



VENDOR/DISPENSER CORE

BASIC KNOWLEDGE
REQUIREMENTS FOR
PESTICIDE EDUCATION
IN CANADA

TRONC COMMUN – VENTE DES PESTICIDES

CONNAISSANCES
FONDAMENTALES REQUISES
POUR LA FORMATION
SUR LES PESTICIDES
AU CANADA

CAPCO



Health
Canada

Santé
Canada

VENDOR/DISPENSER CORE

BASIC KNOWLEDGE REQUIREMENTS

FOR

PESTICIDE EDUCATION IN CANADA

AUSSI DISPONIBLE EN FRANÇAIS

**Prepared by the National Task Force on Pesticide Education,
Training and Certification**

**If you would like additional information
on the Standard for Pesticide Education,
Training and Certification or to be on our
mailing list, please write to:**

**Health Canada
Standard for Pesticide Education,
Training and Certification
Publications
Ottawa, Ontario
K1A 0K9**

**This publication may be reproduced without permission provided
that the source is fully acknowledged and no changes are made.**

**Catalogue Number: H50-4/13-1995E
ISBN: 0-662-22818-9**

CONTRIBUTORS TO THE VENDOR/DISPENSER CORE

First drafts of the vendor/dispenser documents were prepared by L. Litschko, Ridgetown College of Agricultural Technology under contract for the Crop Protection Institute. Review and additional editing of subsequent drafts by L. Litschko is gratefully acknowledged.

Project co-ordination and completion was overseen by L. Litschko, Ridgetown College of Agricultural Technology and L. Skillings, Pest Management Regulatory Agency, Health Canada.

Review and editing of drafts of the complete texts, or parts of the text, by the following people is gratefully acknowledged:

Members of the National Task Force on Pesticide Education, Training and Certification

R. Bell, Pest Management Regulatory Agency, Health Canada

K. Browne, New Brunswick Department of Environment

M. Gilbrook, S.C. Johnson Wax, Brantford, Ontario

D. Goudy, ISK-Biotech, London, Ontario

K. Jamieson, Scientific Editor, Forest Pest Management Institute, Sault Ste. Marie, Ontario

S. Kelner, Ridgetown College of Agricultural Technology

H. Kenney, The Solaris Group, Mississauga, Ontario

K. Lockhart, Uniroyal Chemicals, Elmira, Ontario

I. Schmidt, United Agri Products, Dorchester, Ontario

R. Turner, Uniroyal Chemical Ltd., Elmira, Ontario

D. Wilkinson, Interprovincial Co-operative, Winnipeg, Manitoba

The dedication and commitment of Lois Lemieux, Health Canada for word processing is gratefully acknowledged.

BASIC KNOWLEDGE REQUIREMENTS FOR PESTICIDE EDUCATION IN CANADA VENDOR/DISPENSER CORE

In 1987, the National Task Force on Pesticide Education, Training and Certification was formed to establish a standard for the education, training and certification of pesticide users and handlers. The Task force reports to the CAPCO Standing Committee on Education and Training. Representation on the Task Force includes ten provinces, the territories, and the federal departments of Health Canada, Agriculture and Agri-Food Canada, Natural Resources Canada, National Defence, and three members from the United States Cooperative Extension Service.

The intent of this document is to establish a national standard for the education, training, and certification of pesticide vendors/dispensers, (individuals who sell pesticides). The standard consists of the Vendor/Dispenser Core, and the Vendor/Dispenser Module for Commercial and Restricted Pesticides. The Vendor/Dispenser Core has been developed as the basic knowledge requirements for pesticide education in Canada for pesticide vendor/dispensers selling pesticides. The Vendor/Dispenser Module for Commercial and Restricted Pesticides contains the additional knowledge requirements for vendor/dispensers selling pesticides classified federally as Commercial or Restricted. The vendors/dispensers selling pesticides that are classified federally as Domestic will only be required to know the information contained in the Vendor/Dispenser Core.

The documents are organized into ten concepts (subjects) and each concept is written in a three column format: Course Outline, Instructional Objectives, and Learning Outcomes. The Table of Contents in the module shows which concepts are expanded from the Vendor/Dispenser Core.

The knowledge requirements in the Vendor/Dispenser Core and Module are topics that should be covered by trainers or in a training manual for pesticide vendor/dispenser certification. It will also form the basis upon which the vendor/dispenser manuals are to be developed.

CONTENTS

	<u>PAGE</u>
1. GENERAL INFORMATION	1
Pesticide Terminology	1
Naming Pesticides	3
Grouping Pesticides	3
Chemical Family	4
Formulations	4
2. REGULATIONS	7
Federal Legislation	7
Provincial Legislation	10
Municipal Legislation	10
3. LABELLING	11
Legal Authority	11
Components	11
Interpretation of Pesticide Labels	12
Material Safety Data Sheets	14
4. HUMAN HEALTH	16
Toxicology	16
Exposure	17
Risk	19
Poisoning	20
5. PESTICIDE SAFETY	22
Attitude, General Precautions, Employee Training	22
Selecting and Purchasing Advice to Customers	25
Transportation	26
Storage	27
Protective Clothing and Equipment (PC & E)	28
Cleanup & Maintenance of PC & E	35
Disposal	37
Reentry and Days to Harvest	38
6. ENVIRONMENT	39

	<u>PAGE</u>
7. PEST MANAGEMENT	44
IPM	41
8. APPLICATION TECHNOLOGY	42
9. EMERGENCY RESPONSE	44
Spills	44
Fires	47
Theft	49
First Aid	49
10. PROFESSIONALISM	55
Selling	54
Knowledge	55
Attitude	56
Work Habits/Activities	56
Communication	56

Concept: GENERAL INFORMATION

General Objective: To understand general information on pesticides (terms, naming pesticides, categorizing pesticides and formulations).

COURSE OUTLINE

INSTRUCTIONAL OBJECTIVES

LEARNING OUTCOMES

Pesticides need to be handled and used safely and effectively so that pests can be managed without harming the vendor, purchaser, applicator, consumers (food), bystanders, or the environment.

Appreciate the need for safe and effective pesticide use.

Identify the need for safe and effective use of pesticides.

Pesticide vendors need to be able to:

- interpret information on a pesticide label for proper handling at the vendor site and to advise customers;
- legally and safely sell, handle and store pesticides.

Know the positive effects of correct pesticide use.

Describe the positive effects of correct pesticide use.

Correct pesticide use can:

- aid in the production of economical food;
- help prevent the spread of pests;
- sanitize areas;
- protect parkland and recreational areas;
- control pests that transmit diseases to people or animals;
- protect forests and improve safety of transportation routes, etc.

Know the adverse effects of pesticide misuse.

Describe potential adverse effects of pesticide misuse.

Pesticide misuse can:

- harm people;
- contaminate water or soil;
- kill fish, birds, bees or other animals;
- contaminate food/feed;
- destroy plants;
- harm the applicator.

Pesticides need to be handled safely and responsibly by the vendor.

Appreciate the need for safe and responsible pesticide handling.

Identify the need for safe and responsible handling of pesticides.

Proper pesticide handling:

- protects employees from the hazards associated with pesticides;
- protects the environment from contamination;
- protects the public from exposure to pesticides.

Know the benefits of proper pesticide handling.

Describe the benefits of proper pesticide handling.

Concept: GENERAL INFORMATION

General Objective: To understand general information on pesticides (terms, naming pesticides, categorizing pesticides and formulations).

COURSE OUTLINE

INSTRUCTIONAL OBJECTIVES

LEARNING OUTCOMES

There are many reliable sources of information on pesticides and their safe and effective handling and use. These include:

- pesticide labels;
- Material Safety Data Sheets (MSDS);
- federal and provincial publications;
- pesticide control officials, extension personnel;
- pesticide suppliers and manufacturers;
- trade associations.

The label is an essential source of information for the vendor and the user. The information on the labels arises from extensive field and laboratory data, which was assessed and approved during the federal registration process.

Pesticide Terminology

A pest is a harmful, noxious or troublesome organism. Pests include weeds, insects, fungi, etc.

A pesticide is anything that is intended to prevent, destroy, repel, or manage a pest. Pesticides also include plant growth regulators, plant defoliant and plant desiccants.

A formulation is a mixture of active ingredient(s) with inert ingredients (e.g., emulsifiers), which make the product useable.

An active ingredient is the part of a pesticide formulation that produces the desired effects.

Know reliable information sources on pesticides and their safe and effective use.

Know that the label is an essential source of information for the vendor and the user.

Know the term, pest, and the types of pests.

Know the term, pesticide.

Know the term, formulation.

Know the term, active ingredient.

Identify reliable sources of information on pesticides and their safe and effective use.

Identify the label as an essential source of information for the vendor and the user.

Define pest. List examples of different types of pests.

Define pesticide.

Define formulation.

Define active ingredient.

Concept: GENERAL INFORMATION

General Objective: To understand general information on pesticides (terms, naming pesticides, categorizing pesticides and formulations).

COURSE OUTLINE

INSTRUCTIONAL OBJECTIVES

LEARNING OUTCOMES

Formulants are liquid or solid materials that are added to the active ingredient to make it suitable for storage, handling, or application.

Know the term, formulant.

Define formulant.

Naming Pesticides

Pesticides are named by Product Names, Common Names, and Chemical Names.

Know how to distinguish and identify pesticides by trade name, common name and chemical name.

Describe the trade name, common name and chemical name of a pesticide product.

The product name is the name the manufacturer gives the pesticide product. This name is prominently displayed on the pesticide label.

The common name refers to the name of the active ingredient. Common names appear on pesticide labels next to the word guarantee.

The chemical name refers to the name of the chemical structure of the active ingredient. The chemical name does not usually appear on pesticide labels. It can be found on the Material Safety Data Sheet (MSDS).

Grouping Pesticides

Pesticides can be grouped by the target, how they work, and by chemical family.

Know that pesticides can be grouped by the target, how they work, and by chemical family.

List the ways pesticides can be grouped.

Target

Concept: GENERAL INFORMATION

General Objective: To understand general information on pesticides (terms, naming pesticides, categorizing pesticides and formulations).

COURSE OUTLINE

Pesticide Type	Target
insecticides	insects
herbicide	weeds
fungicide	fungi
acaricide	mites, ticks
algicide	algae
avicide	birds
bactericide	bacteria

INSTRUCTIONAL OBJECTIVES

Know the pesticide types and the target pests controlled by each.

LEARNING OUTCOMES

List the pesticide types and identify the target pests for each.

How Pesticides Work

Contact pesticides control pests through direct contact.

Understand the grouping system based on how pesticides work.

Describe how contact pesticides, systemic pesticides, stomach poisons and repellents work.

Systemic pesticides are absorbed by plants or animals and move within the organism to untreated tissues.

Pesticides that work as stomach poisons must be eaten by the pest.

Repellent pesticides work by keeping the pests away from the area.

Chemical Family

Concept: GENERAL INFORMATION

General Objective: To understand general information on pesticides (terms, naming pesticides, categorizing pesticides and formulations).

COURSE OUTLINE

A chemical family is a group of chemicals that have similar chemical structures and properties. They demonstrate similarities in such areas as poisoning symptoms and persistence in the environment. These groups have similar first aid, clean-up and safety guidelines. (Most of the hundreds of different pesticides can be categorized into one of ten chemical families.)

Knowing chemical families helps vendors understand how pesticides work and how to handle them safely.

Formulations

Pesticides are available in different formulations.

Formulations can be in liquid or solid forms, or can be gases.

Liquid formulations include: emulsifiable concentrates, flowables, microencapsulated suspensions, solutions, and aerosols and ready to use products.

Emulsifiable concentrates are liquids that contain the active ingredient, solvents and emulsifiers. They form milky spray mixtures when mixed with water.

Flowables are liquids that consist of solid particles of active ingredient suspended in a liquid. They need to be diluted.

Microencapsulated suspensions are liquids. Small capsules of active ingredient are suspended in the liquid. They slowly release the active ingredient.

Solutions are clear liquids composed of active ingredient dissolved in solvents.

