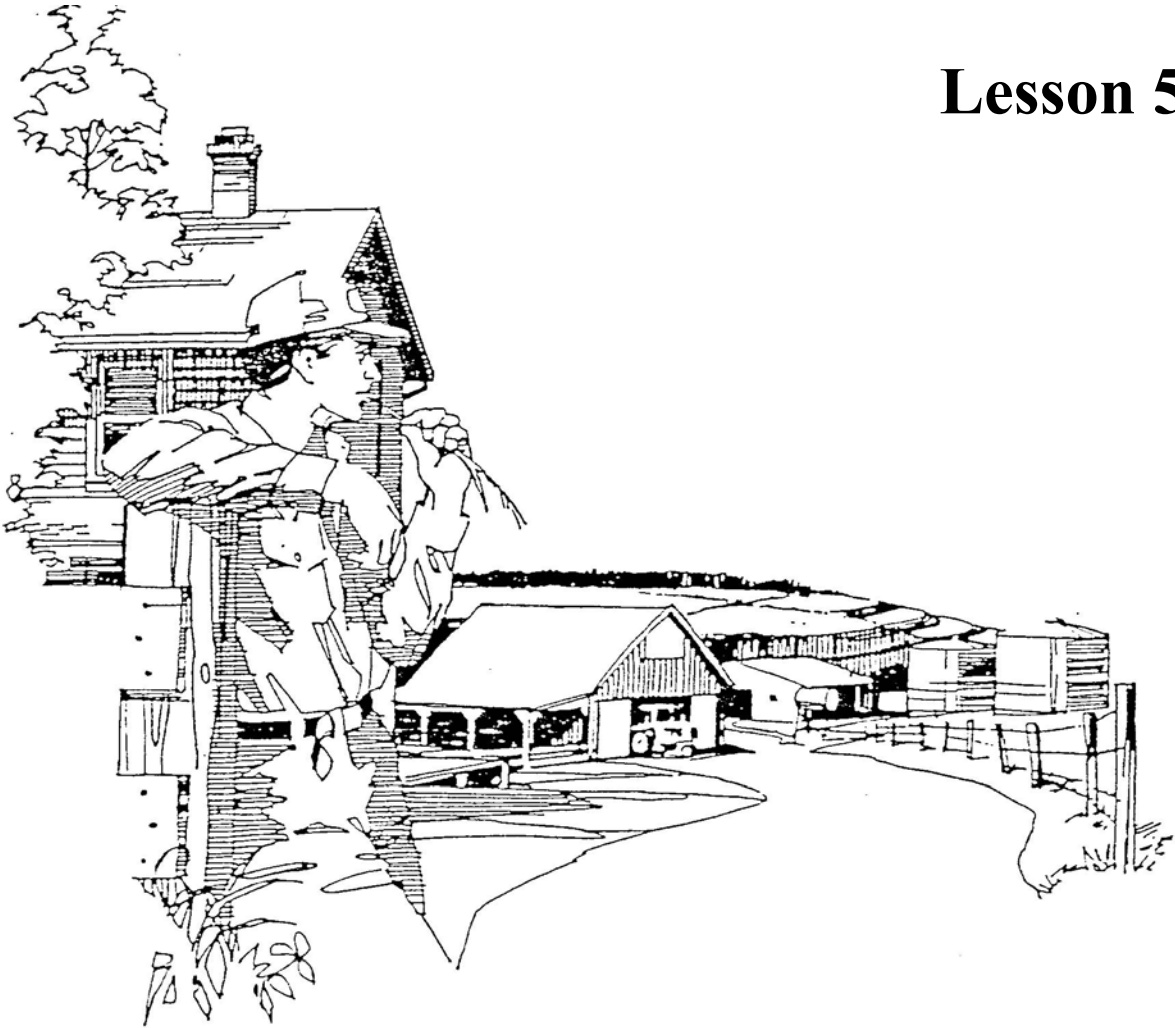


# **Pesticide Applicator Course for Agricultural Producers**

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## **Lesson 5**



## **Poisoning and First Aid**

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## **Lesson 5**

### **Poisoning and First Aid**

#### **What You'll Learn!**

The purpose of Lesson 5 is to explain the symptoms of pesticide poisoning. You'll also learn what steps to take in case of a pesticide poisoning emergency.

