



Environmental Guidelines

Transportation, Storage and Occupational
Handling of Chemical/Industrial Hazardous
Waste

2011

Approved by EPA Board: September 21,2011



Environmental Guidelines for Transportation, Storage and Occupational Handling of Chemical/Industrial Hazardous Waste

1. Objective

The purpose of these guidelines is to provide information to persons on the correct procedures for the transport, storage and occupational handling of chemical/ industrial hazardous waste. Also, to provide guidance for environmental officers in the field.

2. Scope and Contents

These guidelines apply to any person who operates a company, business or facility that transports, generates, stores, treats and disposes of chemical/industrial hazardous waste. It contains information on procedures and requirements for transportation, storage and occupational handling of chemical/ industrial hazardous waste.

3. Definitions

Hazardous waste: means a waste or combination of wastes which because of its quantity, concentration or physical, chemical, infectious characteristics, may pose a substantial hazard to human health or the environment.

Hazardous waste chemical: means a commercial waste chemical having a generic name specified in Schedule I under the Environmental Protection (Hazardous Wastes Management) Regulations, 2000.

Manifest: means the form used for identifying the quantity, composition, origin, routing and destination of hazardous waste during its transportation from the point of generation to the point of storage, treatment or disposal.

Storage: means the containment of hazardous waste, either on a temporary basis or for a period of years, in a manner that does not constitute disposal.

Transporter: means any person engaged in the transportation of hazardous waste.

4. Overview of Manufacturing/Processing Industry



Guyana's manufacturing/processing industry contributes about 10 percent towards the country's GDP and employs approximately 12 percent of the population. The manufacturing sector has been dedicated to the processing of agricultural products (e.g. sugar, rice), forest products and minerals (bauxite, gold and diamonds), basic consumer items, food and beverages, and pharmaceuticals for local consumption. While these manufacturing activities are important to the country's economy, they are also the major generator of chemical hazardous waste in the country.

Chemical hazardous wastes are wastes produced from chemicals listed under Schedule I of the Environmental Protection (Hazardous Wastes Management) Regulations, 2000, such as constituents of wastes from metal carbonyls, beryllium, beryllium compounds; hexavalent chromium compounds; copper compounds; zinc compounds; arsenic, arsenic compounds; selenium, selenium compounds; cadmium, cadmium compounds; antimony, antimony compounds; tellurium, tellurium compounds; mercury, mercury compounds; etc. These hazardous wastes if not managed efficiently can cause severe harm to human health and the environment; therefore it is necessary for the manufacturing/processing industries to have correct guidelines for the transport, storage and occupational handling of these wastes to ensure human health and a safe environment.



5. Environmental Issues and Mitigation Measures

5.1. Issues Identified

In Guyana, due to the continuously growing manufacturing industry, there has been an increase in the generation of chemical hazardous waste and as such an increase in the risk to human health and the environment. Therefore, strict measures and guidelines are needed for the management of the wastes generated and protection of human health and the environment.



5.2 Mitigation Measures.

In order to protect human health and the environment, the generators of these hazardous wastes need to know and implement the correct procedures or guidelines in management of the chemical hazardous waste towards reducing the risk mentioned.

Guidelines for the transportation, storage and occupational handling of chemical/ industrial hazardous wastes:

Transportation of Chemical Hazardous Waste/Materials

Safe transportation of hazardous waste/materials for treatment, storage and disposal is a collective responsibility of the waste generator, receiver and transporter. The following are guidelines for transportation of chemical/ industrial hazardous waste:

- The generator of hazardous waste shall ensure that wastes are packaged suitably for safe handling during transport. Labels on packaging should be readily visible and materials used for packaging should withstand physical conditions and climatic factor, i.e. most chemicals are corrosive, therefore metal containers are not advised; rubber lining or a different type of container is preferred.
- All hazardous waste containers should be provided with a general label according to Environmental Protection (Hazardous Wastes Management) Regulations, 2000.
- 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.
- Transport of hazardous waste should be in accordance with the rules under Environmental Protection (Hazardous Wastes Management) Regulations, 2000 and the Motor Vehicles and Road Traffic Act, 1998, and other guidelines issued from time to time.
- The transporter shall not accept hazardous waste unless accompanied by a manifest document in accordance with Environmental Protection (Hazardous Wastes Management) Regulations, 2000. Manifest must be signed and dated, and a copy returned to the generator. The remaining copies should be retained by the transporters for further necessary action prescribed in Environmental Protection (Hazardous Wastes Management) Regulations, 2000. Also, a copy of the manifest must be available during transportation as a requirement under the Environmental Protection (Hazardous Wastes Management) Regulations, 2000.
- Transporters of hazardous waste shall be responsible for:

- Obtaining permission from the Environmental Protection Agency for transport of hazardous waste and in addition permission may be required under the Motor Vehicles and Road Traffic Act, 1998.
- Following all the rules pertaining to transportation of hazardous waste as stipulated under the Environmental Protection (Hazardous Wastes Management) Regulations, 2000.
- Transporting the wastes/ materials in closed containers at all times.
- Delivering the wastes/ materials at designated point only.
- Informing the local authority, occupier/ operator of a facility, and others concerned immediately in case of spillage, leakage or other accidents during transportation.
- Training the driver with regard to the emergency response measures to be taken during the transportation of waste/ materials.
- Clean-up in case of contamination.