Aerosols are solutions packaged in a pressurized container.

INSTRUCTIONAL OBJECTIVES

Understand what chemical families are and how knowledge of families can be helpful.

Know the types of pesticide formulations available.

LEARNING OUTCOMES

Define and describe chemical family.

Identify the advantages of knowing chemical families.

Describe the different types of formulations.

Concept: GENERAL INFORMATION

General Objective: To understand general information on pesticides (terms, naming pesticides, categorizing pesticides and formulations).

COURSE OUTLINE

INSTRUCTIONAL OBJECTIVES

LEARNING OUTCOMES

Ready To Use products can be liquids which require no pre-mixing.

Solid formulations include: dusts, granulars, pellets, soluble granules, soluble powders, baits, tablets, and wettable powders.

Dusts are dry materials made of active ingredient and inert materials. They are ready to use.

Baits are active ingredients mixed with attractants or edible substances. There are both liquid and solid baits.

Granulars are a dry mixture of large, free-flowing particles with a low concentration of active ingredient.

Pellets are mixtures of active ingredients and inert materials. They are formed into spheres or cylinders.

Soluble granules are solid materials like granulars, but can be dissolved in a liquid.

Soluble powders are dry materials similar to dusts, but are soluble in water.

Tablets are either active ingredients alone, or active ingredients and inert ingredients. They are formed into small blocks or spheres.

Wettable powders are dry materials made of active ingredient, inert dust and a wetting agent. They are mixed with water and form a suspension.

Concept: REGULATIONS

General Objective: To understand the need for pesticide regulations; to understand pesticide regulations in Canada.

COURSE OUTLINE

INSTRUCTIONAL OBJECTIVES

LEARNING OUTCOMES

Pesticide laws are designed to protect the vendor, the purchaser, the applicator, the consumer, and the environment. They are based on current scientific knowledge.

Appreciate the need for regulating pesticides.

Identify why there are pesticide laws.

Pesticides are regulated by federal, provincial, and sometimes municipal governments.

Be aware of the levels of government which regulate pesticides.

List the levels of government that may regulate pesticides.

Federal Legislation

Pest Control Products (PCP) Act and Regulations:

The major federal legislation regulating pesticides in Canada is the PCP Act and Regulations. The regulations focus attention on human health, environmental protection, and pesticide performance.

Know that the major federal legislation regulating pesticides in Canada is the PCP Act and Regulations.

Identify the major federal legislation regulating pesticides in Canada.

The main purposes of the PCP Act/Regs are to ensure that:

Understand the purpose, complexity and administration of the PCP Act and Regs.

Identify the main purposes of the PCP Act and Regs.

1. No person shall manufacture, store, display, distribute or use any pest control product under unsafe conditions.
2. No person shall package, label or advertise any pest control product in a manner that is false, misleading or deceptive, or is likely to create a false impression about the pest control product.
3. No person shall sell in or import into Canada a pest control product unless it is registered.

All pesticides must be registered by Health Canada's Pest Management Regulatory Agency before they can be used (including advertised, imported, sold) in Canada. Once a pesticide is registered it is given a PCP Act registration number.

Know that all pesticides must be registered by Health Canada's Pest Management Regulatory Agency before they can be used. Know that once a pesticide is registered it is given a PCP Act registration number.

Identify what is required before pesticides can be used in Canada.

The federal classification system classifies pesticides as Domestic, Commercial, Restricted, or Manufacturing, depending on the toxicity and intended use.

Know the four pesticide classifications, and understand the basis of the federal classification system.

List the four federal pesticide classifications. Identify the basis of the federal classification system.

Concept: REGULATIONS

General Objective: To understand the need for pesticide regulations; to understand pesticide regulations in Canada.

COURSE OUTLINE

INSTRUCTIONAL OBJECTIVES

LEARNING OUTCOMES

Domestic pesticides are for use in or around the home. They are designed to have low toxicity and to pose a minimum risk to people and the environment when used properly. Accidental over-exposure is not likely to cause severe poisoning. They can be safely handled without protective clothes (except in the case of spills) or special training when label directions are followed. Domestic pesticides are available in small packages.

Know the major characteristics of domestic pesticides.

Describe the major characteristics of domestic pesticides.

Commercial pesticides are for use in agriculture, forestry, industry and other commercial operations and are not for use in and around the home. They may be categorized as Agricultural or Industrial. Handlers need more knowledge on safe handling procedures and need personal protective equipment. Pesticides that are more toxic and may have environmental concerns may be in this category.

Know the major characteristics of commercial pesticides.

Describe the major characteristics of commercial pesticides.

Restricted pesticides are pesticides with certain limitations on the label. Restrictions on the label are due to toxicity or environmental concerns. The limitations can involve display, storage, distribution and sale, usage or qualification of users.

Know the major characteristics of restricted pesticides.

Describe the major characteristics of restricted pesticides.

Manufacturing pesticides are used in manufacturing, formulating or repackaging and are not usually available for use by retail vendors or applicators.

Know the major characteristics of manufacturing pesticides.

Describe the major characteristics of manufacturing pesticides.

The Fertilizer Act

Concept: REGULATIONS

General Objective: To understand the need for pesticide regulations; to understand pesticide regulations in Canada.

COURSE OUTLINE

The Fertilizer Act is the federal law that regulates fertilizers used in Canada, including fertilizers containing pesticides. Before a fertilizer-pesticide can be sold or used in Canada, it must be registered under the Fertilizer Act.

Other Federal Acts

Other federal legislation regulates different aspects of pesticide use including pesticide residues in foods, damage to fish or fish habitat, damage to migratory birds and transport of dangerous goods. This legislation includes:

Food and Drugs Act and Regulations protect the health of consumers by prohibiting the sale of food that contains any harmful or poisonous substance. Where food residues are concerned, compound safety must be proven to Health Canada prior to registration under the PCP Act. Maximum residue limits are established for pesticides in food products. Excessive pesticide residues can be prevented by following label rates, preharvest interval, and other label recommendations.

Migratory Birds Convention Act protects water fowl and other migratory birds.

Fisheries Act protects fish and fish habitat (spawning grounds, nursery, rearing, food supply and migration areas).

INSTRUCTIONAL OBJECTIVES

Know that fertilizers, including fertilizer-pesticides, must be registered under the Fertilizer Act before being sold or used in Canada.

Develop an awareness and general understanding of the major federal laws affecting pesticides and their use.

Be aware of the Food and Drug Act and Regulations and how they can affect pesticides and their use.

Be aware of the Migratory Birds Convention Act and how it can affect the use of pesticides.

Be aware of the Fisheries Act and how it affects the use of pesticides.

LEARNING OUTCOMES

Identify what is required before a fertilizer or fertilizer-pesticide is sold or used in Canada.

List the other federal laws which affect pesticides and their use.

Describe the implications, to the consumer and applicator, of having excessive pesticide residues in crops. Describe how to prevent excessive pesticide residues in crops.

Describe how the Migratory Birds Convention Act protects migratory birds.

Describe how the Fisheries Act protects fish and fish habitat.

Concept: REGULATIONS

General Objective: To understand the need for pesticide regulations; to understand pesticide regulations in Canada.

COURSE OUTLINE

The Workplace Hazardous Material Information System, commonly known as WHMIS, is a Canada-wide system to provide employers and workers with information about the hazardous materials they work with on the job. Presently, pesticides are exempted from the WHMIS rules on labelling and Material Safety Data Sheets (MSDS) because they are already covered under the Pest Control Products Act. However, the worker's "Right to Know" component applies. It is the responsibility of the supervisor to tell the employee about any possible danger to health and safety. It is the employee's right to obtain information about the substances he/she works with, including MSDSs where available.

Labour Codes (workers), National Fire Code (pesticide storage), National Building Code (pesticide storage), the Canadian Environmental Protection Act (environment protection), and other legislation also have impacts on pesticide management.

Provincial Legislation

Provinces have legislation that may further restrict pesticide use for provincial conditions. Provincial legislation regulates the sale, purchase, storage, transportation, use, and disposal of registered products.

Regulations vary from province to province.

Municipal Legislation

Each municipality may have by-laws that restrict pesticide use with respect to public health.

INSTRUCTIONAL OBJECTIVES

Be aware of how WHMIS affects employers and workers and their handling of pesticides.

Be aware of Labour Codes (workers), Fire Codes (pesticide storage), Building Codes (pesticide storage), the Canadian Environmental Protection Act (environment protection), and other legislation that also have an impact on pesticide management.

Develop an awareness and general understanding of the major provincial laws affecting pesticides and their use.

Develop an awareness that municipal legislation may exist in their community.

LEARNING OUTCOMES

Describe how WHMIS affects employers and workers and their handling of pesticides.

Identify the codes and other legislation which have an impact on pesticide management.

Identify the major provincial laws which regulate pesticide use in your province. Describe how these laws affect pesticides and their use.

Identify municipal legislation that exists in your community.

Concept: LABELLING

General Objective: To identify, define and be able to use information on pesticide labels and Material Safety Data Sheets.

COURSE OUTLINE

INSTRUCTIONAL OBJECTIVES

LEARNING OUTCOMES

Legal Authority

Pesticide labels are legal documents. Pesticides must be used according to the instructions on the label. If label directions are not followed, laws are being broken. When selling pesticides, advise customers to read the label before using the product.

The label must be kept on the container and in good condition. If a label becomes illegible, contact your supplier/manufacturer for a replacement label and place the new label on the package. Do not sell a pesticide with a damaged label.

Components

A pesticide label provides basic information on use, limitations, disposal, first aid, contents, precautions, formulation, and toxicology. A pesticide label has two panels.

The components of the principal label panel are:

- product name;
- class designation;
- precautionary symbols;
- "read the label before using" statement;
- guarantee statement;
- PCP Act registration number;
- net contents;
- name and address of registrant/agent.

The components of the secondary label panel are:

- directions for use;
- cautionary statements;
- first aid instructions;
- toxicological information;
- notice to user.

Know the legal status of pesticide labels. Be able to identify legal uses of a pesticide.

Understand that the label must be kept on the container in good condition. Know what to do if a label becomes illegible.

Know the basic information on pesticide labels.

Know the components of the principal label panel.

Know the components of the secondary label panel.

Describe the legal status of pesticide labels. Identify legal uses of a labelled product.

Describe the required condition of a pesticide label. Describe what to do if a label becomes illegible.

Describe the basic information provided on a pesticide label.

List and identify the components of the principal label panel.

List and identify the components of the secondary label panel.

Concept: LABELLING

General Objective: To identify, define and be able to use information on pesticide labels and Material Safety Data Sheets.

COURSE OUTLINE

For small-size Domestic class pesticides, the following components may appear on the lower half of the secondary display panel: name and address of the registrant/agent, net contents, PCP Act registration number, and guarantee.

Interpretation of Pesticide Labels

Understanding and interpreting pesticide label information allows a vendor to advise the applicator on how to safely and effectively use a product.

Precautionary symbols can be one of three shapes; the octagon, which indicates extreme hazard and has the word danger associated with it, the diamond, which indicates moderate hazard and has the word warning associated with it, and the inverted triangle, which indicates slight hazard and has the word caution associated with it.

Precautionary symbols may have one of four pictures; the shape of the skull and cross bones, which indicates poison, the flame, which indicates flammability, the hand, which indicates corrosivity and the exploding grenade which indicates explosivity.

The combination of shape, word and picture indicates the type and severity of the hazard associated with the pesticide.

Precautionary symbols indicate:

- Danger Poison;
- Warning Poison;
- Caution Poison;
- Danger Extremely Flammable;
- Warning Flammable;
- Caution Flammable;
- Caution Explosive;

INSTRUCTIONAL OBJECTIVES

Know that Domestic class pesticides may be labelled differently.

Know why it is important to be able to understand and interpret pesticide label information.

Be able to interpret precautionary symbols on pesticide labels.

LEARNING OUTCOMES

List and identify the components that may appear on the lower half of the secondary display panel.

Identify why it is important to be able to understand and interpret pesticide label information.

Describe the precautionary symbols on pesticide labels.

