



# Safety & Health in the use of Hazardous Chemicals at Work



OSHA HOTLINE: 623-OSHA (6742)  
[www.osha.gov.tt](http://www.osha.gov.tt)

## Introduction

Hazardous chemicals are necessary to perform many jobs. However, if they are not handled properly, they can present a hazard to both your health and safety and those around you. The Occupational Safety and Health Act Chapter 88:08 (OSH Act) was passed to ensure the safety and health of workers in the workplace. The legislation has provisions for the use, handling, storage, transport and disposal of hazardous chemicals. These are found under Sections 6(1); 6(3); 6(4); 6(5); 6(6); and 6A of the OSH Act.

This leaflet provides information that you, as an employer, may need to know to help you safely protect your employees from hazardous chemicals at work. It will also be useful to employees and their safety representatives and even persons at home.

## WHAT IS A HAZARDOUS CHEMICAL?

A hazardous chemical is any substance that poses a physical hazard or health hazard to you or others in the workplace. A physical hazard generally results from the physical or chemical properties, like flammable, corrosive or explosive substances. Health hazards are hazards like skin irritants, carcinogens or respiratory sensitizers that have an adverse effect on workers health as a result of contact. The safe use of hazardous chemicals in the workplace is critical to preventing injuries.



## DO YOU USE HAZARDOUS CHEMICALS AT WORK?

Many people use hazardous chemicals.

A user could be:

- a farmer
- a hairdresser
- a cleaner
- a worker in a chemical plant
- a technician in a laboratory
- a pest control operator
- or a person at home.

Do you know which chemicals in your workplace are hazardous? Employees have a RIGHT TO KNOW what they may be exposed to in the workplace.



The information about a hazardous chemical can be obtained from the Chemical Safety Data Sheet (CSDS) also known as a Material Safety Data Sheet (MSDS), which is available from the suppliers of the chemicals.

### **Serious health effects may be influenced by following:**

- the amount they are exposed to
- the frequency and duration of exposure
- the combined effects of different chemical exposures
- the exposed person's individual sensitivity to the chemical



# CHEMICAL SAFETY DATA SHEET (CSDS)

CONTROL OF SUBSTANCES HAZARDOUS TO HEALTH ASSESSMENT FORM							
RISK ASSESSMENT		LOW	X	MEDIUM		HIGH	
SUBSTANCE NAME <b>Auto Diesel / Derv</b>					Assessment REF. C001		
					CAS NO. 068334-30-5		
SUBSTANCE USED IN / AS <b>Combustible fuel - Risk Assessed: For use with Mobile Generator engine, for use in well ventilated outdoor area.</b>					R50/53 Very toxic to aquatic organisms may cause long-term adverse effects in the aquatic environment. P40 Limit discharge of a carcinogenic effect		
				HAZARDOUS CONSTITUENTS:- Petroleum Hydrocarbons		Safety Phrases S2 Keep out of reach of children. S36/37 Wear suitable protective clothing and gloves. S61 Avoid release into the environment.	
FREQUENCY OF EXPOSURE Daily		Workplace Exposure Limit 5mg/m3		DURATION OF EXPOSURE Dependant on task- 10 minutes		Maximum Exposure Limit 10mg/m3	
EXPOSURE CONTROLS ( Refer to MSDS)				TRAINING/INFORMATION/INSTRUCTION			
General Ventilation		Engineering Control		Containment		Special	
X						Expert Advice Needed	
List any specific training, information or instruction that may be required:- Avoid fumes, contact with skin, inhalation							
<b>FIRST AID MEASURES :-</b> If contact with skin, flush area immediately with cold water, remove contaminated clothing. Seek medical attention if symptoms persist. If in eye contact, check and remove contact lenses flush eyes for 15 minutes with water, seek medical attention. DO NOT INDUCE VOMITING - and in cases of pressure injection, seek medical help							
<b>PERSONAL PROTECTIVE EQUIPMENT REQUIRED:-</b>							
PAPER MASK X	FILTER MASK	GLOVES X	LEATHER GLOVES	RUBBER GLOVES	GOGGLES X	RESPIRATOR	APRON
<b>FIRE FIGHTING MEASURES: -</b> Water fog or spray exposed surfaces and containers, or to fuel, allow to burn out under control or use foam till respiratory kit.							
<b>EXTINGUISHER TYPES:-</b>							
WATER		FOAM X		CO2 X		DRY POWDER	
<b>SPILLAGE CONTROL:-</b> Dangerous to environment, toxic to invertebrates and slightly toxic to fish.....contains spillage, soil to be removed where contaminated.							
<b>DISPOSAL MEASURES:-</b> Seek advice for disposal, use registered waste carrier only.							
DATE 28 <sup>th</sup> July 2010		CARRIED OUT BY		REVIEW DATE		REVIEW/CARRIED OUT BY	

