

Transportation of Hazardous Waste

Hazardous waste is generally transported by truck over public highways. Only a very small amount is transported by rail, and almost none is moved by air or inland waterway. Highway shipment is the most common because road vehicles can gain access to most industrial sites and approved TSDFs. Railroad trains require expensive siding facilities and are suitable only for very large waste shipments.

Hazardous wastes can be shipped in tank trucks made of steel or aluminium alloy, with capacities up to about 34,000 litres (9,000 gallons). They also can be containerized and shipped in 200-litre (55-gallon) drums. Specifications and standards for cargo tank trucks and shipping containers are included in governmental regulations.

The Manifest System

In the United States a key feature of regulations pertaining to waste transport is the “cradle-to-grave” manifest system, which monitors the journey of hazardous waste from its point of origin to the point of final disposal. The manifest system helps to eliminate the problem of midnight dumping. It also provides a means for determining the type and quantity of hazardous waste being generated, as well as the recommended emergency procedures in case of an accidental spill. A manifest is a record-keeping document that must be prepared by the generator of the hazardous waste, such as a chemical manufacturer. The generator has primary responsibility for the ultimate disposal of the waste and must give the manifest, along with the waste itself, to a licensed waste transporter. A copy of the manifest must be delivered by the transporter to the recipient of the waste at an authorized TSDF. Each time the waste changes hands, a copy of the manifest must be signed. Copies of the manifest are kept by each party involved, and additional copies are sent to appropriate environmental agencies (Pollution Control Boards).

In the event of a leak or accidental spill of hazardous waste during its transport, the transporter must take immediate and appropriate actions, including notifying local authorities of the discharge. An area may have to be diked to contain the wastes, and efforts must be undertaken to remove the wastes and reduce environmental or public health hazards.

Manifest system (Movement Document) for hazardous and other waste to be used within the country only.- (1) The sender of the waste shall prepare seven copies of the manifest in Form 10 comprising of colour code indicated below and all seven copies shall be signed by the sender:

Copy number with colour code	Purpose
(1)	(2)
Copy 1 (White)	To be forwarded by the sender to the State Pollution Control Board after signing all the seven copies.
Copy 2 (Yellow)	To be retained by the sender after taking signature on it from the transporter and the rest of the five signed copies to be carried by the transporter.
Copy 3 (Pink)	To be retained by the receiver (actual user or treatment storage and disposal facility operator) after receiving the waste and the remaining four copies are to be duly signed by the receiver.
Copy 4 (Orange)	To be handed over to the transporter by the receiver after accepting waste.
Copy 5 (Green)	To be sent by the receiver to the State Pollution Control Board.
Copy 6 (Blue)	To be sent by the receiver to the sender.
Copy 7 (Grey)	To be sent by the receiver to the State Pollution Control Board of the sender in case the sender is in another State.

Each consignment of Hazardous waste is associated with TREM card which provides the information of waste and its characteristics as shown in following table as form 9 in hazardous waste rules 2016.

FORM 9
[See rule 18 (2)]

TRANSPORT EMERGENCY (TREM) CARD
[To be carried by the transporter during transportation of hazardous and other wastes, provided by the sender of waste]

1. Characteristics of hazardous and other wastes:

S. No.	Type of waste	Physical properties/	Chemical constituents	Exposure hazards	First Aid requirements

2. Procedure to be followed in case of fire :
3. Procedure to be followed in case of spillage/accident/explosion :
4. For expert services, please contact :
(i) Name and Address :
(ii) Telephone No. :

(Name, contact number and signature of sender)

Date.....
Place.....

Vehicles used for Hazardous waste Transportation:



Vehicles used for transportation are generally with hydraulic mechanism for ease of loading and unloading.

Sources:

www.britannica.com/technology/hazardous-waste-management/Transport-of-hazardous-waste

[http://www.moef.gov.in/sites/default/files/Final%20HWM%20Rules%202016%20\(English\)_0.pdf](http://www.moef.gov.in/sites/default/files/Final%20HWM%20Rules%202016%20(English)_0.pdf)

<http://smsmepl.com/service/>