Identify the type and degree of hazard associated with each precautionary symbol.

Identify the words associated with each precautionary symbol.

Concept: LABELLING

General Objective: To identify, define and be able to use information on pesticide labels and Material Safety Data Sheets.

COURSE OUTLINE

INSTRUCTIONAL OBJECTIVES

LEARNING OUTCOMES

- **Danger Corrosive;**
- **Warning Corrosive;**
- **Caution Corrosive;**
- **Caution Irritant.**

Eye hazard warnings require the keywords;

- **Danger Corrosive**
- **Danger Eye Irritant**
- **Warning Eye Irritant**

Precautionary symbols may not be needed on every pesticide label.

Know that precautionary symbols may not be needed on every pesticide label.

Identify when precautionary symbols are not needed.

The guarantee statement states the active ingredients in the product and the concentration of each ingredient.

Interpret the guarantee statement on pesticide labels.

Describe and identify the guarantee statement on a label.

The product name may describe the type of formulation, the use, the active ingredient or the concentration of the a.i.

Be able to locate the product name on pesticide labels.

Identify the product name on a label.

The registration number is usually written as "Registration No. 00000 Pest Control Products Act" (or Reg. No. on pesticides federally classified as Domestic). The higher the number, the more recently the product was registered.

Be able to locate the registration number.

Identify the registration number on a label.

The net contents are listed as weight or as volume. This information will help the applicator to decide how many packages are needed.

Be able to locate the net contents on pesticide labels.

Identify the net contents on a label.

The name and address of the registrant will be listed.

Be able to contact the registrant of the product.

Identify the name and address of the registrant on a label.

The directions for use provides information on the rates, use areas (e.g., crops, pests), timing, application and limitations.

Be able to interpret directions for use on pesticide labels.

Identify and describe the directions for use on a label.

Concept: LABELLING

General Objective: To identify, define and be able to use information on pesticide labels and Material Safety Data Sheets.

COURSE OUTLINE

INSTRUCTIONAL OBJECTIVES

LEARNING OUTCOMES

Cautionary statements provide information on hazards relating to the handling of the product, how to lessen the hazards, and decontamination and disposal procedures.

Be able to interpret the cautionary statements on pesticide labels.

Identify and describe the cautionary statements on a label.

First aid instructions outline practical measures to follow in the event of a poisoning or accident.

Be able to interpret the first aid instructions on pesticide labels.

Identify and describe the specific first aid procedures for the product on a label.

The toxicological information provides information for medical personnel for the treatment of persons who have been poisoned, intoxicated or injured by the pesticide.

Be able to provide the toxicological information on pesticide labels to medical personnel.

Identify and describe the toxicological information on a label.

The notice to user says the product can only be used according to the directions on the label.

Understand the notice to user.

Identify and describe what the notice to user says.

Understanding and considering all areas of label information helps the vendor to advise the customer regarding pesticides.

Know the importance of understanding all areas of label information.

Identify the importance of understanding all areas of label information.

Material Safety Data Sheets

A Material Safety Data Sheet (MSDS) provides additional information about a pesticide product. The MSDS gives information about health hazards, personal safety and environmental protection. Until pesticides are covered by WHMIS legislation, MSDSs may not be available for all pesticide products.

Know the Material Safety Data Sheet provides additional information on a pesticide product.

List the additional information provided on a Material Safety Data Sheet.

Material Safety Data Sheets are organized into various sections. The order in which the sections appear varies from company to company.

Interpret the various sections of a MSDS.

List and describe the sections of a MSDS.

The Product Identification section gives the trade name, chemical name, and primary use of the product. It also gives the name, address and emergency telephone numbers of the manufacturer and supplier.

Concept: LABELLING

General Objective: To identify, define and be able to use information on pesticide labels and Material Safety Data Sheets.

COURSE OUTLINE

INSTRUCTIONAL OBJECTIVES

LEARNING OUTCOMES

The Hazardous Ingredients section explains what the active ingredient is, and may tell you what other ingredients are included. It gives the chemical registration numbers and transportation classification for the product.

The Physical Data section includes appearance, odour, specific gravity, boiling point, etc.

The Occupational Procedures/Preventative Measures section explains what personal protection must be used -- such as eye protection, skin protection and respiratory protection. It also gives safe handling and storage procedures.

The First Aid and Emergency Procedures section explains what to do if someone is exposed to the product. Follow these instructions in an emergency, but always call for medical help.

The Fire and Explosion Hazard section gives the flash point and ignition point of the pesticide. It also gives special procedures to use when fighting a fire.

The Toxicity/Health Effects (Toxicological Data) section gives results of the company's research on the product.

The Reactivity Data section gives any special chemical properties of the product, i.e. temperature for storage.

The Preparation Date & Group section tells who prepared the MSDS and when it was prepared. MSDSs are updated at least every three years.

A company may choose to include additional sections.

MSDSs may be obtained from the supplier.

Know where to obtain a MSDS.

Identify where to obtain a MSDS.

Concept: LABELLING

General Objective: To identify, define and be able to use information on pesticide labels and Material Safety Data Sheets.

COURSE OUTLINE

Understanding and considering the information on a MSDS helps vendors make effective and environmentally sound decisions regarding emergency response and safe handling practices.

INSTRUCTIONAL OBJECTIVES

Know the importance of the information on a MSDS when making decisions.

LEARNING OUTCOMES

Identify the importance of understanding the information on a MSDS.

Concept: HUMAN HEALTH

General Objective: To understand acute and chronic toxicity; routes of exposure; factors affecting exposure; reducing exposure; and risk. To know poisoning symptoms and be able to recognize poisoning.

COURSE OUTLINE

INSTRUCTIONAL OBJECTIVES

LEARNING OUTCOMES

Toxicology

Pesticides are designed to control some living thing, plant or animal, and may be dangerous or hazardous to people if not handled carefully.

Know that pesticides can be harmful if not handled carefully.

Describe why pesticides must be handled carefully.

Toxicity is a measure of harm a particular pesticide can cause to an organism (poisonous).

Understand basic toxicity terms.

Describe toxicity.

Acute toxicity is the potential to cause harm within a few hours to a few days after an exposure. Acute toxic effects result from a single dose or single exposure. Symptoms resulting from acute or short term poisoning can develop within a few minutes or couple of days.

Understand acute and chronic toxicity.

Describe acute toxicity.

Chronic toxicity is the potential to cause harm slowly, or a long time after exposure - this harm is long-term. Chronic toxic effects result from repeated exposures or long-term effects from a single exposure. Symptoms resulting from chronic or long-term poisoning may not develop for many days, months or even years.

Describe chronic toxicity.

Toxic effects can vary with gender, health, age, weight, route of exposure, exposure to other products, etc.

Know what factors can cause toxic effects of a pesticide to vary.

List factors that can cause toxic effects of a pesticide to vary.

Chronic effects of pesticide poisoning may include reduced body weight, skin irritation, anaemia, kidney disorders, blood disorders, central nervous system, pulmonary and cardiovascular disorders.

Know potential chronic effects of pesticides.

List examples of chronic effects of pesticide poisoning.

Chronic effects may occur in three situations:
- as a complication of acute poisoning;
- as a slowly progressive condition;
- as the development of undesirable effects years after exposure.

Understand how chronic effects of pesticides can occur.

Identify situations when chronic effects can occur.

Concept: HUMAN HEALTH

General Objective: To understand acute and chronic toxicity; routes of exposure; factors affecting exposure; reducing exposure; and risk. To know poisoning symptoms and be able to recognize poisoning.

COURSE OUTLINE

INSTRUCTIONAL OBJECTIVES

LEARNING OUTCOMES

Acute effects of pesticides are listed in the section on poisoning symptoms.

Exposure

Exposure may occur through inhalation, ingestion, dermal absorption and ocular absorption.

Domestic pesticides should not require personal protective equipment to protect against respiratory or ocular exposure when they are handled according to label directions. The wearing of additional personal protective equipment by users who exhibit sensitivity or express health concerns should not be discouraged. In the event of a spill or accident, refer to the MSDS for the recommended personal protective equipment.

Inhalation is the absorption of airborne particles of a substance. Spray droplets, vapours or gases can be inhaled. Inhalation exposure increases in enclosed spaces. Inhalation exposure can be reduced by the use of proper respiratory protective equipment and following safety practices.

Ingestion, or oral exposure, refers to the intake of a substance by mouth. It may result from accidental ingestion, suicide attempts, or contamination of food. The most common occurrence of oral intake is when pesticides are stored in food or beverage containers. The potential for oral exposure can be minimized by following good hygiene practices and storing pesticides properly.

Know the routes of pesticide exposure.

Understand that domestic pesticides do not normally require respiratory or ocular personal protective equipment when following label directions, but that certain conditions do require their use.

Understand inhalation exposure and know how it can be reduced.

Understand oral exposure and know how it can be reduced.

List the routes of pesticide exposure.

Identify when respiratory or ocular personal protective equipment may be required for domestic pesticides.

Describe inhalation exposure. Describe how to minimize inhalation exposure.

Describe oral exposure. Describe how to minimize oral exposure.

Concept: HUMAN HEALTH

General Objective: To understand acute and chronic toxicity; routes of exposure; factors affecting exposure; reducing exposure; and risk. To know poisoning symptoms and be able to recognize poisoning.

COURSE OUTLINE

INSTRUCTIONAL OBJECTIVES

LEARNING OUTCOMES

Dermal exposure is the intake of a substance through skin. It can result from direct contact with the spray concentrate, spray solution, or spray mist, or from wearing contaminated clothing. Absorption is affected by skin conditions, location of the exposure and the pesticide. Skin on different areas of the body absorbs pesticides at different rates. The scrotal area, armpits, small of the back, and the head tend to be more absorptive. Any area where moisture/perspiration occurs could be a problem. Dermal exposure can be reduced by following safety guidelines and wearing proper personal protective equipment.

Generally, dermal exposure, especially to the hands and forearms, accounts for the most pesticide exposure to vendors.

Ocular exposure is the intake of a substance through the eyes. Eyes are very sensitive and can absorb large amounts of pesticides. Eye exposure can result from splashes or spills, drift or rubbing the eyes with contaminated hands. Ocular exposure can be reduced by wearing eye protection and following safety procedures.

The type of formulation affects amount of exposure and penetration. Certain formulations can penetrate skin easier than others; some are more volatile and can pose greater respiratory danger.

Exposure to pesticides can occur at any stage of pesticide handling.

Understand dermal exposure. Know how dermal exposure can be reduced.

Know that dermal exposure is the most common route of exposure among vendors. Know the body areas that are generally exposed to the most pesticide.

Understand ocular exposure. Know how ocular exposure can be reduced.

Know the activities that generally provide the greatest opportunity for vendor exposure.

Realize that the type of formulation can affect exposure and penetration.

Understand when pesticide exposure can occur.

Describe dermal exposure. Describe how to minimize dermal exposure.

Identify which route of exposure is most common among pesticide vendors. Describe the parts of a body that generally receive the most exposure to pesticides.

Describe ocular exposure. Describe how to minimize ocular exposure.

List the activities that provide the greatest opportunity for vendor exposure.

Describe how the type of formulation can affect exposure or penetration.

Describe activities that can involve pesticide exposure.

Concept: HUMAN HEALTH

General Objective: To understand acute and chronic toxicity; routes of exposure; factors affecting exposure; reducing exposure; and risk. To know poisoning symptoms and be able to recognize poisoning.

COURSE OUTLINE

A vendor may be exposed to pesticides from:

- spills;
- leaking containers;
- unloading trailers;
- vapours;
- handling contaminated containers, clothing and equipment;
- accidental ingestion.

The amount of exposure vendors are subjected to depends on:

1. The vendor's attitude. A vendor must be safety conscious. A vendor who practises good personal hygiene routines, and good work procedures will reduce the potential for exposure.
2. The protective equipment used. Suitable, clean and properly maintained protective equipment reduces exposure when used properly.
3. The organization of the storage and display area.
4. The safety practices followed. Following proper safety practices will reduce the potential for exposure. For example, cleaning up spills quickly and promptly or keeping an accurate list of inventory.