By the time you complete this lesson you should be able to:

- recognize mild, moderate, and severe symptoms of pesticide poisoning;
- define a cholinesterase test and explain its usefulness in monitoring levels of exposure to pesticides;
- list safety/emergency information sources;
- describe the five immediate general first aid steps for pesticide poisoning;
- list the essential components of a special first aid kit for pesticide poisoning;
- name two places to call for medical attention about a poisoning and list two things you should tell the staff at the place you call;
- indicate what first aid procedures to follow when pesticides are:
  - spilled on the body
  - splashed in the eyes
  - swallowed
- name the recommended method for inducing vomiting.

You'll need to know all these things for the Pesticide Certification Exam.



## **Recognizing Poisoning**

**Pesticide poisoning must be recognized quickly and treated promptly. Immediate treatment can mean the difference between mild effects and serious illness. Sometimes an incident of exposure may be obvious such as a spill or splash. At other times, only the person affected may be aware of his or her symptoms. A co-worker may notice someone showing signs of poisoning. Everyone working with pesticides, including family members and farm workers, should be familiar with typical symptoms of pesticide poisoning and immediate first aid measures.**

**We recommend that you complete a basic C.P.R. (Cardio-Pulmonary Resuscitation) and a first aid course. Your local Red Cross or St. John Ambulance will be able to give you information regarding these courses.**

**The symptoms of pesticide poisoning vary because each person's sensitivity to a particular pesticide can be different. One person may develop symptoms immediately following exposure while a fellow worker could remain unaffected. Some symptoms take the form of allergic reactions such as skin irritations or rashes. These may show up after repeated exposures to a particular pesticide.**

**Symptoms of some pesticide poisoning are similar to the symptoms of food poisoning, asthma, flu, and other illnesses and may be mistaken for them. If you have been exposed to pesticides do not ignore any symptoms.**



## Symptoms of Poisoning

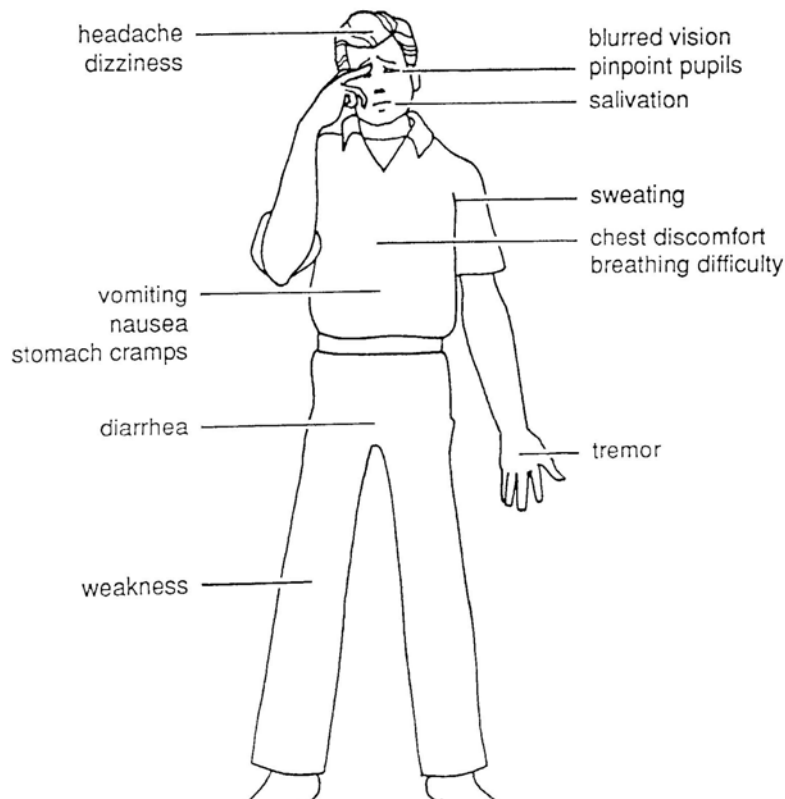
The following symptoms are general for all pesticides. However, not all pesticides produce all of these symptoms. For specific symptoms read the label of the pesticide you are using before you begin to work with it.

*Mild symptoms* may include: headache, fatigue, nausea, loss of appetite, dizziness, weakness, nervousness, constricted pupils, blurred vision, loss of weight, thirst, moodiness, and irritation of skin, eyes, nose, and throat.