## A Chemical Safety Data Sheet (CSDS) identifies:

- The hazards associated with the use of the chemical
- How the chemical can be used safely
- What to expect if the recommendations are not followed
- How to recognise signs and symptoms of exposure
- Emergency and mitigation response measures

## Typical Information found on a CSDS:

- Product Information – product name
- Manufacturer and supplier names, addresses, and emergency phone numbers
- Hazardous Ingredients
- Physical Data, Fire or Explosion Hazard Data, Reactivity Data – information on the chemical instability of a product and the substances it may react with
- Toxicological Properties – Health effects
- Preventive Measures, including First Aid Measures
- Preparation Information – Who is responsible for preparation and date of preparation

## HOW DO CHEMICALS ENTER YOUR BODY?

Chemicals can enter your body by various routes:

- **Inhalation** - (Breathing) via the respiratory tract. This is the most common way that workplace chemicals enter the body
- **Ingestion** - (Digestive system) Chemicals can enter the stomach by eating and drinking contaminated food and drink, or by smoking cigarettes that are contaminated by contact with unwashed hands.
- **Absorption** - (Skin contact) Chemicals which pass through the skin
- **Injection** - In some instances, chemicals may enter by accidental injection through the skin.

## HEALTH EFFECTS FROM EXPOSURE TO HAZARDOUS CHEMICALS

Exposure to hazardous chemicals can have both Acute and Chronic effects

Acute effects – show up after a brief exposure and include symptoms like rashes or skin irritation, head - ache, nausea or burns.

Chronic effects – repeated or prolonged exposure. The effects depend on the amount and frequency of exposure. Examples include: liver or kidney diseases; respiratory diseases; nerve and brain disorders and reproductive damage

## EMPLOYER RESPONSIBILITIES

The employer is responsible for ensuring the following in accordance with the OSH Act:

- All chemicals must be labelled in a way that is easily understandable
- All chemicals must have an unexpired chemical safety data sheet (CSDS)
- The language used on the CSDS must be easily understood by all employees
- Containers which have been emptied but which may contain residues of hazardous chemicals, must be disposed of appropriately so that the risk to the environment is eliminated or minimised
- If a label or CSDS cannot be obtained the employer shall advise the Chief Inspector in writing
- A suitable and sufficient annual risk assessment
- Health surveillance of workers
- Promptly Investigate all employee safety and ill health complaints
- Report all occupational diseases to OSHA in accordance with section 48 of the OSH Act.



## EMPLOYEE RESPONSIBILITIES

Employees are responsible for ensuring that they follow Section 10(1) of the OSH Act.

They must also:

- (i) Cooperate and comply with the employer and the organisations policies or procedures with respect to chemical safety
- (ii) Use correctly any personal protective devices and clothing provided for his use

### General Safety Tips

- Do not reuse empty drink bottles to store chemicals
- Do not reuse empty chemical containers
- Personal protective equipment as recommended by the CSDS must be used
- Read container labels before use
- Do not mix chemicals unless specifically stated by the manufacturer or supplier
- Dispose of all chemicals properly and in accordance with CSDS requirements
- Do not store chemicals with food articles
- Do not store incompatible chemicals together
- Store flammable chemicals in intrinsically safe environments
- Exercise care when transporting chemicals so as to ensure spills are prevented
- Do not transport chemicals together with food
- If a chemical spill occurs, clean it up promptly using the appropriate recommended strategies
- Use chemicals in a well ventilated area
- If you suspect that chemicals you work with are affecting your health, you should promptly report this to your employer.

## ASSESSING AND MANAGING THE RISK OF HAZARDOUS CHEMICALS

All employers must conduct a suitable and sufficient risk assessment. This assessment identifies and evaluates the risk to the safety and health of employees who are exposed and persons not in his employment who may be affected.