Risk

Risk is the chance that someone or something will be harmed by a pesticide.

Risk is primarily affected by the toxicity of the pesticide and the exposure to the pesticide.

RISK = TOXICITY X EXPOSURE

INSTRUCTIONAL OBJECTIVES

Understand how pesticide exposure can occur.

Understand how the vendor's attitude, the protective equipment used, and the safety practices followed can affect the amount of exposure a vendor is subjected to.

Understand what risk is and how it is affected by pesticide toxicity and exposure.

LEARNING OUTCOMES

Describe how pesticide exposure can occur.

Describe how the vendor's attitude, the protective equipment used, and the safety practices followed can affect the amount of exposure a vendor is subjected to.

Describe risk. Describe how pesticide toxicity and exposure affect risk.

Concept: HUMAN HEALTH

General Objective: To understand acute and chronic toxicity; routes of exposure; factors affecting exposure; reducing exposure; and risk. To know poisoning symptoms and be able to recognize poisoning.

COURSE OUTLINE

INSTRUCTIONAL OBJECTIVES

LEARNING OUTCOMES

The greater the toxicity, the greater the risk. The type of active ingredient and the concentration of active ingredient affect the toxicity of the product. Some active ingredients are more toxic than others. Higher concentrations of an active ingredient increase toxicity.

The longer the exposure, the greater the risk.

High exposure to a product with a low toxicity creates risk.

Risk can be minimized by choosing a less toxic pesticide or by reducing exposure, or both. Eliminating or minimizing exposure to a very toxic product minimizes risk.

Understand how to minimize risk.

List ways risk can be minimized.

Poisoning

Poisoning symptoms can include:

- headache;
- dizziness;
- thirst;
- excessive salivation;
- nausea, stomach cramps, vomiting;
- diarrhoea;
- eye irritation, blurring of vision, constriction of pupils;
- skin irritation or burns;
- perspiration;
- anaemia;
- weakness, fatigue or exhaustion;
- feeling of constriction in throat and chest, wheezing, coughing;
- rapid or weak pulse;
- trembling, muscle twitching, seizures;
- mental confusion;
- inability to breathe, blue lips or face;

Know poisoning symptoms.

List and describe poisoning symptoms.

Concept: HUMAN HEALTH

General Objective: To understand acute and chronic toxicity; routes of exposure; factors affecting exposure; reducing exposure; and risk. To know poisoning symptoms and be able to recognize poisoning.

COURSE OUTLINE

INSTRUCTIONAL OBJECTIVES

LEARNING OUTCOMES

- loss of reflexes, slurred speech, staggering gait;
- restlessness, apprehension, excitability;
- unconsciousness;
- allergic response.

Some poisoning symptoms may be vague and can be confused with other common ailments (flu, excess heat, hangover, food poisoning, etc.).

Acute pesticide poisoning symptoms may appear within a few minutes of exposure or not for many (up to 96) hours after exposure.

Early recognition of poisoning symptoms allows you to minimize exposure and begin preventative actions or first aid procedures. All pesticide products do not have the same poisoning symptoms. Therefore, vendors should read the poisoning symptoms on a pesticide label before handling the product.

If anyone at the facility is acting or feeling unusual or exhibiting poisoning symptoms, consult a doctor or Poison Information Centre.

Know that poisoning symptoms are similar to symptoms of other ailments.

Know that pesticide poisoning should not be eliminated as a cause of symptoms for some time after application.

Appreciate the importance of recognizing poisoning symptoms of the product being used. Know that poisoning symptoms might be described on the label and that the label should be read before handling the product.

Realize that a doctor should be consulted if anyone at the outlet is feeling abnormal or exhibiting any poisoning symptoms.

Identify common ailments which can be confused with poisoning symptoms.

Identify the length of time needed for acute poisoning symptoms to appear.

Describe why it is important to review poisoning symptoms prior to using a pesticide. Identify poisoning symptoms on a pesticide label.

Describe what should be done if anyone at the outlet is feeling abnormal or exhibiting any poisoning symptoms.

Concept: PESTICIDE SAFETY - ATTITUDE, GENERAL PRECAUTIONS, EMPLOYEE TRAINING

General Objective: To know why pesticides must be handled in a careful and knowledgeable way during all activities involving pesticides. To know general safety precautions for handling pesticides.

COURSE OUTLINE

INSTRUCTIONAL OBJECTIVES

LEARNING OUTCOMES

Attitude

Pesticides can poison people, pets, livestock, and can harm a wide variety of beneficial organisms as well as the environment if not handled appropriately. Storing, marketing, displaying, and selling pesticides safely protects vendors, customers, applicators, bystanders, consumers, and the environment. Vendors should work responsibly around pesticides and encourage others to do so.

Safety is critical for all activities using pesticides, including selection and purchase, display, storage, transport, mixing and loading, application, cleanup and maintenance, and disposal.

Everyone who may come in contact with pesticides should be informed about safe practices to prevent them from harming themselves, others, or the environment. For example, anyone other than handlers must be kept away from storage areas. The person responsible for laundering contaminated clothing must be aware of proper laundry procedures. Reentry times must be made known and understood by affected people.

Develop a responsible attitude towards pesticide safety.

Know why a person should follow safety procedures when using pesticides.

Identify when safety should be a part of the pesticide vendor's and applicator's activities.

Know who should be notified about pesticide use. Be able to identify situations where people, other than vendors or applicators, should be informed about pesticide safety.

Concept: PESTICIDE SAFETY - ATTITUDE, GENERAL PRECAUTIONS, EMPLOYEE TRAINING

General Objective: To know why pesticides must be handled in a careful and knowledgeable way during all activities involving pesticides. To know general safety precautions for handling pesticides.

COURSE OUTLINE

INSTRUCTIONAL OBJECTIVES

LEARNING OUTCOMES

Anyone handling pesticides must regularly review safety procedures because:

- familiarity with a product or procedure may cause a person to become careless;
- safety procedures or product information may have changed since information was reviewed;
- repetition encourages automatic adoption of safety procedures.

Appreciate the importance of reviewing safety procedures.

Identify why safety procedures should be regularly reviewed.

General Precautions

Concept: PESTICIDE SAFETY - ATTITUDE, GENERAL PRECAUTIONS, EMPLOYEE TRAINING

General Objective: To know why pesticides must be handled in a careful and knowledgeable way during all activities involving pesticides. To know general safety precautions for handling pesticides.

COURSE OUTLINE

INSTRUCTIONAL OBJECTIVES

LEARNING OUTCOMES

Common safety practices that should be used for all types of pesticide handling are:

Know general safety practices that should be used for all types of pesticide handling/use.

List safety practices that are common to all types of pesticide use.

1. Never eat, drink, or smoke when handling (storing, loading, disposing, etc.) pesticides.
2. Do not carry food or smoking items on your body when handling pesticides.
3. Always wash before eating, drinking, smoking or using the toilet.
4. Shower thoroughly, washing body, hair and under fingernails at the end of each day when handling pesticides.
5. Always carefully read and follow label information and directions.
6. Do not wear contact lenses when handling pesticides.
7. Immediately wash any spillage off the affected person and remove heavily contaminated clothing.
8. Wear clean protective clothing.
9. Keep pesticides away from children, pets and unauthorized persons.

Employee Training

Employers, employees, and supervisors must co-operate to reduce injuries and illnesses on the job. The employer has the most responsibility for health and safety in the work place. However, employees and supervisors also have duties and responsibilities. Make sure the business follows all federal, provincial and municipal laws and regulations.

Know who has the responsibility for health and safety in the workplace.

Identify who has the responsibility for health and safety in the workplace.

Concept: PESTICIDE SAFETY - ATTITUDE, GENERAL PRECAUTIONS, EMPLOYEE TRAINING

General Objective: To know why pesticides must be handled in a careful and knowledgeable way during all activities involving pesticides. To know general safety precautions for handling pesticides.

COURSE OUTLINE

INSTRUCTIONAL OBJECTIVES

LEARNING OUTCOMES

As an employer, have the proper protective clothing, and equipment available for employees and train employees on its proper use. Provide employees with information about their pesticides they handle. Have MSDSs when available. Train employees to work safely.

As an employer, know what can be done to help employees work safely.

Describe how employers can help employees work safely.

As an employee, wear any protective clothing or equipment that is required to protect you from exposure to the pesticide. Ask for information about the pesticides. Ask to be shown how to properly handle pesticides and clean up minor spills.

As an employee, know what can be done to work safely.

Describe how employees can work safely.

A health and safety representative or health and safety committee is required by law under most provincial labour authorities. Call the local authorities for up-to-date information and advice.

Know where to find information on health and safety laws.

Identify where to find information on health and safety laws in the work place.

Concept: PESTICIDE SAFETY - SELECTING AND PURCHASING ADVICE TO CUSTOMERS

General Objective: To know how to select a suitable pesticide and determine the quantity to purchase.

COURSE OUTLINE

INSTRUCTIONAL OBJECTIVES

LEARNING OUTCOMES

Selecting and Purchasing Advice to Customers

When helping a customer select or purchase a pesticide make sure that the:

- product is registered for the intended use (pest to be controlled and where it will be used);
- customer knows how to handle and use the pesticide;
- customer knows what protective clothing and equipment to use;
- customer knows the amount of pesticide needed;
- label restrictions are understood.

Consider all of the above factors when helping a customer select a pesticide.

Helping a customer to carefully plan pesticide purchases can:

- reduce the amount of pesticides in the customer's storage area and thereby reduce the risk of human or environmental exposure;
- reduce the need for the customer's storage space by minimizing the amount of pesticide to be stored;
- reduce the need for disposal of unused or unwanted pesticides.

The total amount of product required will be:

Product = pesticide rate x treatment area x no. of treatments/year.

The total number of containers to sell will be:

Container = total amount of product required ÷ size of container.

Know what to consider when helping a customer select a pesticide.

Know why pesticide purchases should be planned.

Know how to calculate the amount of product to sell.

List things to consider when helping a customer select a pesticide.

List and describe reasons why pesticide purchases should be planned.

Given a rate, a number of applications and the size of the treatment areas, calculate the amount of product to sell.

Given the size of pesticide container and the amount of product needed, calculate the number of containers to sell.

Concept: PESTICIDE SAFETY - TRANSPORTATION

General Objective: To know how to transport pesticides safely and legally.

COURSE OUTLINE

INSTRUCTIONAL OBJECTIVES

LEARNING OUTCOMES

Transportation Rules

There are no Transportation of Dangerous Goods (TDG) Act requirements for a purchaser transporting a Domestic pesticide from the retail outlet to a residence.

Know the general transportation rules for a Domestic pesticide.

List the general requirements for the transport of a Domestic pesticide.

Transportation Guidelines

1. Pack containers upright and securely.
2. Prevent contamination. Never transport pesticides with food, feed, fertilizer, clothing or household goods.
3. Transport only pesticide containers that have approved labels.
4. Never leave pesticides unattended in a vehicle, unless they are locked up in a compartment other than the passenger area.
5. Only transport containers that are in good condition. Make sure caps and plugs are tightly closed. Don't move broken bags or cartons or leaky containers. If bags are broken, take the necessary steps to repackage or dispose of the pesticides.
6. Protect paper and cardboard containers from moisture.
7. Never transport pesticides in the passenger compartment of a vehicle or let people ride in the same compartment with the pesticides (e.g., back of truck). Harmful fumes may be released; spills can cause injuries or contaminate the vehicle.
8. Transport pesticide containers in something that can be cleaned safely such as metal or plastic or on a waterproof tarp.

Know the transportation guidelines.

Describe how to transport pesticides safely.

Concept: PESTICIDE SAFETY - STORAGE

General Objective: To know how to store pesticides safely and legally.

COURSE OUTLINE

INSTRUCTIONAL OBJECTIVES

LEARNING OUTCOMES

Proper storage of pesticides protects people, animals and the environment. Proper storage can also extend the shelf life of pesticides and prevent cross-contamination.

Know why proper pesticide storage is important.