*Moderate symptoms* may include: trembling, lack of muscular co-ordination, perspiration, excessive salivation, constricted throat or chest, labored breathing, flushed skin, abdominal cramps, vomiting, diarrhea, mental confusion, and rapid or slow pulse rate.

*Severe symptoms* may include: fever, respiratory distress, loss of reflexes, muscle twitching, convulsions, and unconsciousness.

For further information on symptoms of pesticide poisoning, see the chart entitled "Poisoning Symptoms of Pesticide Groups" at the end of this lesson.



## **Cholinesterase Testing**

The greatest number of pesticide poisonings by far are caused by organophosphorous and carbamate insecticides. Examples of organophosphorous insecticides include azinphos-methyl, malathion, and dimethoate. Examples of carbamate insecticides include carbofuran and aldicarb.

Exposure to organophosphorous and carbamate insecticides can lower cholinesterase levels. Cholinesterase is an enzyme in the blood which affects the nervous system and the way the brain sends messages to different parts of the body.

Cholinesterase blood testing is a way of determining whether or not you are suffering from exposure to these classes of pesticides. If you handle or apply organophosphorous or carbamate insecticides, you should consider having these tests regularly. They will help you prevent serious pesticide poisonings.

Talk to your doctor about cholinesterase blood testing. You must have two tests done: one before you begin to handle organophosphorous or carbamate pesticides, and another one or more during or after use so that your doctor can note any changes in your cholinesterase levels. If the tests show your cholinesterase levels have been lowered, take steps to reduce your exposure to these pesticides.

## **Poison Control Information**

Advice on what to do in case of a pesticide poisoning emergency can be obtained by calling your local Poison Control Centre. The number is listed on the inside of the front cover of your telephone book.

The main Poison Control Centre for Newfoundland and Labrador is:

**Poison Control Centre  
Janeway Child Health Centre,  
300 Prince Phillip Drive  
St. John's, NL A1B 3V6  
722-1110 or 722-1117**

Poison Control Centres will be able to help you more quickly if you can provide them with the name of the pesticide product and its P.C.P. Act Registration Number.

## **Exercise 5.1**

**You should place the following phone numbers of where you can call for help in case of a pesticide poisoning emergency on or near your phone and in your first aid kit:**

- **your doctor**
- **ambulance**
- **nearest Poison Control Centre**
- **fire department**

<b>Emergency Phone Numbers</b>	
<i>Please fill in your Emergency Numbers (See Inside front cover of your telephone directory)</i>	
<b>Poison Control Center</b> .....	_____
<i>Take the complete Trade Name and Pest Control Products Acts Registration number from the pesticide label when you go for medical help</i>	
<b>Doctor</b> .....	_____
<b>Ambulance</b> .....	_____
<b>Fire</b> .....	_____
<b>Police</b> .....	_____
<b>Pesticide Information</b> .....	<b>1-800-563-6181</b>
<i>Call this number for further information, or cleanup advice and to report spills to the Minister of Environment and Lands</i>	

## **Special First Aid Kits and Emergency Equipment**

**If you work with any pesticide and especially any of the very toxic chemicals, you should have a special first aid kit available. This first aid kit may save your life.**

**First aid kits should be kept in a central location that everyone is aware of. Your first aid kit should contain:**

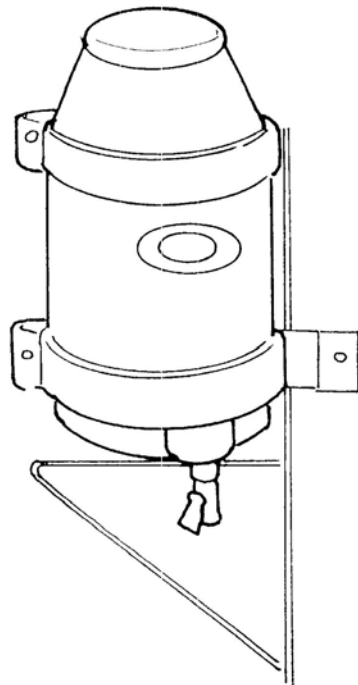
- **soap or detergent to wash pesticide off the skin;** \_\_\_\_\_
- **a container with rubbing alcohol for cleaning skin;** \_\_\_\_\_
- **a pair of clean, waterproof gloves to prevent skin contamination of the person administering first aid;** \_\_\_\_\_
- **drinking cup;** \_\_\_\_\_
- **plastic face mask for use during mouth-to-mouth resuscitation to avoid direct contact with the victim's mouth if contaminated with pesticide;** \_\_\_\_\_
- **paper towels to wipe up splashes or small spills;** \_\_\_\_\_
- **nail brush for cleaning under fingernails if exposed;** \_\_\_\_\_
- **telephone numbers of Poison Control Centres and several quarters for emergency phone calls;** \_\_\_\_\_
- **\*ipecac syrup to induce vomiting;** \_\_\_\_\_
- **\*activated charcoal to absorb the pesticide in the stomach;** \_\_\_\_\_
- **clean plastic bottle for mixing activated charcoal with fresh water.** \_\_\_\_\_