- Requirements for the transportation of hazardous wastes/materials:



Vehicles used for transportation shall be in accordance with the provisions under the Motor Vehicle and Road traffic Act, 1998

Transporter shall have valid Permit for transport of hazardous waste/materials during the transportation of hazardous waste/materials and shall be readily available when asked for or properly displayed.

The word "HAZARDOUS WASTE" shall be displayed on all sides of the vehicle in english.

Each vehicle shall carry a first-aid kit, spill control equipment and fire extinguisher.

- Vehicle should be fitted with mechanical handling equipment as may be required for safe handling and transportation of the wastes.
- Name of the facility operator or the transporter, as the case may be, shall be displayed.
- Emergency phone numbers shall be displayed properly.
- Carrying of passengers is strictly prohibited and those associated with the waste haulers shall be permitted only in the cabin.
- The trucks shall be dedicated for transportation of hazardous wastes and they shall not be used for any other purpose.
- Each vehicle shall carry a first-aid kit, spill control equipment and fire extinguisher.
- The driver of the transport vehicle shall have valid driving license for heavy vehicles from the Guyana Revenue Authority (Excise Licensing and Motor Vehicle Registration) and should have experience in transporting the chemicals.
- Driver(s) shall be properly trained for handling emergency situations and safety aspects involved in the transportation of hazardous wastes.
- The design of the trucks should be suited to transport hazardous waste (avoid spillage during transportation).



Storage of Chemical/ Industrial Hazardous Waste/Materials

- Chemical hazardous material must be stored based on their compatibility and same hazard together like flammables with flammables or oxidizers with oxidizers to ensure safety.
- Hazardous substances should be stored in an orderly manner with older products most accessible and the newer products least accessible.
- Good practices must be upheld in areas where hazardous products are stored.
- All hazardous materials must be properly labeled including their exact contents, hazardous properties, date of receipt, and if appropriate, date of expiration.
- Hazardous substances should be stored in original containers in which they were packaged at the manufacturing plant. If this is not practical, these products should be transferred according to manufacturers' recommendations into containers that are constructed to withstand the effects of the product over the maximum storage time.
- Incompatible materials must not be stored such that they may come in contact with each other, i.e. when possible, segregate toxic chemicals from other chemicals and store in closed cabinets. Label the cabinets "TOXIC CHEMICALS" or with a similar warning.
- Maintain chemicals per manufacturer requirements.
- Make sure containers are closed when not in use.
- Use secondary containment such as acid carriers when transporting liquid chemicals more than a very short distance.
- Central chemical storage areas (e.g. rooms) require specific design and equipment such as construction materials, lighting, ventilation, fire extinguishers, and housekeeping procedures such as aisle space.
- Additional requirements apply to those chemicals that are classified as flammable or combustible liquids.
- Storage of flammable and combustible liquids (e.g. diesel, gasoline, ethanol, etc.):

- Flammable and combustible liquids should be stored in glass, metal or plastic containers. In excess of 10 gallons of flammable and combustible liquids should be stored in an approved well ventilated "flammables" cabinet.
- Refrigerators and freezers used to store flammable and combustible liquids should be explosion proof or "lab safe".

- Storage of highly reactive gases (e.g. organic peroxides, chlorine, etc.):

- Segregate highly reactive materials like oxidizing agents, reducing agent from acids, combustibles, etc.
- Store in trays large enough to hold the contents of the bottles.
- Store away from heat and light.
- Store materials that react vigorously with water away from possible contact water.
- Store thermally unstable material in refrigerator.
- Avoid friction, grinding and all forms of impact near peroxides especially solid form.
- Do not use metal spatulas to handle peroxides, because contamination by metal can lead to explosive decomposition.
- Store containers in cabinets that are designed to hold that type of waste