Describe why proper pesticide storage is important.

The supplier or manufacturer can be an important source of information regarding proper pesticide storage.

Know that the supplier or manufacturer can be an important source of information regarding proper pesticide storage.

Identify who can be an important source of information regarding proper pesticide storage.

Some provinces have legal requirements for pesticide storage.

Know that there can be legal requirements for pesticide storage.

Identify whether there are legal requirements for pesticide storage.

Concept: PESTICIDE SAFETY - PROTECTIVE CLOTHING AND EQUIPMENT

General Objective: To know how to select, properly wear and maintain suitable protective clothing and equipment for the handling of pesticides.

COURSE OUTLINE

INSTRUCTIONAL OBJECTIVES

LEARNING OUTCOMES

The purpose of protective clothing and equipment is to limit exposure to pesticides.

Know the purpose of protective clothing and equipment.

Identify the purpose of protective clothing and equipment.

To be effective and beneficial, equipment and clothing must be:
- selected for the product being used (see label directions);
- used properly;
- maintained properly.

Know what is needed to make protective equipment and clothing beneficial and effective.

Describe the factors that are important if protective clothing and equipment is to be effective.

Protective equipment and clothing used for handling pesticides should not be used for any other purpose.

Know that protective clothing and equipment for pesticides should not be used for any other purpose.

Identify that protective clothing and equipment for pesticides, should not be used for activities other than pesticide handling.

The protective clothing and equipment needed for handling pesticides depends upon the risk during use or handling. Some factors that can affect the risk include the:
- pesticide;
- type of exposure;
- length of exposure.

Know what affects the type of personal protective clothing/equipment needed for handling a pesticide.

List the factors that affect the personal protective equipment/clothing needed for handling a pesticide.

Pesticide

The toxicity and volatility of the pesticide as well as the ability of the pesticide to be absorbed through the skin affects the protective clothing and equipment needed. Generally, vendors handling more toxic pesticides need more protection.

Know what pesticide characteristics affect the protective clothing/equipment needed.

Describe the pesticide characteristics that affect the type of protective equipment/clothing needed.

Type of Exposure

The type of exposure (oral, dermal, inhalation) that may occur when handling a pesticide is one factor used in determining the protective clothing and equipment needed. For example, a vendor working in an enclosed area (cleaning up a spill) could be exposed to a concentration of fumes and therefore would need respiratory protection.

Know how the type of exposure determines the protective clothing and equipment needed.

Describe how the type of exposure determines the protective clothing and equipment needed.

Concept: PESTICIDE SAFETY - PROTECTIVE CLOTHING AND EQUIPMENT

General Objective: To know how to select, properly wear and maintain suitable protective clothing and equipment for the handling of pesticides.

COURSE OUTLINE

INSTRUCTIONAL OBJECTIVES

LEARNING OUTCOMES

The pesticide label will provide information about the type of protective equipment needed when handling the product in the container. The information on protective clothing will be under the "Precaution" section. Always follow label advice.

Know a source of information on protective equipment needed for a specific product.

Identify the label information for protective equipment needed when handling a specific pesticide.

Additional information on protective clothing and equipment for a specific pesticide may be found on Material Safety Data Sheets (MSDS). General information on protective clothing and equipment may be obtained from:

Know where additional information on protective clothing and equipment can be obtained from.

List sources of additional information on pesticide safety equipment and clothing.

- product pamphlets;
- safety equipment suppliers;
- applicator handbooks;
- pesticide trainers.

Knowing several sources of information on protective clothing and equipment helps the vendor or customer select the appropriate protective clothing/equipment.

Appreciate why a vendor/applicator should know several sources of information on protective clothing and equipment.

Identify why a vendor/applicator should be familiar with sources of information on protective clothing and equipment.

Sometimes the label will not mention specific equipment, but will imply that protection is needed. For example, labels may say:

Know how to interpret label statements on personal protective equipment.

Given label statements state what personal protective equipment is needed to handle the pesticide.

- Keep from breathing dust or fumes;
- Avoid skin contact;
- Keep out of eyes.

Statements like these mean protection is needed.

Generally, when handling unopened pesticide containers, wear:

- chemical-resistant unlined gloves and boots;
- coveralls or long sleeved shirt and pants.

Know the general protective clothing and equipment to wear when handling unopened containers and cleaning up spills.

Identify the general protective clothing and equipment to wear when handling unopened containers and cleaning up spills.

Generally, when cleaning up spills, wear:

- chemical-resistant unlined gloves and boots;
- coveralls;
- appropriate goggles;
- appropriate respirator.

Concept: PESTICIDE SAFETY - PROTECTIVE CLOTHING AND EQUIPMENT

General Objective: To know how to select, properly wear and maintain suitable protective clothing and equipment for the handling of pesticides.

COURSE OUTLINE

INSTRUCTIONAL OBJECTIVES

LEARNING OUTCOMES

Dermal Protection

The skin is the major route of entry.

Know the major route of entry into the body.

Identify the major route of entry into the body.

The hands are the most highly exposed part of the body.

Know what the most highly exposed part of the body is.

Identify the most highly exposed part of the body.

Other dermal exposure sites include face, ear canal, neck, arms, legs, etc.

Realize that hands are not the only location for dermal exposure.

List other dermal exposure sites.

Gloves

Always wear gloves when handling pesticides, pesticide containers, or pesticide-contaminated equipment.

Know when you should wear gloves.

Describe when gloves should be worn.

Gloves must be:

- clean;
- chemical-resistant;
- made of an impermeable material such as neoprene, nitrile, butyl rubber or PVC-supported (not leather or cloth);
- unlined;
- long enough to cover the wrist;
- in good condition (no holes, rips).

Know the characteristics of gloves that should be used for protection from pesticides.

List the characteristics of suitable gloves for protection from pesticides.

Gloves should normally be worn under shirt sleeves to keep the pesticide from running into the gloves. Turn up the end of the gloves to form cuffs under the shirt sleeves.

Know how to wear gloves properly.

Describe how the gloves should be worn.

Body covering

Anyone who handles pesticides should wear as a minimum:
long-sleeved shirt and long-legged trousers
OR
a coverall-type garment.

Know what type of body covering should be used for handling pesticides.

Describe the two options of minimal body covering to use when handling pesticides.

Concept: PESTICIDE SAFETY - PROTECTIVE CLOTHING AND EQUIPMENT

General Objective: To know how to select, properly wear and maintain suitable protective clothing and equipment for the handling of pesticides.

COURSE OUTLINE

INSTRUCTIONAL OBJECTIVES

LEARNING OUTCOMES

Clothes should be:

- clean (pesticide free);
- of tightly woven fabric;
- waterproof if pesticides are likely to substantially wet the work clothes or coveralls.

Know the characteristics of suitable protective body coverings.

List the characteristics of suitable protective body coverings.

Boots

Boots should be worn, especially when handling pesticides may cause contamination of footwear. They should:

- be chemical-resistant (e.g., rubber);
- be unlined;
- come above the ankle;
- be worn under pant legs.

Know what type of boots should be worn when handling pesticides.

List the important characteristics of boots suitable for pesticide vendors/applicators.

Hats

Hats should be worn when handling pesticides where there is any risk of pesticide exposure to the head. Normal handling of unopened containers should not require protective hats, however when cleaning a spill or working in a confined space, a protective hat should be worn. The head can absorb pesticides much easier than most other body locations.

Know why it is important to wear a hat when handling pesticides.

Describe why it is important to wear a hat when handling pesticides.

The hat should be:

- wide brimmed;
- waterproof (e.g., not cloth or leather);
- easy to clean.

Know the characteristics of a suitable hat for handling certain pesticides.

Describe characteristics that are suitable for a hat used when handling pesticides.

Examples of unsuitable hats for use while handling pesticides are baseball type caps and straw hats.

Ocular Protection

Concept: PESTICIDE SAFETY - PROTECTIVE CLOTHING AND EQUIPMENT

General Objective: To know how to select, properly wear and maintain suitable protective clothing and equipment for the handling of pesticides.

COURSE OUTLINE

INSTRUCTIONAL OBJECTIVES

LEARNING OUTCOMES

Goggles or Face Shields should be worn where there is risk of pesticide exposure to the eyes. The eyes can easily absorb, and be harmed by pesticides.

Know why goggles or face shields are important when handling pesticides.

Identify why it is important to wear goggles or face shields when handling pesticides.

Goggles or a face shield should be worn when pesticide splash, spray, or dust could get in the face or eyes and a full face respirator is not being worn. Face/eye protection is especially important for vendors when cleaning up a spill.

Know when goggles or a face shield should be worn.

Identify when goggles or a face shield should be worn.

Goggles should:

- be tight fitting;
- not have air vents (unless they have indirect vents);
- have a rubber or plastic headband;
- be clean.

Know the characteristics of goggles that are suitable for use while handling pesticides.

List the characteristics of goggles that are suitable for use while handling pesticides.

Respiratory Protection

A respirator is a unit that covers the mouth and nose to prevent spray droplets, particles, and vapours from entering the lungs.

Know the purpose of a respirator.

Identify the purpose of a respirator.

Respiratory protection can be important because once in the lungs, pesticides can enter the blood stream rapidly and completely. If inhaled in sufficient amounts, pesticides can cause damage to nose, throat, and lung tissue.

Know why respiratory protection is important.

Describe why respiratory protection is important.

Concept: PESTICIDE SAFETY - PROTECTIVE CLOTHING AND EQUIPMENT

General Objective: To know how to select, properly wear and maintain suitable protective clothing and equipment for the handling of pesticides.

COURSE OUTLINE

Respirators should be worn when the label says to or when a person may be exposed to harmful levels of pesticides in the air. Respirators would not normally be worn when handling unopened containers, however, a respirator should be worn when cleaning up a spill or encountering vapours in a storage area. Respirators must:

- have a MSHA-NIOSH approval (NIOSH - National Institute of Occupational Safety & Health); or a British Health and Safety Executive (BHSE) approval;
- have proper cartridges (usually organic vapour cartridges) for pesticides;
- fit properly;
- be clean;
- contain cartridges that are not over-saturated.

Fitting a respirator

Only a properly fitted respirator will protect a person.

Respirators are available in different shapes and sizes. Select one that fits properly. Be clean shaven. Proper fit cannot be achieved with a beard or other facial hair; the hair prevents direct contact between the face and the edge of the respirator.

Follow the manufacturer's instructions for respirator fit or use one of the 2 following fit tests:

1. Place the palm of the hand over exhalation valve cover and exhale gently. If the face piece bulges slightly and no air leaks between the face and face piece are detected, a proper fit has been obtained. If air leakage is detected, reposition the respirator on the face and/or readjust the tension of the elastic straps to eliminate the leakage. Repeat this fit test.

INSTRUCTIONAL OBJECTIVES

Know when a respirator should be worn. Know the characteristics of a suitable respirator for protection when handling pesticides.

Understand why a respirator should be fitted properly.

Know how to have a properly fitted respirator.

Know when and how to do a fit test.

LEARNING OUTCOMES

Identify when a respirator should be worn. List the characteristics of a respirator suitable for protection from pesticides.

Identify why it is important for a respirator to fit properly.

Describe how to have a properly fitted respirator.

Describe how to do a fit test.

Concept: PESTICIDE SAFETY - PROTECTIVE CLOTHING AND EQUIPMENT

General Objective: To know how to select, properly wear and maintain suitable protective clothing and equipment for the handling of pesticides.

COURSE OUTLINE

INSTRUCTIONAL OBJECTIVES

LEARNING OUTCOMES

2. Place flat pieces of paper or the palms of the hands over the open area of the cartridge cap, inhale gently and hold your breath for 5 to 10 seconds. If the face piece collapses slightly a proper fit has been obtained. If air leakage is detected reposition the respirator on the face and/or readjust the tension of the elastic straps to eliminate the leakage. Repeat this fit test.

Types of respirators

Types of respirators available include:

- dust masks;
- cartridge respirators;
- canister respirators;
- air-powered purifying respirators;
- self contained breathing equipment.