**\* Ipecac syrup and activated charcoal are only to be administered upon the instructions of a doctor or a Poison Control Centre officer.**



## **Fresh Water**

**Fresh water must be available for drinking if a pesticide is swallowed, for washing if a pesticide is spilled, and for a continuous eye wash if a pesticide is splashed in the eyes. Running water or a portable container with at least 45 litres of fresh water must be present at all mixing, loading, and application sites.**



**You can construct a clean tank from a covered bucket or container with a hose and clamp attachment. You can also purchase a commercial water tank, to attach to your sprayer.**

## **Exercise 5.2**

**Get out your first aid kit and turn to the list on the previous page. In the blanks provided on this list, check off each item that you find in your kit. Now you can make a note of what you need to pick up to make your first aid kit complete.**

## Quiz 5.1

1. The column on the left below contains a number of symptoms of pesticide poisoning. Classify each symptom as either mild, moderate, or severe by placing an X in the appropriate space. The first symptom has been classified for you.

	Mild	Moderate	Severe
abdominal cramps	_____	<u>  X  </u>	_____
blurred vision	_____	_____	_____
convulsions	_____	_____	_____
diarrhea	_____	_____	_____
fatigue	_____	_____	_____
fever	_____	_____	_____
flushed skin	_____	_____	_____
headache	_____	_____	_____
irritation of eyes	_____	_____	_____
labored breathing	_____	_____	_____
loss of reflexes	_____	_____	_____
moodiness	_____	_____	_____
muscle twitching	_____	_____	_____
lack of muscular co-ordination	_____	_____	_____
nausea	_____	_____	_____
respiratory distress	_____	_____	_____
trembling	_____	_____	_____
unconsciousness	_____	_____	_____

**After completing Question 1, fill in the blanks in each of the following statements.**

- 2. Your cholinesterase level will be lowered by exposure to excess amounts of \_\_\_\_\_ and \_\_\_\_\_ pesticides.**
- 3. The four emergency numbers you should have by your phone are \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_.**
- 4. Running water or a portable container with at least \_\_\_\_\_ of fresh clear water must be available at all mixing, loading, and application sites.**
- 5. Name at least eight items you should have in your pesticide emergency first aid kit.**

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**After completing the quiz, check the Answer Key at the end of this lesson. If you've done well, continue with Lesson 5. If not, review the appropriate sections before proceeding.**

## **First Aid Treatment**

Victims of pesticide poisoning must receive immediate treatment. First aid treatment is not a substitute for medical treatment, but prompt treatment can mean the difference between life and death. It is important to know what first aid steps to follow in poisoning emergencies.

## **General Procedures for Pesticide Poisoning**

**Act as quickly as possible when someone has been poisoned. Follow the steps listed below.**

- Step 1**        **Protect *yourself* from exposure (put on gloves, respirator, etc., as may be required).**
  
- Step 2**        **Remove the victim from the area of contamination.**
  
- Step 3**        **Check if the victim is breathing. If breathing has stopped or is very weak, clear the airway of any obstruction and begin artificial respiration. Continue until the victim is breathing normally or until medical help arrives. When performing mouth-to-mouth resuscitation, use the plastic mask in your first aid kit to protect yourself from poison. (C.P.R. courses will teach you the correct methods of resuscitation.)**
  
- Step 4**        **Call the Poison Control Centre, doctor, or ambulance with the complete trade name and P.C.P. Act Registration Number of the pesticide. Tell them when the victim was poisoned and what the symptoms are. Follow carefully any instructions you are given.**
  