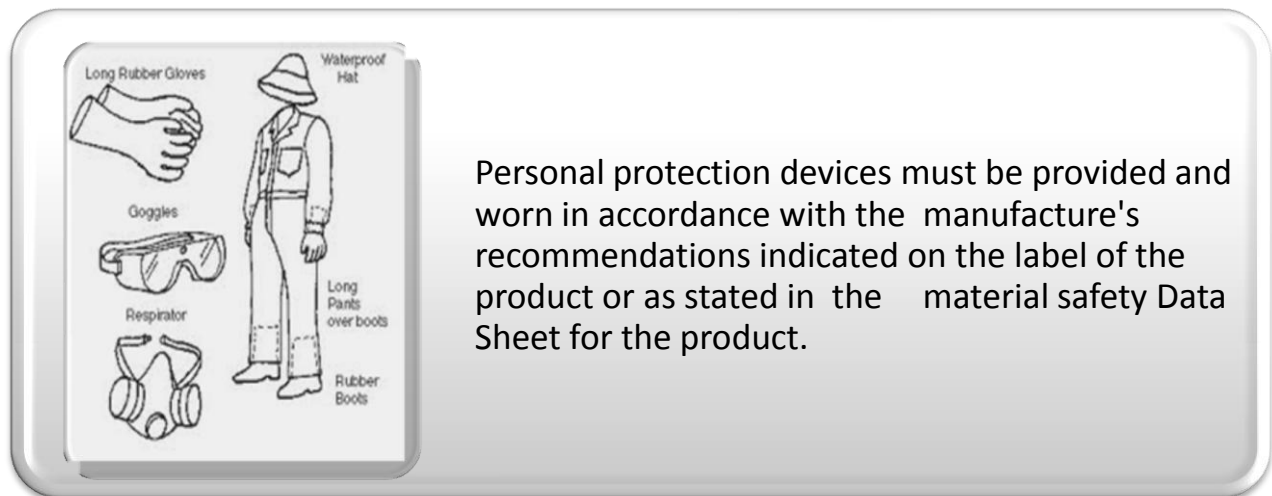
- Storage of compressed gases (e.g. any flammable and ignitable gases):

- Properly label the cylinders with their contents; store upright and away from heat source.
- Cylinders should be chained to the wall or otherwise secured from falling.
- Do not store cylinders so as to block exits, obstruct aisles, etc.
- Cylinders should be separate based on their contents. Additionally, partially full and empty cylinders should be labelled as to their status.

Occupational Handling of Chemical Hazardous Waste/Materials

All workers/employees of a manufacturing/processing or any other industrial company that generate chemical/industrial hazardous waste are at great risk of exposure/ poisoning and other possible life threatening concern. As such, precautions must be taken when handling waste.

- Protective measures:



- Whenever it is feasible, engineering controls must be used to reduce employee exposures to hazardous materials. The two most common engineering controls are the use of local exhaust and general ventilation. These measures limit an employee's exposure to airborne contaminants.
- When engineering controls are not available, or they fail to adequately reduce hazards, other personal protective equipment is required. Examples of personal protective equipment include: safety glasses, hearing protection, gloves, respirators, etc.

- Training and Inspection:

In order to ensure safety of the employees at the workplace, the following steps must be taken:

- Training in emergency procedures for all employees.
- Training on the correct procedures for the use, handling, storage, etc. of the different chemicals present, and also the health risk from exposure.

In order to make safety inspections effective, the following guidelines should be observed:

- Develop a checklist for each site, listing the items that should be inspected.
- Review the results of these inspections with supervisors and workers.
- Re-inspect any identified problems to ensure that they have been corrected.
- Document all inspections and subsequent follow-up actions. Retain these records until site activities are completed and as long as required by regulatory agencies.

- Spill and accident Procedures

Hazardous chemical spills can be handled effectively when plans of action have been developed. Spill procedures should include the following:

- the potential location of possible spills;
- the quantities of material that might be released;
- Chemical and physical properties of the material. This information may be obtained from the Material Safety Data Sheet or label;
- hazardous properties of the material (consult the MSDS);
- the types of personal protection equipment that may be needed for clean-up;
- Location and contents of spill kits that should be made available where possible. These kits might include the following:
 - Neutralizing agents such as sodium carbonate, sodium bicarbonate or sodium bisulphate.
 - Absorbents such as vermiculite or absorbents pillows or dikes. Paper towels or rags and sponges, but caution should be exercised because some chemicals may ignite upon contact with them.
 - Plastic scoops and shovels, disposable mops, disposable protective clothing and containers to receive the spilled material and all items used in the clean-up.



The following general procedure may be used, but should be tailored to the individual needs of the handlers and the specific hazard associated with the hazardous material:

- If the spilled material is flammable, turn off ignition and heat sources.
- Attend to any person who may have been contaminated (see First Aid).
- Notify individuals in the area about the spill.
- Evacuate nonessential personnel.
- Avoid breathing vapors of spilled material. Establish an exhaust or ventilation, if it is safe to do so. Air handling units are not to be used because they re-circulate the hazardous vapors.
- If a spill is relatively large, or involves a highly toxic material, a carcinogen or flammable material, contact the EPA for assistance in cleaning up the spill and disposing of the hazardous waste resulting from the clean-up.