The first four types of respirator do not supply any oxygen so they should never be used in oxygen deficient atmospheres.

Dust masks should not be used because they are not effective against pesticide vapours. They only provide protection from dust particles.

Cartridge respirators consist of a face mask (1/2 or full) and 1 or 2 cartridges that filter out pesticide vapours. The full face mask provides eye protection as well as respiratory protection. The cartridge respirators may also have a dust/mist/fume pre-filter. Pesticides emit organic vapours, therefore use cartridges that give organic vapour protection. Cartridge respirators are recommended for protection when exposed to low concentrations of pesticides. They are the most common type of respiratory

protective equipment used for pesticides. Some of these respirators are now disposable.

Know the types of respirators available.

Know that dust masks are not effective.

Understand chemical cartridge respirators and know when they should be worn.

List the types of respirators available.

Describe why dust masks should not be used for pesticide applications.

Describe chemical cartridge respirators. Identify when chemical cartridge respirators should be used.

Concept: PESTICIDE SAFETY - PROTECTIVE CLOTHING AND EQUIPMENT

General Objective: To know how to select, properly wear and maintain suitable protective clothing and equipment for the handling of pesticides.

COURSE OUTLINE

INSTRUCTIONAL OBJECTIVES

LEARNING OUTCOMES

Canister respirators and air-powered purifying respirators may be necessary for pesticides federally classified as Commercial and Restricted. They are used in higher vapour concentrations than cartridge respirators.

Know when canister and air-powered purifying respirators may be necessary.

Identify where and when canister and air-powered purifying respirators should be used.

Concept: PESTICIDE SAFETY - CLEANUP AND MAINTENANCE OF PROTECTIVE CLOTHING AND EQUIPMENT

General Objective: To know how to safely and effectively clean and maintain equipment.

COURSE OUTLINE

INSTRUCTIONAL OBJECTIVES

LEARNING OUTCOMES

Care of Protective Clothing and Equipment

Clean protective clothing and equipment after use.

Know when to clean protective clothing and equipment.

Identify when protective clothing and equipment should be cleaned.

Chemical-Resistant Gloves

- Wash gloves before taking them off and before removing protective clothing and equipment.
- Leave gloves on while removing and cleaning protective clothing and equipment.
- Wash thoroughly with detergent and rinse well.
- Check the gloves for leaks frequently by filling with water and squeezing.
- Discard leaky gloves.
- Replace gloves on a regular basis.

Know how to care for gloves used for protection from pesticides.

Describe how to care for gloves used for protection from pesticides.

Body covering

- Rinse off waterproof clothing before removal.
- Discard heavily contaminated clothing.
- Use disposable plastic garbage bags for temporary storage of pesticide-contaminated clothes prior to washing.
- Wash clothing after each day of use. To wash clothes:
 - use chemical-resistant gloves to handle clothing;
 - use a prewash additive on contaminated areas;
 - pre-soak and launder separately from normal laundry;
 - avoid overcrowding clothes in the washing machine;
 - pre-rinse clothing using the pre-soak cycle;
 - use hot water;
 - use full water level;
 - use normal wash cycle;
 - use a heavy duty detergent, bleach, or household ammonia (do not mix these cleaners);
 - repeat wash cycles may be required to remove some pesticides;

Know how to safely handle contaminated clothing.

Describe how to safely handle contaminated clothing.

Know how to launder pesticide-contaminated clothing.

Describe how to launder pesticide-contaminated clothing.

Concept: PESTICIDE SAFETY - CLEANUP AND MAINTENANCE OF PROTECTIVE CLOTHING AND EQUIPMENT

General Objective: To know how to safely and effectively clean and maintain equipment.

COURSE OUTLINE

INSTRUCTIONAL OBJECTIVES

LEARNING OUTCOMES

- hang clothes out to dry to prevent possible contamination of the dryer and to allow further breakdown of residues by sunlight;
- run the empty washing machine through a full cycle again after use, using hot water and detergent, to rinse it thoroughly.

Follow manufacturer's instructions for care/disposal of disposable coveralls.

Boots, Hats, Goggles & Face Shields

- Wash thoroughly with soap and warm water after each day of use.
- Discard leaky footwear.

Know how to care for boots, hats, goggles and face shields used for protection.

Describe how to care for boots, hats, goggles and face shields used for protection.

Storage of Personal Protective Equipment

Do not store personal protective equipment in the pesticide storage area or with regular clothing. A cool dry storage area will help extend the life of protective clothing. Keeping waterproof clothing (e.g., gloves, boots, etc.) away from sunlight will help extend their life.

Know how to store personal protective equipment.

Describe where personal protective clothing should be stored.

Personal Hygiene

Remove coveralls before leaving building for lunch or entering lunch room.

Know that coveralls should be removed before leaving building for lunch or entering lunch room.

Identify when coveralls should be removed.

At the end of a day of exposure to pesticides, shower thoroughly, washing body, hair and under fingernails.

Know that people exposed to pesticides should clean themselves at the end of a work day.

Identify which parts of his or her body a pesticide user should take particular care with when washing at the end of a work day.

Concept: PESTICIDE SAFETY - DISPOSAL

General Objective: To know how to dispose of pesticide containers and pesticides safely and legally.

COURSE OUTLINE

INSTRUCTIONAL OBJECTIVES

LEARNING OUTCOMES

Empty Container Disposal

Check with provincial authorities for regulations and guidelines on container disposal. Empty Domestic pesticide containers can be safely disposed of in the household garbage without decontaminating. However, it is desirable to decontaminate these containers when possible. Containers can be decontaminated by draining and triple rinsing, then using the rinse-water in the spray tank.

Know to check with provincial agencies for guidelines and regulations on container disposal.

Identify where to find out how to dispose of empty pesticide containers.

Know that empty containers should be decontaminated.

Describe how empty containers should be decontaminated.

Concentrate Disposal

The most practical way to dispose of pesticide concentrates is to sell them so that they may be used according to label directions. If this is not possible, determine whether unopened containers can be returned to the manufacturer or vendor. Contact the provincial pesticide regulatory authority or a regional office of Conservation and Protection, Environment Canada for additional information on disposal.

Know how concentrates can be disposed of.

Describe how concentrates can be disposed of.

Concept: PESTICIDE SAFETY - REENTRY AND DAYS TO HARVEST

General Objective: To know what reentry times and days to harvest times are.

COURSE OUTLINE

The reentry time is the time that must pass before anyone enters or is allowed to enter a treated area without protective equipment.

Reentry times are listed on some pesticide labels. Make customers aware of the products that have reentry time on the label. When the label does not indicate reentry time, the reentry time has not been established.

Preharvest Intervals

Preharvest interval is the least number of days between the last pesticide application and the harvest date as indicated on the label of pesticides registered for use on food crops. Preharvest intervals are also referred to as minimum preharvest intervals, interval to harvest, withdrawal time, and preslaughter time. Advise customers to follow preharvest intervals on the label so that harmful pesticide residues do not remain on the food crop at harvest. It is only legal to use a pesticide for food crops stated on the label.

INSTRUCTIONAL OBJECTIVES

Know what a reentry time is.

Know where to look for reentry guidelines.

Know what a preharvest interval is. Know where to look for preharvest intervals.

LEARNING OUTCOMES

Describe reentry time.

Identify where to look for reentry guidelines.

Describe preharvest intervals. Identify where to look for preharvest intervals. Identify why it is important to follow preharvest intervals.

Concept: ENVIRONMENT

General Objective: To understand what happens to pesticides once they are released into the environment.

COURSE OUTLINE

The following processes determine the impact a pesticide will have on the environment. The processes include: adsorption, volatilization, vapour and spray drift, runoff, leaching, and degradation.

Adsorption is the binding of chemicals to soil particles. Soils high in organic matter or clay are the most adsorptive. Most soil-bound particles are less likely to leach or be broken down by microbes.

Volatilization is the process where solid or liquid substances evaporate into a vapour (gas). The rate at which pesticides evaporate increases as temperatures increase. Vapours from some pesticides can be a hazard, especially if applied indoors.

Pesticide vapours can move in the air. This movement is called vapour drift. Vapour drift from some pesticides can damage non-target areas or organisms.

Spray drift is the airborne movement of spray droplets away from a treatment site during application. Spray drift is most likely to occur under excessively windy conditions. Drift of pesticides can damage nontarget organisms or contaminate adjacent soil or water.

Runoff is the movement of water over a sloping surface. Pesticides may be either carried directly by water or be bound to soil particles that move with the water.

Runoff from treated areas or areas contaminated by spills can pollute streams, ponds, lakes and wells. Pesticide residues in surface water can harm plants and animals and contaminate lakes, streams and groundwater.

INSTRUCTIONAL OBJECTIVES

Know which processes affect pesticides once they are released into the environment.

Understand what adsorption is and what affects the adsorption of pesticides.

Understand volatilization.

Know what vapour drift is.

Know what runoff is.

Know adverse effects of pesticide-contaminated runoff.

LEARNING OUTCOMES

List the processes that affect pesticides once they are released into the environment.

Describe adsorption.

Describe volatilization

Describe vapour drift.

Describe runoff. List ways pesticides move with runoff.

Identify potential adverse effects of pesticide-contaminated runoff.

Concept: ENVIRONMENT

General Objective: To understand what happens to pesticides once they are released into the environment.

COURSE OUTLINE

INSTRUCTIONAL OBJECTIVES

LEARNING OUTCOMES

Leaching is the movement of pesticides with water down through the soil. Leaching can contaminate groundwater (i.e., subsurface water such as wells).

Understand what leaching is.

Describe leaching.

Degradation is the breakdown of pesticides into other compounds.

Know what degradation is.

Describe degradation.

Pesticides are affected by three types of breakdown.

Know the types of breakdown that affect pesticides.

List and describe the types of breakdown that affect pesticides.

1. Microbial breakdown is the breakdown of pesticides into simple compounds by microbes.
2. Chemical breakdown is the breakdown of pesticides by chemical reactions. Some pesticides breakdown when they react with water.
3. Photodegradation is the breakdown of pesticides by sunlight. Pesticides breakdown at different rates when exposed to sunlight.

Know where a customer may go for more information.

Identify from whom a customer may obtain more information on pesticides and the environment.

Different pesticides are affected differently by each process. If a customer wants more information, refer them to extension specialists or to the supplier or manufacturer.

Concept: PEST MANAGEMENT

General Objective: To understand pest management principles required to carry out safe effective pest control.

COURSE OUTLINE

INSTRUCTIONAL OBJECTIVES

LEARNING OUTCOMES

The goal of pest management is to manage pests effectively, economically, and safely.

Know the goal of pest management.

Identify the goal of pest management.

Pest management usually involves the suppression of pest numbers to acceptable levels. It does not usually involve eradication, which is the total elimination of a pest.

Understand the concepts of suppression and eradication.

Describe suppression and eradication.

Integrated Pest Management (IPM)

Integrated pest management is an approach to pest control that integrates all pest management practices and control methods into one pest management program. IPM does not usually try to eliminate all pests, but tries to reduce the pest population to a level where damage is acceptable using methods that have the least potential to harm people and the environment.

Know what integrated pest management is.

Describe what integrated pest management is.

Integrated pest management involves:

- identifying pests;
- determining the cause and source of the pest;
- knowing the pest's and host's life cycle and behaviour;
- monitoring for the pest over a period of time;
- knowing available management choices;
- being aware of environmental conditions;
- making decisions;
- recording and evaluating results.

Know what integrated pest management involves.

List the possible components of an integrated pest management program.

Concept: APPLICATION TECHNOLOGY

General Objective: To understand the general principles of application technology necessary for proper pesticide application.

COURSE OUTLINE

INSTRUCTIONAL OBJECTIVES

LEARNING OUTCOMES

The principles of application technology involve application equipment and the environmental constraints that affect the application of pesticides.

Ready To Use products, ant traps, baits and some rodenticides come with their own precalibrated application equipment and no further calibration or dilution is required.

Application equipment

Application equipment should apply the pesticide uniformly to the desired target at the correct rate and not contaminate non-target areas. The equipment must therefore:

- be selected carefully;
- have the proper components;
- be operated correctly;
- be calibrated accurately;
- be maintained.