- Step 5**        **Unless the Poison Control Centre or doctor tells you otherwise, follow the specific procedures listed on the following pages, depending on whether the pesticide has contacted the eyes or skin, or has been inhaled or swallowed.**
  
- Step 6**        **Transport the patient to the nearest hospital. Take the complete trade name and P.C.P. Act Registration Number with you.**

## **Specific Procedures for Pesticide Poisoning**

**Determine whether the victim has suffered from eye contact with pesticides, skin burn, or has inhaled or swallowed poisonous substances. Then follow the additional procedures listed below.**

*If pesticide contacts the eyes:*

- **Put on waterproof gloves.**
- **Hold the eyelids open and rinse with large amounts of clean water. Don't use an eye cup as it may re-contaminate the eyes while rinsing.**
- **Continue this treatment for fifteen minutes or more.**

*If pesticide contacts the skin:*

- **Put on waterproof gloves.**
- **Remove the victim's contaminated clothing.**
- **Wash the affected area of the skin with soap and water. Clean under fingernails and toenails if they've been contaminated. Rinse the area with rubbing alcohol, if available. Then wash again with soap and water.**
- **Dry the skin thoroughly and keep the victim warm.**

*If the skin is burned:*

- **Put on waterproof gloves and remove the victim's clothes.**
- **Wash the burned area with large amounts of water.**
- **Cover the burned area with a clean cloth loosely applied.**
- **Do not apply any drugs or medications to the burned area. Avoid the use of ointments, creams, or lotions.**
- **If the victim is in shock, keep the person warm and lying down until medical help arrives.**

*If the victim has inhaled poisonous dust, vapors, or gases:*

- **Put on a respirator if the victim is in a building or enclosed space.**
- **Carry the victim to fresh air as quickly as possible.**
- **Loosen tight clothing.**
- **Watch for signs of unconsciousness or convulsions. If a convulsion occurs, keep the airway open by holding the chin up and keeping the victim turned on one side.**
- **Begin resuscitation if breathing has stopped or is difficult. Remember to use a plastic face mask to protect yourself from contamination.**
- **Keep the victim as quiet as possible while waiting for medical help.**

*If pesticide has been swallowed:*

- **Check the pesticide label to see if vomiting is recommended. Try to contact a doctor or local Poison Control Centre to ask if vomiting should be induced.**
- **Do not induce vomiting unless the Poison Control Centre or a doctor specifically advises you to do so. DO NOT induce vomiting if:**
  - **the substance swallowed contains a petroleum product;**
  - **the victim is unconscious;**
  - **the victim is convulsing;**
  - **the substance swallowed is corrosive such as a strong acid or alkaline product.****Symptoms of swallowing a corrosive substance include severe pain and burning sensation in the mouth and throat. Check the pesticide label for the corrosive symbol.**
- **If medical advice is not available and none of the circumstances mentioned above apply, induce vomiting by giving the victim water and tickling the back of the throat and tongue to make the person gag.**

- **If you are advised by a doctor or the Poison Control Centre to induce vomiting with ipecac, administer the ipecac syrup which is stored in your first aid kit. The usual dose is one tablespoon for children, or two tablespoons for adults, followed by a half to a full glass of water or juice.**
- **If the victim is unable to sit, place the person face down on his or her side. Keep the airway free of vomitus and transport the victim to the nearest medical centre.**
- **If a doctor recommends activated charcoal, administer it according to the doctor's instructions when the vomiting is completely finished. It absorbs any remaining pesticide in the stomach.**
- **If the victim has swallowed a corrosive substance and is conscious and able to swallow, administer a half to a full glass of milk or water. Do not give the victim large quantities to drink as this may induce vomiting.**

## **If You Are Working Alone**

**If you are exposed to a toxic pesticide and are beginning to feel any symptoms, remain calm. Try to find someone to help you. If no help is immediately available, follow the steps as described above for treating a victim of poisoning. If vomiting is indicated, take ipecac syrup immediately. Once you have followed the immediate treatment steps, obtain help as soon as possible. When getting medical help, take the trade name and the P.C.P. Act Registration Number with you.**

## **Quiz 5.2**

**Below are a number of statements, each containing a single blank. Complete each statement by filling in the blank with the letter of the best answer from the Answer Box on the next page.**