6. EPA Authorisation Process

According to the Environmental Protection (Hazardous Wastes Management) Regulations 2000 Part II (Power to Issue Environmental Authorization):

3. (1) Any person who, at the time of the commencement of these Regulations, is in operation of a facility that generates, treats, stores, disposes or transports hazardous waste shall submit a duly completed notice in the form set out in Schedule III to the Agency.
- (2) The Agency shall publish the notification mentioned in paragraph (1) at least twice in a daily newspaper having wide circulation in Guyana and members of the public shall have at least sixty days from the date of the last publication to make objections to the operations of the facility to the Agency.
- (3) The Agency shall, in deciding to grant an environmental authorization in accordance with regulation 18 of the *Environmental Protection (Authorization) Regulations 2000*, take into account the submissions that have been made to it under paragraph (2).
- (4) The Agency shall send a copy of the objections to the person who has given notice of activity and thereupon such person shall make application to the Agency under regulation 4.
4. (1) Any person who at the time of the commencement of these Regulations is in operation of a facility that generates, transports, treats, stores or disposes of hazardous waste, shall, subject to paragraph (3), before commencing any action related thereto, submit an application to the Agency for an environmental authorization within three years of the commencement of these Regulations or such other time as the Agency may determine.
- (2) Any person who proposes to operate a facility that generates, transports, treats, stores or disposes of hazardous waste, shall, subject to paragraph (3), before commencing any action related thereto, submit an application to the Agency for an environmental authorization within three years of the commencement of these Regulations or such other time as the Agency may determine.
- (3) The fee prescribed in regulation 8 of the *Environmental Protection (Authorizations) Regulations 2000* shall accompany the application.



(4) The Agency may at any time request a person who engages in any of the activities specified in paragraph (1) to submit a notification of activity and an application to the Agency for an environmental authorization.

(5) An application for an environmental authorization shall be in accordance with the provisions of regulation 17 of the *Environmental Protection (Authorizations) Regulations 2000*.

(6) In addition to the information that is required for a grant of an environmental authorization prescribed in regulation 17 of the *Environmental Protection (Authorizations) Regulations 2000*, the applicant shall provide written evidence of financial capability.

(7) The requirement in paragraph (1) for an environmental authorization shall not apply to –

(a) Facilities that generate or store hazardous wastes in quantities less than one hundred kilograms per month; (b) Facilities that generate less than one kilogram of acutely hazardous wastes per month; (c) Facilities that accumulates up to one thousand kilograms of hazardous wastes onsite at any time.

(8) Any person who contravenes this regulation shall be guilty of an offence and shall be liable on summary conviction to a fine of not less than seventy-five thousand dollars nor more than five hundred thousand dollars and to imprisonment for six months.

The first step is to apply to the **Environmental Protection Agency (EPA)** for Environmental Authorisation. The developer must submit to the Agency a completed Application Form and all the required information:



New Projects	Existing Projects
<ul style="list-style-type: none"> ☛ Identification of the Permit Applicant (National ID Card, Passport). ☛ Proof of Land Ownership ☛ A 'No-Objection' Letter for the operation from the relevant Local Authority – NDC/RDC/Town Council. Note the Approved Site Plan by the NDC/RDC/Town Council would be accepted as “no-objection”. ☛ 'No Objection' from the Village Council <u>and</u> Ministry of Amerindian Affairs if project falls within Amerindian titled lands. ☛ Land use suitability letter/Outline Planning Permission from the Central Planning & Housing Authority ☛ Map showing surrounding land uses, identification of receiving water(s) and the location of any existing or proposed intake and discharge structures and the location of any discharge. ☛ Draft Site Plan (approved by the NDC/RDC/Town Council, as applicable to project site) showing the layout of the Operation (submit a final version after all necessary adjustments have been made). ☛ Project Description (summary). ☛ Business Registration/Certificate of Incorporation (if applicable). ☛ Indication whether or not a Permit or Licence from any other Government entity is required or have been obtained. Submit Permit, Licence, or Proof of Application from relevant sector Agency. 	<ul style="list-style-type: none"> ☛ Identification of the Permit Applicant (National ID Card, Passport). ☛ Proof of Land Ownership ☛ Map showing surrounding land uses, identification of receiving water(s) and the location of any existing discharge structures and the location of any discharge. ☛ Site Plan showing the layout of the Operation. ☛ Project Description (summary). ☛ Business Registration/Certificate of Incorporation (if applicable). ☛ Indication whether or not a Permit or Licence from any other Government entity is required or have been obtained. Submit Permit, Licence, or Proof of Application from relevant sector Agency.