Selection of Application Equipment

A variety of application equipment is available for applying pesticides.

Types of Sprayers

There are many types of sprayers. The sprayer used depends on the size of area to be treated, the pest, the pesticide formulation, and the recommended method of application.

Operation

Advise the customer to operate application equipment in a manner consistent with the instructions on the pesticide label.

Know that some products require no calibration or dilution.

Know that the basic objective of application equipment should be to apply the pesticide uniformly to the desired target at the correct rate and not contaminate non-target areas. Know what is necessary to achieve the basic objective of pesticide application equipment.

Know that the sprayer used depends on the size of area to be treated, the pest, the pesticide formulation, and the recommended method of application.

Know that the customer must operate the application equipment according to label instructions.

Identify pesticide products which require no calibration or dilution.

Identify the basic objective of application equipment. List the criteria necessary to achieve a uniform pesticide application to the desired target, at the correct rate, without contaminating non-target areas.

List the factors which determine the sprayer to be used.

List how the customer must operate the application equipment.

Concept: APPLICATION TECHNOLOGY

General Objective: To understand the general principles of application technology necessary for proper pesticide application.

COURSE OUTLINE

INSTRUCTIONAL OBJECTIVES

LEARNING OUTCOMES

Make sure that the customer understands the label instructions regarding application rate.

Calibration

Calibration is a procedure for checking and adjusting the delivery rate of application equipment. Properly calibrated equipment will deliver the correct amount of the pesticide to the treatment area, in a uniform distribution, when the equipment is operated properly.

Calibration procedures for specific application equipment may be outlined in the operator manual or recommended by industry or government specialists.

Environmental Conditions

Refer your customers to the product label for information on environmental conditions.

Know what calibration is. Understand why it is important to calibrate application equipment.

Know where to obtain information on calibration procedures.

Know that environmental conditions affecting application are on the label.

Describe calibration. Identify why it is important to calibrate application equipment.

Identify sources of information on specific calibration procedures.

List where to find information on environmental conditions that can affect pesticide application.

Concept: EMERGENCY RESPONSE

General Objective: To know how to safely and effectively respond to pesticide emergencies.

COURSE OUTLINE

INSTRUCTIONAL OBJECTIVES

LEARNING OUTCOMES

Spills

Pesticide spills are hazardous because the pesticide or vapours may poison people, animals, or plants. Spilled pesticides may also contaminate soil, sewer systems, streams, food or feed, surfaces (e.g., wood or concrete), lakes, wells, and other water sources. Vendors must minimize the risk of spills and hazards from spills.

Know why pesticide spills are hazardous.

Identify why pesticide spills are hazardous.

Concept: EMERGENCY RESPONSE

General Objective: To know how to safely and effectively respond to pesticide emergencies.

COURSE OUTLINE

- Vendors should be prepared to respond to accidental spills by:
- knowing the hazards associated with the products being used;
 - being able to recognize a hazardous spill situation as per provincial guidelines;
 - keeping emergency phone numbers handy. The numbers should include the provincial government emergency number, police, fire, ambulance, poison control centre, doctor, and CANUTEC (if applicable); CANUTEC can provide information for major transportation spills;
 - reading the product label (first aid, precautions, etc.). Product labels may also contain useful information regarding spills, such as a 24 hour emergency response number for assistance/information;
 - having adequate emergency protective gear and equipment available as well as adequate absorptive material such as clay or fine sand, a container for contaminated waste, tools to pick up the contaminated material, bleach (clean up), hydrated lime (decontamination);
 - having a plan of action for emergency spills, and
 - having Material Safety Data Sheets (MSDS) available.

INSTRUCTIONAL OBJECTIVES

Know how to be prepared for accidental pesticide spills.

LEARNING OUTCOMES

List and describe ways to be prepared for pesticide spills.

If a spill occurs:

- 1. Protect yourself and others from exposure by:**

Know how to safely and effectively respond to pesticide spills.

Describe how to respond to a spill.

Concept: EMERGENCY RESPONSE

General Objective: To know how to safely and effectively respond to pesticide emergencies.

COURSE OUTLINE

INSTRUCTIONAL OBJECTIVES

LEARNING OUTCOMES

- wearing protective gear;
 - ventilating the area;
 - evacuating the area;
 - keeping bystanders and animals away;
 - following safety practices (not smoking, eating, or drinking during clean up, etc.).
2. Contain and control the spilled material. Cover liquid spills with absorbent material. Prevent the spill from entering storm drains, wells, water systems and waterways.
 3. Check the label and MSDS for instructions and the registrant's emergency phone number.
 4. Call the provincial government emergency number if the spill is likely to:
 - harm the environment;
 - injure or damage property, livestock or people;
 - affect safety of the area;
 - interfere with normal activities;
 - meet any provincial requirement for reporting.
 5. Clean up the spill. Follow emergency guidelines if provided, otherwise: sweep or shovel absorptive material into a designed solid waste container lined with a heavy duty plastic bag. Dry formulations can be swept up and reused or placed directly into the designated waste container if they are wet or contaminated.
 6. Decontaminate the spill area. Decontaminate hard surfaces by:
 - using as small amount of wash water as possible (only enough to extract the pesticide, not dilute it);

Know how to clean up a spill area.

Know how to decontaminate the spill area.

Describe how to clean up the spill area.

Describe how to decontaminate the spill area.

Concept: EMERGENCY RESPONSE

General Objective: To know how to safely and effectively respond to pesticide emergencies.

COURSE OUTLINE

- containing the wash water to the contaminated area;
- using bleach only when specified on the label or MSDS;
- working the cleaning material into the spill area with a coarse broom;
- absorbing the excess liquid with more absorbent material, then sweeping it into the special waste container;
- sealing the waste container, placing a warning label on it and storing it until it can be properly disposed of. If unsure of how to dispose of the material contact the provincial pesticide regulatory authority or the supplier or manufacturer.

For soil contamination:

Contact the manufacturer or provincial authority for information on decontaminating soil saturated with pesticide.

7. Decontaminate clean-up equipment and protective gear.

8. Shower.

Decontamination Kit

Vendors should have decontamination kits on hand, fully equipped, and easy to get in an emergency. Inspect the kit regularly. Label the kit properly.

An example of a well-equipped decontamination kit is:

- 1 - 12 litre package of heavy duty detergent;**
- 4 - 25 kilogram bags of absorbent material;**

INSTRUCTIONAL OBJECTIVES

Know that a decontamination kit should be on hand and easily accessible in case of an emergency.

Know the contents of a well-equipped decontamination kit for pesticide emergencies.

LEARNING OUTCOMES

Identify the need for a decontamination kit.

List the items of a well-equipped decontamination kit for pesticide emergencies.

Concept: EMERGENCY RESPONSE

General Objective: To know how to safely and effectively respond to pesticide emergencies.

COURSE OUTLINE

2 - 4 litre containers of sodium hypochlorite (laundry bleach);
4 - 25 kg bags of hydrated lime (do not mix bleach & lime);
2 square mouthed shovels or spades;
2 yard brooms;
1 hand pump with hose;
2 - 205 litre open-head drums with lids;
2 - 205 litre sealable drums;
2 - 20 litre open-head drums with lids;
2 heavy plastic bags;
2 cartridge type respirators;
2 pairs safety goggles;
4 pairs industrial chemical resistant gloves;
2 pairs chemical resistant boots;
2 pairs overalls

Any spill that might cause harm to people or the environment should be reported to provincial environmental regulatory authorities.

Fires

Pesticide fires are hazardous because: pesticides are flammable; a few pesticides could be explosive; some pesticides produce highly toxic fumes when they burn; the toxicity and hazards of many pesticides burning together in the same fire are unknown; fumes may poison people (including fire fighters), animals, or plants; and the run-off water from fire fighting may contain pesticide residue that could contaminate soil, sewers, streams, lakes, wells, and other water sources.

INSTRUCTIONAL OBJECTIVES

Know that spills that may cause harm to people or the environment should be reported to provincial environmental regulatory authorities.

Know why fires involving pesticides are hazardous.

LEARNING OUTCOMES

Identify who to advise in the case of a spill that may cause harm to people or the environment.

List reasons why fires involving pesticides are hazardous.

Concept: EMERGENCY RESPONSE

General Objective: To know how to safely and effectively respond to pesticide emergencies.

COURSE OUTLINE

Vendors should be prepared to respond to a fire involving pesticides by:

- keeping an inventory of stored pesticides in easily accessible locations away from the storage area;
- letting the fire department know where the pesticides are stored;
- posting a warning sign on all entrances to storage rooms where large quantities of pesticides are stored;
- keeping emergency phone numbers handy;
- keeping a fire-extinguisher approved for chemical fires near the storage area;
- getting advice from the local fire department about adequate fire equipment for the facility, i.e., sprinkler system;
- installing a smoke alarm/detection system;
- installing a plan of action in case of a fire;
- training employees to respond properly in an emergency;
- having a drainage system or dikes in place so that runoff water is prevented from entering waterways.

INSTRUCTIONAL OBJECTIVES

Knowhow to be prepared for a fire involving pesticides.

LEARNING OUTCOMES

List ways of being prepared for a fire involving pesticides.

Concept: EMERGENCY RESPONSE

General Objective: To know how to safely and effectively respond to pesticide emergencies.

COURSE OUTLINE

If a fire occurs:

- call the fire department immediately;
- evacuate the area;
- account for all personnel;
- keep people and animals away/upwind from the area so they are not exposed to toxic fumes, run-off or explosions;
- remind fire fighters that pesticides are in the building;
- provide the fire fighters with MSDSs;
- advise fire fighters to use as little water as possible;
- control all runoff water;
- report fire involving pesticides to the provincial pesticide regulatory authority;
- call the police for traffic control;
- call the local medical authorities;
- call adjacent landowners.

After the fire has occurred:

- rope off the area and prevent entry;
- check with fire fighters that all fire fighting equipment is decontaminated on site;
- report any health effects of anyone involved in the fire;
- dispose of the debris according to provincial regulations;
- evaluate all runoff areas for environmental impact;
- determine the cause of the fire and remediate problem.

INSTRUCTIONAL OBJECTIVES

Know how to respond to a fire involving pesticides.

Know what to do after the fire is extinguished.

LEARNING OUTCOMES

Describe what to do if a fire involving pesticides occurs.

Describe what to do once the fire is extinguished.

Concept: EMERGENCY RESPONSE

General Objective: To know how to safely and effectively respond to pesticide emergencies.

COURSE OUTLINE

Prevent fires by:

- not using open flames for welding, burning, cutting, etc. in the pesticide storage area;
- using stretch wrapping rather than shrink wrapping because stretch wrapping does not require any heat;
- making sure the pesticide storage follows the required codes (i.e., National Fire Code, Building Code);
- not smoking in storage areas;
- securing doors and windows to prevent unauthorized people from entering your property.

Theft

Help prevent theft of pesticides by always keeping pesticides securely stored. The owner may be liable in the event of an accident. If large quantities of pesticides are stolen, inform the provincial regulatory authority, the supplier, and the police.

First Aid

First aid provides immediate assistance (helps stabilize a person and sustain life) until medical help can be reached.

If a person feels ill during or after handling pesticides seek medical attention immediately.

Vendors working with pesticides should be familiar with first aid for pesticide poisonings so they can help in case of an accident. The accident victim may not be capable of helping himself.

INSTRUCTIONAL OBJECTIVES

Know how to prevent fires.

Know how to help prevent theft of pesticides. Know what to do if pesticides are stolen.

Understand what first aid is.

Know what to do if a person feels ill during or after handling pesticides.

Appreciate the need for vendors, applicators, family and colleagues to be familiar with first aid for pesticide poisoning.

LEARNING OUTCOMES

Describe what can be done to prevent fires.

Describe how to help prevent theft of pesticides. Describe what to do if pesticides are stolen.

Identify the purpose of first aid.

Describe what to do if a person feels ill during or after handling pesticides.