- 1. If pesticide is splashed in someone's eyes \_\_\_\_\_.**
- 2. If the victim is unconscious or convulsing, or has swallowed a corrosive \_\_\_\_.**
- 3. If a medical authority recommends you induce vomiting with ipecac \_\_\_\_\_.**
- 4. If the victim has inhaled poisonous dust or gases and is in an enclosed area \_\_\_\_.**
- 5. If the skin is burned with a pesticide \_\_\_\_\_.**
- 6. If the doctor recommends activated charcoal, \_\_\_\_\_.**
- 7. The first step in a poisoning emergency is \_\_\_\_\_**
- 8. To induce vomiting without ipecac \_\_\_\_\_**
- 9. If the pesticide contacts the skin, \_\_\_\_\_**
- 10. When you call the doctor or Poison Control Center \_\_\_\_\_**
- 11. To protect yourself when performing mouth-to-mouth resuscitation after a pesticide poisoning, \_\_\_\_\_**
- 12. After you have administered immediate first aid, \_\_\_\_\_**



**Answer Box**

- a) administer it when the vomiting is completely finished.**
- b) administer two tablespoons ipecac syrup followed by half to a full glass of juice or water.**
- c) begin rinsing with water and continue for at least 15 minutes.**
- d) do not induce vomiting.**
- e) give the victim water and tickle the back of the throat.**
- f) have ready the trade name and P.C.P. Act Registration Number of the pesticide, and details of the poisoning.**
- g) protect yourself.**
- h) put on gloves, remove contaminated clothing, and wash the area at least twice with soap and water.**
- i) transport the victim to the nearest hospital.**
- j) use the plastic face mask in your first aid kit.**
- k) wash the area with large amounts of water and cover with a clean cloth.**
- l) wear a respirator to rescue him or her.**

**When you have finished, check your answers against the Answer Key at the end of the lesson. If you have done well, and feel you knew the first aid steps to follow in a pesticide poisoning emergency, complete Lesson 5.**

## Poisoning Symptoms of Pesticide Groups

Generally pesticides with similar chemical structure cause similar symptoms of poisoning. If you work with pesticides, you should be familiar with symptoms of poisoning caused by the major groups of pesticides.

Two chemical groups are the most frequent causes of pesticide poisoning:

- organophosphorous insecticides (OP)
- carbamates (C)

The following chart lists some of the better known pesticides and their poisoning symptoms. The information in the chart is for reference only. You will not be tested on it in the Pesticide Certification Exam.

Pesticide Group	Examples	Typical Symptoms
Organochlorines	endosulfan, lindane, methoxychlor	apprehension, nausea, vomiting, weakness, excitability, dizziness, disorientation, twitching, convulsions
Organophosphates	Guthion (azinphos- methyl), Dyfonate (fonofos), Lorsban (chlorpyrifos), diazinon, dichlorvos, malathion, parathion	headaches, dizziness, weakness, tremors, nausea, diarrhea, blurred vision, convulsions
Carbamates	Temik (aldicarb), Furadan (carbofuran), Sevin (carbaryl), Lannate (methomyl)	headaches, dizziness, weakness, tremors, nausea, diarrhea, blurred vision, convulsions
Dinitrophenols	dinoseb, Karathane (dinocap), DNOC	fever, sweating, rapid breathing, rapid heart rate
Bipyridyliums & Pyridyliums	Reglone (diquat), Gramoxone (paraquat)	respiratory distress, lung damage

<b>Pesticide Group</b>	<b>Examples</b>	<b>Typical Symptoms</b>
<b>Fumigants</b>	<b>methyl bromide, Telone (1-3 dichloropropene), Vapam (metam-sodium), chloropicrin</b>	<b>double vision, slurred speech, inco-ordination, chemical pneumonia, kidney damage</b>
<b>Dithiocarbamates &amp; Thiocarbamates</b>	<b>ziram, maneb, Eptam, Surpass (vernolate)</b>	<b>irritation of the eyes, skin, nose, and lungs, nausea, vomiting, muscle weakness</b>
<b>Chlorophenoxy</b>	<b>2,4-D, MCPA</b>	<b>symptoms range from skin rash and muscle weakness to convulsions and coma in severe poisoning</b>
<b>Petroleum Products</b>	<b>kerosene, solvent distillate, diesel oil</b>	<b>nausea, vomiting, cough, irritation to lungs, central nervous system depression</b>
<b>Anticoagulants</b>	<b>warfarin, diphacinone, brodifacoum</b>	<b>nosebleeds, bleeding gums, abdominal pains, weakness</b>

## Answer Key

### Quiz 5.1

1. The column on the left below contains a number of symptoms of pesticide poisoning. Classify each symptom as either mild, moderate, or severe by placing an X in the appropriate space.