The risk assessment should take into consideration the public health impact. Based on the risk assessment conducted suitable control measures should be implemented. Conducting risk assessments are a requirement of the OSH Act and significant findings should be documented and records maintained. This will help when reviewing where improvements can be made so that risks are controlled more effectively.

You can manage the risk of hazardous chemicals by conducting a risk assessment as mentioned earlier, a **risk assessment can be done by taking the following steps:**

- identifying hazards associated with the hazardous chemical
- assessing the risks associated with these hazards
- eliminating or minimising the risks by implementing and maintaining control measures
- reviewing control measures to ensure they are effective.

## IMPORTANCE OF HEALTH SURVEILLANCE

Health surveillance is a system of ongoing health checks. The employer is required by law to conduct health surveillance if their risk assessment identifies a need for it. If you are exposed to chemicals hazardous to health such as solvent, fumes, dust, etc., you may need health surveillance.

Health surveillance helps to assess the health of the employees in relation to:

- The workplace hazards to which they are exposed.
- Confirming the effectiveness of control measures.
- Collecting data for the detection and evaluation of hazards to health.

## CONTROL MEASURES

If a hazard cannot be eliminated altogether, there are several other measures to control the hazard. Some of these ways are more effective than others. The established means of managing the associated risk is by employing the “ **HIERARCHY OF HAZARD CONTROLS**”. This is a priority listing of control measures that can be used in combination if necessary.

It is considered good occupational safety and health practice to follow the hierarchy of controls.

## HIERARCHY OF HAZARD CONTROLS

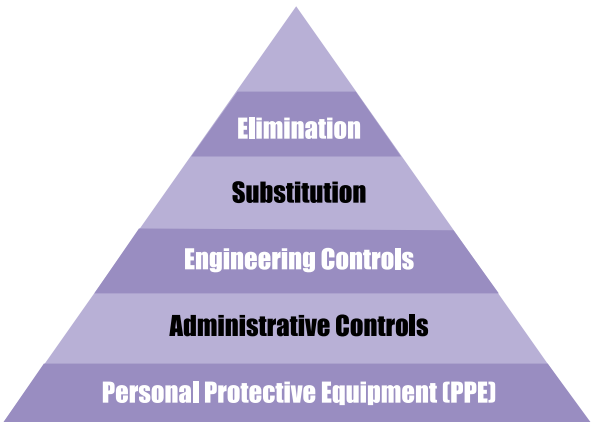


Figure 1 Hierarchy of Controls

### Examples of each step in the hierarchy:

#### (1) Elimination

The first priority in controlling the hazard is to eliminate it and remove the danger. This can be done by changing a work process in a way that will get rid of a hazard. For example, replacing glue with screws in furniture manufacturing.

#### (2) Substitution

The hazard may be controlled by substituting something else in its place that would be non-hazardous or less hazardous to workers. A non-toxic (or less toxic) chemical could be substituted for a hazardous one. For example, using water-based paints instead of oil-based paints.

### **(3) Engineering Controls**

Whether or not substitution is an option, there may still be a need for further control and at this point, engineering controls should be considered and adopted where practicable. For example, the use of local exhaust ventilation (LEV) that captures and carries away the contaminants before they can get in the breathing zone of workers.

### **(4) Administrative Controls**

These involve changes in workplace policies and procedures. This can include health screening and surveillance, reducing the time workers are exposed to a hazard, training and supervision.

### **(5) Personal Protective Equipment (PPE)**

The use of PPE is a way of controlling hazards by placing protective equipment directly on workers' bodies. Examples of personal protective equipment include: respirators, gloves, protective clothing, hard hats, goggles, and ear plugs.

PPE inevitably fails to eliminate or reduce danger and should only be considered when the above steps, mentioned in the hierarchy of controls



have been explored and exhausted. There are few exceptions to this rule for example, when responding to emergencies.

**PPE is generally considered the last resort because:**

- The hazard is not eliminated or changed.
- If the equipment is inadequate or fails, the worker is not protected.
- No personal protective equipment is fool-proof (for example, respirators leak).
- PPE can be uncomfortable and may hamper dexterity or mobility.
- PPE can actually create hazards. For example, the use of breathing apparatus may impair communication.

While there are some jobs such as, working on or near certain types of asbestos, where wearing adequate PPE is essential, there are many jobs where employers hand out PPE when in fact they should be using more effective hazard control methods.