Identify why people working with pesticides or closely associated with pesticide vendors and applicators should know first aid for pesticide poisoning.

Concept: EMERGENCY RESPONSE

General Objective: To know how to safely and effectively respond to pesticide emergencies.

COURSE OUTLINE

Vendors working with pesticides and their fellow workers should be familiar with:

- the relevant emergency phone numbers;
- first aid for pesticide poisonings for products being handled;
- the pesticide being handled;
- the location of the person who is working with the pesticide;
- the approximate time the person will be working with the pesticide.

Post emergency phone numbers by the phone.

Keep a first aid kit for pesticide emergencies near the pesticide storage area.

A kit designed for pesticide emergencies should be maintained and should contain:

ITEM	PURPOSE
clean water	- drinking, washing skin or eyes
soap	- washing pesticide off skin
gloves	- protecting person administering first aid
cup	- for drinking
face mask	- protection during mouth to mouth resuscitation
bandages	- prevents pesticides entering wounds
blanket	- cover victim
telephone nos	- to get help
paper towel	- cleaning
plastic bag	- collecting vomit

INSTRUCTIONAL OBJECTIVES

Know that the vendors, applicators and people closely associated with them should be familiar with location of emergency phone numbers, first aid for pesticide poisoning, what pesticide is being used, where the application takes place and when the applicator will return.

Know the emergency phone numbers which should be posted by the phone.

Know where kits for pesticide emergencies should be kept.

Know what should be in a kit designed for pesticide emergencies.

Know the purpose of the individual items in the emergency kit.

LEARNING OUTCOMES

List the things people working with pesticides or closely associated with pesticide vendors and applicators should know regarding pesticide poisoning.

List the emergency phone numbers which should be posted by the phone.

Describe where kits for pesticide emergencies should be kept.

List the items that should be in a kit designed for pesticide emergencies.

Describe the purpose of the items in the emergency kit.

Concept: EMERGENCY RESPONSE

General Objective: To know how to safely and effectively respond to pesticide emergencies.

COURSE OUTLINE

PLUS:

Syrup of Ipecac induces vomiting, activated charcoal absorbs pesticide in stomach. These two remedies are only to be administered upon instruction of a Doctor, and if the patient is alert.

Rapid and organized response to poisoning emergencies is important as it minimizes negative effects to poisoned person.

General procedures for any pesticide poisoning are:

1. Protect yourself.
2. Remove the person from contamination.
3. Check if the person is conscious. If the victim is unconscious, check if the person is breathing, and give artificial respiration if necessary. Cardiopulmonary resuscitation (CPR) may be necessary if the pulse disappears. CPR should only be done by trained people.
4. Call a Doctor or Poison Control Centre.
5. Keep the person quiet, warm, comfortable and reassured.

Position the patient. Place the patient on their side with the head lower than the rest of the body and turned to one side. If the patient is not conscious, keep the chin pulled forward and head back to allow breathing to take place. (An intoxicated person should never be transported flat on their back).

Specific emergency procedures for dermal exposure, oral exposure, ocular exposure, or respiratory exposure are below. Always treat respiratory exposure first, eye contamination second, skin contamination third and ingestion fourth. Applicators could suffer from both physical injury and a pesticide accident at the same time. Internal injuries usually take precedence over the contamination.

INSTRUCTIONAL OBJECTIVES

Appreciate the need for rapid and organized response to poisoning emergencies.

Know the general emergency procedures for any pesticide poisoning.

Know how to position the patient.

Know the order of first aid procedures in case of dermal, oral, eye, respiratory, and internal injury.

LEARNING OUTCOMES

Identify why a rapid and organized response is needed for poisoning emergencies.

List the general procedures for any pesticide poisoning.

Describe the position the patient should be placed in.

List the four types of exposure and internal injuries in the order of importance for treatment.

Concept: EMERGENCY RESPONSE

General Objective: To know how to safely and effectively respond to pesticide emergencies.

COURSE OUTLINE

INSTRUCTIONAL OBJECTIVES

LEARNING OUTCOMES

<p>Dermal</p> <ol style="list-style-type: none">1. Remove contaminated clothing, including footwear.2. Immediately drench skin with water. Cold water is preferred; hot water opens pores and increases absorption.3. Wash skin and hair with soap & water; clean under fingernails and toenails.4. Get medical help. <p>For Chemical Burns:</p> <ol style="list-style-type: none">1. Remove contaminated clothing.2. Wash with lots of running water.3. Cover burned area with loose, clean cloth. Do not apply anything to the burn.4. Get medical help. <p>Oral:</p> <ol style="list-style-type: none">1. Get medical help immediately.2. Read label for instructions.3. Do not induce vomiting unless specifically indicated on the label. Do not induce vomiting if the patient is unconscious or having convulsions or if a corrosive material was swallowed. Never give anything by mouth to an unconscious or drowsy patient.4. To induce vomiting, give patient water, position the person upright in a sitting or standing position and gently tickle the back of the throat with a finger or blunt object. Collect some of the vomitus for the doctor. <p>Eye:</p> <ol style="list-style-type: none">1. Hold eyelid open and wash eye immediately with clean running water for 15 minutes or more.2. Get medical help.	<p>Know the first aid procedures for dermal exposure.</p> <p>Know the first aid procedures for chemical burns.</p> <p>Know the first aid procedures for oral exposure.</p> <p>Know the first aid procedures for eye exposure.</p>	<p>List in order of precedence, the emergency procedures for dermal exposure.</p> <p>List, in order of precedence, the specific emergency procedures for chemical burns.</p> <p>List, in order of precedence, the specific emergency procedures for oral exposure. Identify when you should induce vomiting, and when you should not induce vomiting. Describe how to induce vomiting.</p> <p>List, in order of precedence, the specific emergency procedures for eye exposure.</p>
---	---	---

Concept: EMERGENCY RESPONSE

General Objective: To know how to safely and effectively respond to pesticide emergencies.

COURSE OUTLINE

INSTRUCTIONAL OBJECTIVES

LEARNING OUTCOMES

Respiratory:

1. Move victim to fresh air.
2. Loosen tight clothing.
3. Apply artificial respiration if breathing has stopped. Place a blanket underneath victim's shoulder and tilt the head back with the chin forward to clear air passages.
4. Prevent chilling or overheating.
5. Keep person quiet.
6. Get medical help.

Know the first aid procedure for respiratory exposure.

List, in order of precedence, the specific emergency procedures for respiratory exposure.

If the patient is having a seizure/convulsion, place a padded gag between the teeth; put a pillow under head. Do not forcibly restrain him/her.

Know what to do if a person is having a seizure/convulsion.

Describe what to do if a person is having a seizure/convulsion.

Information that medical personnel need to know about a pesticide poisoning includes:

- name of pesticide and each active ingredient, label and container if possible;
- type of exposure;
- symptoms;
- PCP Act registration number on the front panel of the product label;
- length of exposure or amount ingested;
- age & weight of person exposed;
- first aid performed.

Know the information which medical personnel need to know about a pesticide poisoning.

List the information medical personnel need to know about a pesticide poisoning.

If full recovery takes place after first aid measures, seek assessment by medical personnel before patient returns to work.

Understand that medical assessment should be obtained if full recovery takes place after first aid measures.

Identify the need for medical assessment although full recovery took place after first aid measures.

Study what went wrong to avoid accident recurrence and review emergency response plan.

Appreciate why the accident should be reviewed.

Identify why an accident should be reviewed.

Concept: PROFESSIONALISM

General Objective: To know and understand the principles that enable a vendor to deal professionally with the public.

COURSE OUTLINE

INSTRUCTIONAL OBJECTIVES

LEARNING OUTCOMES

Selling Pesticides

A vendor has a responsibility to the customer for selection of the proper pesticide. A vendor may need to help the customer determine the application rate, give advice on how to handle the pesticide safely, or how to dispose of the empty containers properly.

Appreciate the responsibility that the vendor has to the customer.

Identify the responsibility that the vendor has to the customer.

Conduct the business in a professional manner by:

Know how to conduct a pesticide vendor business.

List ways to conduct business in a professional manner.

- following all provincial regulations. This may include selling, displaying, storing, disposing etc. A vendor and/or business may need to be licensed or certified or both to sell and display pesticides. The licence and/or certification needed may depend upon the types of customers and types of pesticides sold. Check with provincial pesticide authorities.

- keeping records of the sale, i.e., description of the pesticide (name, quantity, package size). This will help estimate inventory for following years and help reduce storage and handling.

- following guidelines for properly displaying products. This will ensure the safety of employees and customers. Do not contaminate other products that are on sale near by.

- insuring the business. Include general liability, on site debris removal and disposal, off site pollution, and property insurance.

Public relations refers to the interactions between the vendor and other people. Other people includes: customers, fellow workers, bystanders, residents, and other concerned citizens (e.g., very sensitive people) or groups. Each has its own interests, needs, concerns, priorities, preferences, perceptions and organizations.

Know what public relations refers to. Realize that the people and groups which make up the public vary greatly.

Describe what public relations is. List the things that can cause the public (groups or individuals) to be different.

Concept: PROFESSIONALISM

General Objective: To know and understand the principles that enable a vendor to deal professionally with the public.

COURSE OUTLINE

INSTRUCTIONAL OBJECTIVES

LEARNING OUTCOMES

Good public relations will:

- enhance credibility;
- improve public trust/confidence;
- enhance customer confidence;
- help produce an informed public that is involved, interested, solution oriented, collaborative and supportive;
- help you understand the public's concerns and misconceptions;
- help to deal with complaints or difficulties arising from pest control activities.

Appreciate why a vendor should maintain good public relations.

List the reasons why it is advantageous to maintain good public relations.

Factors affecting public relations are: knowledge, attitude, image, work habits/activities, and communications.

Know factors affecting public relations.

List the factors that affect public relations.

Improve public relations by:

- being knowledgeable about your profession;
- having a good attitude;
- carrying out work activities in a professional manner;
- communicating with the public.

Know how to improve public relations.

List qualities that will help to improve public relations.

Knowledge

Know and understand:

- regulations for pesticide vendors and applicators;
- information on the label;
- resources (people, publications, organizations, etc.) that could provide information.

Know that type of information that will help you improve public relations.

List the types of information that will help you improve public relations.

Concept: PROFESSIONALISM

General Objective: To know and understand the principles that enable a vendor to deal professionally with the public.

COURSE OUTLINE

Continually upgrade your knowledge (e.g., attend seminars, trade shows, courses, read journals, papers, and other literature). If you do not know the answer to a question say so, do not guess.

INSTRUCTIONAL OBJECTIVES

Know that learning is an ongoing activity.

LEARNING OUTCOMES

List ways you can continually upgrade your knowledge.

Attitude

Have a good attitude by:

- responding quickly and effectively to requests for information, complaints, concerns or emergencies;
- being credible (e.g., honest, courteous, polite, and respectful of others) at all times;
- only selling pesticides for registered uses;
- refusing to work unsafely;
- considering bystander/neighbour concerns regarding the outlet operation;
- being conscientious and alert;
- staying within your area of expertise.

Know how to have an attitude that improves public relations.

List the qualities of an attitude that could improve public relations.

Work Habits/Activities

Concept: PROFESSIONALISM

General Objective: To know and understand the principles that enable a vendor to deal professionally with the public.

COURSE OUTLINE

INSTRUCTIONAL OBJECTIVES

LEARNING OUTCOMES

- Conduct your work activities professionally by:
- being environmentally safety conscious and human safety conscious and following safety practices;
 - advising others to handle and apply pesticides responsibly, according to the label and the other safety guidelines;
 - using clean, well-maintained equipment;
 - avoiding unethical sales gimmicks;
 - setting a good example for your customers.

Know how to conduct your work activities professionally.

List ways to conduct your work activities professionally.

Communication

- Communicate with the public by:
- listening to the public's concerns and trying to understand and appreciate their viewpoint;
 - being honest, frank, open, and cooperative;
 - speaking clearly with sincerity;
 - avoiding misguided statements;
 - distributing only factual information.

Know how to communicate with the public

List guidelines to help communicate with the public.