	Mild	Moderate	Severe
abdominal cramps	_____	<u>  X  </u>	_____
blurred vision	<u>  X  </u>	_____	_____
convulsions	_____	_____	<u>  X  </u>
diarrhea	_____	<u>  X  </u>	_____
fatigue	<u>  X  </u>	_____	_____
fever	_____	_____	<u>  X  </u>
flushed skin	_____	<u>  X  </u>	_____
headache	<u>  X  </u>	_____	_____
irritation of eye	<u>  X  </u>	_____	_____
labored breathing	_____	<u>  X  </u>	_____
loss of reflexes	_____	_____	<u>  X  </u>
moodiness	<u>  X  </u>	_____	_____
muscle twitching	_____	_____	<u>  X  </u>
lack of muscular co-ordination	_____	<u>  X  </u>	_____
nausea	<u>  X  </u>	_____	_____
respiratory distress	_____	_____	<u>  X  </u>
trembling	_____	<u>  X  </u>	_____
unconsciousness	_____	_____	<u>  X  </u>

2. Your cholinesterase level will be lowered by exposure to excess amounts of organophosphate and carbamate pesticides.
3. The four emergency numbers you should have by your phone are Poison Control Centre, your doctor, ambulance, and fire department.
4. Running water or a portable container with at least 45 litres of fresh, clear water must be available at all mixing, loading, and application sites.

5. Your first aid kit should contain:
- a) soap or detergent to wash pesticide off the skin.
  - b) a container with rubbing alcohol for cleaning skin.
  - c) a pair of clean, waterproof gloves to prevent skin contamination of the person administering first aid.
  - d) drinking cup.
  - e) plastic face mask for use during mouth-to-mouth resuscitation to avoid direct contact with the victims mouth if contaminated with pesticide.
  - f) paper towels to wipe up splashes or small spills.
  - g) nail brush for cleaning under fingernails if exposed.
  - h) telephone numbers of Poison Control Centres and several quarters for emergency phone calls.
  - i) ipecac syrup to induce vomiting.
  - j) activated charcoal to absorb the pesticide in the stomach.
  - k) clean plastic bottle for mixing activated charcoal with fresh water.

## Quiz 5.2

- 1. If pesticide is splashed in someone's eyes c) begin rinsing with water, and continue for at least 15 minutes.
- 2. If the victim is unconscious or convulsing, or has swallowed a corrosive d) do not induce vomiting.
- 3. If a medical authority recommends you induce vomiting with ipecac syrup b) administer two tablespoons followed by half to a full glass of juice or water.

4. **If the victim has inhaled poisonous dust or gases and is in an enclosed area l) wear a respirator to rescue him or her.**
5. **If the skin is burned with a pesticide k) wash the area with large amounts of water and cover with a clean cloth.**
6. **If the doctor recommends activated charcoal, a) administer it when the vomiting is completely finished.**
7. **The first step in a poisoning emergency is g) protect yourself.**
8. **To induce vomiting without ipecac e)give the victim water and tickle the back of the throat.**
9. **If the pesticide contacts the skin, h) put on gloves, remove contaminated clothing, and wash the area twice with soap and water.**
10. **When you call the doctor or Poison Control Centre, f) have ready the trade name and P.C.P. Act Registration Number of the pesticide, and details of the poisoning.**
11. **To protect yourself when performing mouth-to-mouth resuscitation after a pesticide poisoning, j) use the plastic face mask in your first aid kit.**
12. **After you have administered immediate first aid, i) transport the victim to the nearest hospital.**

## **Looking Ahead**

**In Lesson 5 you have learned to recognize symptoms of pesticide poisoning. You have prepared your first aid kit, and you know what to do in a pesticide poisoning emergency.**

**Lesson 6 will tell you what protective clothing and equipment to wear when working with pesticides.**