).

The label must withstand the effects of rain and sun. Labelling of containers is important for tracking the wastes from the point of generation upto the final point of disposal. The following are the requirements for labelling:

- The label should contain the name and address of the occupier and operator of the facility where it is being sent for treatment and final disposal i.e., **Labeling of container shall be provided with a general label as per Form 8 of the HW (M & H) Rules, 1989 and as amended).**

- Emergency contact phone numbers shall be prominently displayed **viz. the phone number of concerned Regional Officer of the SPCB / PCC, Fire Station, Police Station and other agencies concerned.**

Explanation: As a general rule, the label has to state the origin / generator of the waste. He - and only he - is responsible and shall know, in case of any accident / spillage etc., what kind of wastes it is, what hazard may occur and which measures should be taken. The second in the line is the collector / transporter, who has to know the risk and what to do to minimize risks and hazards.

5 COLLECTION AND TRANSPORTATION OF HW

Safe transportation of HW to the Treatment, Storage and Disposal Facility (TSDF) is a collective responsibility of the waste generator, operator of a facility for treatment & disposal of HW and the transporter. The following guidelines shall be followed prior to handing over of the waste to the transporter:

- (a) The generator of the hazardous waste shall ensure that wastes are packaged in a manner suitable for safe handling, storage and transport. Labelling on packaging is readily visible and material used for packaging shall withstand physical conditions and climatic factors.
- (b) The generator shall ensure that information regarding characteristics of wastes particularly in terms of being Corrosive, Reactive, Ignitable or Toxic is provided on the label.
- (c) Transport of hazardous wastes shall be in accordance with the provisions of the rules made by the Central Government under the Motor Vehicles Act, 1988 and other guidelines issued from time to time.

- (d) All hazardous waste containers shall be provided with a general label as given in Form 8 in Hazardous Waste (Management & Handling) Rules, 1989, as amended.
- (e) Transporter shall not accept hazardous wastes from an occupier (generator) unless six-copy (with colour codes) of the manifest (Form 9) as per Rule 7 of the HW (M & H) Rules, 1989 and as amended is provided by the generator. The transporter shall give a copy of the manifest signed and dated to the generator and retain the remaining four copies to be used for further necessary action prescribed in the Hazardous Wastes (Management & Handling) Rules, 1989, as under:

Copy 1 (White) : To be forwarded to the SPCB/PCC by the occupier

Copy 2 (Yellow) : To be signed by the transporter and retained by the occupier

Copy 3 (Pink) : To be retained by the operator of a facility

Copy 4 (Orange) : To be returned to the transporter by the operator of facility after accepting waste

Copy 5 (Green) : To be forwarded to the SPCB/PCC by the operator of facility after disposal.

Copy 6 (Blue) : To be returned to the occupier by the operator of the facility after disposal.

- (f). In case of interstate transportation of waste, the occupier (waste generator) shall strictly follow the manifest system as stipulated under Rule 7 (5) of the HW (M & H) Rules, 1989 and amendments made thereunder.
- (g). In case of transport of hazardous wastes to a facility for treatment, storage and disposal existing in a State other than the State where wastes are generated, the generator shall obtain necessary “No Objection Certificate” from the concerned State Pollution Control Board or Pollution Control Committee of the Ut’s where the facility is existing (As stipulated under Rule 7 (6) of HW (M & H) Rules).
- (h). The generator shall provide the transporter with relevant information in Form 10, i.e. Transport Emergency (TREM) Card regarding the hazardous nature of the wastes and measures to be taken in case of an emergency.
- (i). The operator of a facility (registered recyclers or re-processors of hazardous waste) while collecting the wastes from the waste collections points or Ports or ICDs , shall also follow the manifest system as per Rule 7 of the HW (M & H) Rules.

6 RESPONSIBILITIES OF THE HW TRANSPORTER

Transporter of hazardous wastes shall be responsible for:

- Obtaining permission from SPCB for transport of hazardous waste [in addition to any other permissions that may be required under the Motor Vehicles (Amendment) Act of 1988].
- The transport vehicles shall be designed suitably to handle and transport the hazardous wastes of various characteristics.

- The transporter should follow all the Rules pertaining to transportation of hazardous waste as stipulated under HW (M & H) Rules, 1989 and as amended.
- Transporting the wastes in closed containers at all times
- Delivering the wastes at designated points only.
- Informing SPCB/PCC or local authority, occupier/operator of a facility, and others concerned immediately in case of spillage, leakage or other accidents during transportation
- The transporter shall train the driver with regard to the emergency response measures to be taken during the transportation of waste.
- Cleanup in case of contamination.
- Cleaning of vehicles shall be carried out at designated places i.e. either at TSDF/CETPs etc., or where there are facilities to treat such wastewaters.

7 TRANSPORTATION

The following are the requirements pertaining to the transportation of hazardous wastes:

- Vehicle used for transportation shall be in accordance with the provisions under the Motor Vehicles Act, 1988, and rules made thereunder.

- **Transporter shall possess requisite copies of the certificate (valid authorization obtained from the concerned SPCB/PCC for transportation of wastes by the waste generator or operator of a facility) for transportation of hazardous waste.**
- **Transporter should have valid “Pollution Under Control Certificate” (PUCC) during the transportation of HW and shall be properly displayed.**
- Vehicles shall be painted preferably in blue colour with white strip of 15 to 30 cm width running centrally all over the body. This is to facilitate easy identification.
- Vehicle should be fitted with mechanical handling equipment as may be required for safe handling and transportation of the wastes.
- The words "HAZARDOUS WASTE" shall be displayed on all sides of the vehicle **in Vernacular Language, Hindi, English.**
- Name of the facility operator or the transporter, as the case may be, shall be displayed.
- **Emergency phone numbers and TREM Card in Form 10 of HW (M & H) Rules, 1989 and as amended shall be displayed properly.**
- Vehicle shall be fitted with roll-on / roll-off covers if the individual containers do not possess the same.
- **Carrying of passengers is strictly prohibited and those associated with the waste haulers shall be permitted only in the cabin.**
- Transporter shall carry documents of manifest for the wastes during transportation as required **under Rule 7** of the Hazardous Waste (M & H) Rules, 1989, as amended.
- The trucks shall be dedicated for transportation of hazardous wastes and they shall not be used for any other purpose.
- Each vehicle shall carry first-aid kit, spill control equipment and fire extinguisher.
- **HW transport vehicle shall run only at a speed specified under Motor Vehicles Act in order to avoid any eventuality during the transportation of HW.**

- Educational qualification for the driver shall be minimum of 10th pass (SSC). **The driver of the transport vehicle shall have valid driving license for heavy vehicles from the State Road Transport Authority and shall have a minimum of five years of experience in transporting the chemicals.**

Driver(s) shall be properly trained for handling the emergency situations and safety aspects involved in the transportation of hazardous wastes.

- The design of the trucks shall be such that there is no spillage during transportation.

.....0000000.....