Other related titles in this series:

- Safe handling and application of pesticides
- Safe storage, transport and disposal of pesticides
- A short guide for employers
- A short guide for employees
- Risk Assessment
- The prevention of occupational diseases

**For further reading:** Reference the pesticides and other relevant brochures

**We are OSHA! We can help!**

“Safety and Health in the workplace is everyone’s responsibility so take it seriously “

Contact us if you have any questions or want to file a complaint.

We will keep your information confidential.

We are here to help you.

Call our hotline at 623-OSHA, or 299-0300 Ext. 2163 or fax 623-5905 or 653-6563.

Or visit any one of our offices located at:  
50-54 Duke Place, Duke Street, Port-of-Spain  
40-42 St. James Street, San Fernando



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- Children should not apply pesticides
- Persons not involved should not be in the field during application
- Follow the label instructions for applying pesticides and ask for advice if you do not understand them
- Do not use leaking or defective equipment
- The application equipment should be inspected and assembled properly
- Calibrate your sprayer so you are certain that you apply the correct amount
- Be aware of the wind direction and do not stand downwind when spraying
- Do not apply pesticides when it is raining
- Keep people and animals out of freshly treated crops
- Do not use your mouth to blow the knapsack nozzles if blocked
- Avoid walking through sprayed foliage
- At a minimum, wear long pants, long-sleeved shirt, goggles and rubber gloves to reduce your exposure. Read the label and wear the listed protective clothing and equipment when spraying
- Personal hygiene is extremely important when working with pesticides. Do not eat, drink, smoke or touch the face or other bare skin with your hands or gloves used in handling chemicals
- After handling chemicals be sure to wash your face and hands properly before eating, smoking or going to the toilet

*(continues on the back cover)*

## AFTER APPLICATION

There is the risk of hazardous exposure to pesticides after its application. Great care is therefore of utmost importance during all the post-application steps, such as cleaning equipment, disposal of containers and handling of contaminated working clothes

### Remember:

- Carefully wash the application equipment after use
- Application equipment should be washed separately from other equipment
- Never rinse pesticides down the drain. Rinse water can be reapplied to the field
- Wash working clothes separately from other clothes
- Take a shower and use soap
- In case of skin exposure, wash for several minutes with copious amounts of fresh, running water and soap
- Respect the re-entry period
- Be sure to store unused pesticides safely

### Read our other related guidance:

- Safe storage, transport and disposal of pesticides
- Safety and health in the use of hazardous chemicals at work



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# Safe Handling and Application of Pesticides

A guide for small - scale operators



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## SAFE HANDLING AND APPLICATION OF PESTICIDES

The Occupational Safety and Health Act Chapter 88:08, places a responsibility on all employers and self-employed persons to ensure that the safety and health risks to themselves, their employees, third party interests and members of the public, arising or in connection with work carried out, are suitably and sufficiently managed. This includes all work activities and therefore, using pesticides on your farm holding is no exception.

## SAFE MIXING AND LOADING



When mixing pesticides, remember:

- Handling of pesticides before application should only be done by suitably trained persons.
- When using personal protective equipment, ensure that it is done as specified on the label or accompanying leaflet
- Follow the manufacturer's instructions before loading the application equipment. The type of equipment used depends on the area to be treated and the form in which the pesticide is applied.



- Mix only the amount you need to do the job
- Mix outdoors or in a well-ventilated area
- Know what to do in case of an emergency
- Keep children and pets out of the area where pesticides are being mixed and inform nearby persons to keep a safe distance
- Avoid leaking and spillage, but if it happens be ready to clean the area immediately. Don't wash spill away. Sprinkle spills with sawdust or sand; sweep the mixture into a plastic garbage bag and dispose of as recommended in the accompanying leaflet or the Chemical Safety Data Sheet (CSDS)



- Never measure or pour concentrated pesticides without suitable gloves, even if the quantities seem to be very limited
- Do not eat, drink or smoke during mixing or loading
- If you repack or transport pesticides to other containers, ensure that they are suitably and adequately labelled
- Never use bare hands to scoop or to mix pesticides
- Many pesticides can be mixed and used together, but ensure that only appropriate pesticides mixtures are prepared. Remember to follow directions provided with each product
- Ensure that an emergency supply of fresh water is available for washing yourself in case of an accident

## SAFE APPLICATION OF PESTICIDES

When applying or spraying pesticides, remember:

- Only suitably trained persons should be allowed to apply pesticides

## PESTICIDE DISPOSAL



When disposing of pesticides or used pesticide containers, always remember the following:

- Never flush unused pesticides down the sink or storm drain.
- Do not put pesticide products directly into the garbage. Dispose of unused pesticides by following the directions on the label or CSDS directs
- Triple rinse empty pesticide containers. Fill empty containers 1/4 full of water, cover tightly, shake, and then add the rinse water to the spray tank; repeat three times.
- Wrap the empty container in newspaper and dispose of with your regular solid waste or as directed on the label.
- All empty pesticide containers, after having been decontaminated, should be made unusable by puncturing
- Never attempt to burn pesticide containers
- If the pesticide is outdated or no longer required, then it should be appropriately disposed of

- Do not create risks for people, animals or the environment with your pesticide wastes

## DEALING WITH PESTICIDE SPILLAGES

- Ensure that you know what is spilled so that you are aware of your possible exposure. At a minimum, wear PPE in accordance with CSDS-guidelines when cleaning up spills.
- If a spill occurs, clean it up promptly. Do not leave the spill unattended
- Do not wash a spill away - runoff can damage non-target plants or pollute surface and ground-water.
- Sprinkle spills with sawdust or sand. Sweep the mixture into a plastic garbage bag and dispose of as recommended in the CSDS or label



### Other related guidance:

- Safe handling and application of pesticides
- Protecting yourselves from pesticides exposure
- Pesticide Safety Information
- Safety and health in the use of hazardous chemicals at work



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# Safe Storage, Transport and Disposal of Pesticides

A guide for small - scale operators



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[www.osha.gov.tt](http://www.osha.gov.tt)

## SAFE STORAGE, TRANSPORT AND APPLICATION OF PESTICIDES

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### PESTICIDE STORAGE



#### When storing pesticides:

- Ensure human and pet safety- store product in such a manner as to eliminate access to children and pets.
- Store pesticides 4 feet off the ground, preferably in a locked and labeled cabinet
- Do not put pesticides in soft-drink bottles or other containers. Store them in their original containers with labels that list ingredients, directions for use, and treatment in case of poisoning.



- Apply transparent tape over the label to keep it legible.
- Never store pesticides with food, animal feed or medical supplies.
- Do not stockpile. Reduce storage needs by buying only the amount of pesticide that you will need in the near future or during the current season when the pest is active. The person who buys and uses pesticides is also responsible for correct storage
- Pesticides should be stored in a well-ventilated, cool and dark place. Avoid high temperatures.
- Do not expose pesticide containers to direct sunlight
- Be sure storage shelves are strong enough and can support the weight of the product
- Follow all storage instructions on the pesticide label.
- Store flammable liquids far away from an ignition source.
- Keep your pesticide storage area dry and well ventilated.
- Check pesticide containers periodically for leaks, corrosion, breaks, tears, or rust and take appropriate action where necessary
- Put warning signs on the door, indicating that pesticides are stored
- Restrict access to authorized persons only

### PESTICIDE TRANSPORT

The transport of pesticides is a very delicate matter and should be done very carefully.

- Bag pesticides separate from groceries.
- At a minimum, protect bottles by wrapping them in paper to reduce the chance of breakage if they fall over or crash together.
- Secure containers upright to make sure that they cannot fall or be knocked over.
- Transport in the cargo area, away from people and groceries.
- Do not transport pesticides with other materials, especially with food
- Use safe work practices when you load and unload pesticides from the vehicle
- Ensure loads are adequately secured
- Loads should be protected from rain and excessive sunlight
- Be sure that there is no sharp material which can damage the containers and result in leaking of pesticides
- Information provided with the pesticides such as labels and the Chemical Safety Data Sheets (CSDS) should always be in the vehicle.



- In the event of a vehicular accident during transport, give necessary information about the products as contained in the CSDS to the police, health authorities or any other emergency response service. Keep other people away from the scene of the accident.
- Keep in the vehicle appropriate personal protective equipment and clothing in the event you have to deal with a spill.
- Containers with liquids should be loaded topside up in the vehicle, and not to be subject to high pressure from excessive weight which can damage them.
- Check the pesticide load at intervals during transport.
- After transportation, the containers should be checked for leaks and loose lids, and immediately repackaged if necessary.
- Unreadable labels should be replaced. Ensure that the label is easy to understand and has the relevant safety information
- As far as practicable, do not leave your vehicle unattended when transporting pesticides.