Pesticide Education Packet

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Produced by

CORNELL MIGRANT PROGRAM

and

HUMAN ECOLOGY FIELD STUDY OFFICE

New York State College of Human Ecology
Department of Human Development and Family Studies
New York State College of Agriculture and Life Sciences
Cornell Cooperative Extension

In collaboration with
BUREAU OF MIGRANT EDUCATION
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1983

Why the Pesticide Education Packet?

"One time there was a bunch of little kids playing with a pesticide can, and it had been raining, and the children they don't know very much, and they were playing in this, and I don't know how it happened, probably the child drank the water, and a few hours later she died. And I would want everybody here to open their ears and their eyes and see what really is happening to many people, and I wish that someone would do something about it."

These words were part of the testimony of a Florida farmworker at a forum on the use and misuse of pesticides. At this and similar forums held during the spring and summer of 1980 in California, Texas, and Florida, farmers and farmworkers repeatedly expressed concern for the health and the lives of their children.

Why the Pesticide Education Packet? For the children, who need to know.

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Pesticide safety has long been a concern for those who work or live in farming areas. Farmworkers and their families are especially vulnerable because they spend much of their lives in areas where pesticides are used heavily. Yet almost no information exists to instruct farmworkers, and particularly their children, about living around pesticides. The purpose of this guide is to help fill that gap.

During the mid-1970s, the Migrant Bureau of the New York State Department of Education and the Cornell Migrant Program recognized the need to provide pesticide safety education for children in migrant summer schools. An educator, Dan LaFica, was hired for several summers to instruct the children in classrooms throughout the state. It was eventually recognized that each public school teacher needed information and materials so that (s)he could provide pesticide safety education at the local level.

In 1981 the Field Study Office of the New York State College of Human Ecology at Cornell adopted as one of its projects the development of a pesticide education packet that could be generally distributed to educators. Faculty of the Field Study Office recruited undergraduates Allen Liff and Beth Dessen to create the packet and Debra Lee Wilburn to illustrate it.

Many Cornell faculty advised and assisted in the development of the curriculum packet. Materials were tested with the Wayne/Finger Lakes Migrant Tutorial Program through Coordinator Basil Dobush. Kay Embrey, extension associate in the Department of Human Development and Family Studies, provided field coordination.

Finally, the materials were produced by Media Services at Cornell University. We wish to acknowledge the assistance provided by Trudie Calvert, our editor.

Richard Bove, chief of the Migrant Bureau, and DeLores Franklin, bureau associate, have supported pesticide safety education efforts for many years. Without their financial and program support, this packet would never have been produced.

This packet was developed with the assistance of Royal Colle, professor of Communication Arts, Cornell University; Edythe Conway, lecturer, Human Service Studies, Cornell University; Linda DuBois, tutor, Wayne/Finger Lakes Tutorial Program; Mary Jo Dudley, communication specialist, RNY Farmworker Opportunities; Anne Hallinan-Garland, tutor, Wayne/Finger Lakes Tutorial Program; Dan LaFica, consultant, Palmyra; and David Pimentel, professor of entomology, Cornell University.

Herbert J. Engman
Cornell Migrant Program
Michele Whitham
Field Study Office
Cornell University
June 1982

How to Use the Pesticide Education Packet

The Pesticide Education Packet consists of two separate but closely interrelated sections, the Teacher's Guide and Teaching Tools.

The Teacher's Guide is designed to provide educators with essential information on pesticides and their effects on people and the environment. This information is organized into three units:
Unit 1. What Is a Pesticide?
Unit 2. The Dangers of Pesticides
Unit 3. Protection from Pesticide Poisoning

These units provide the minimum information that a teacher who is not a specialist in pesticide education will need to instruct children on pesticide safety. By familiarizing yourself with the material in the guide you will become both better able to diagnose the potential dangers that the children you work with face and to use correctly the Teaching Tools provided in the second half of the packet. Of course you are encouraged to use the references suggested in the accompanying bibliography to extend your technical knowledge of pesticides even further.

The Teaching Tools portion of the Pesticide Education Packet provides a variety of materials designed to help you translate the information contained in the Teacher's Guide into educational activities appropriate to the children you work with. These teaching materials are:

- The Digger McGee Comic Book, in three episodes.
- Think Sheets, one per episode, which ask questions about the information contained in the comic book story.
- Exercise Sheets, one per episode, which present to the children activities designed to check their understanding of the material presented.
- Activity Cards describing additional discussion topics and experiments that you can undertake with the children to explore further the content of the Pesticide Education Packet.
- A Photo Packet containing visual aids designed to enhance the children's understanding of particular teaching points.
- Blank Exercise Sheets and Activity Cards for creating your own curriculum materials.

In integrating the Teacher's Guide and the Teaching Tools portion of the Pesticide Education Packet, it is important to note that these two sections exactly parallel each other. In other words, information is presented in the Teacher's Guide in the same order that it is to be presented to the children through use of the Teaching Tools. In addition, the material contained in both sections is keyed to the Digger McGee Comic Book, which the children will read first as their introduction to the topic of pesticide education. Thus throughout the Teacher's Guide, panels of the Digger McGee Comic Book appear in the text as a visual cue to you signaling which information from the guide is necessary to explain the ideas contained in the Comic Book. Similarly, the Objectives that begin the Teaching Tools portion of the packet cover the same points that are highlighted in the Comic Book panels reproduced in the Teacher's Guide. Thus the Comic Book, Teacher's Guide, and Teaching Tools are all dovetailed to facilitate your teaching of important facts and concepts about pesticides to children.

As you begin to explore how best to use the Pesticide Education Packet materials with your children, remember that these materials were designed to be used flexibly.

Teacher's Guide

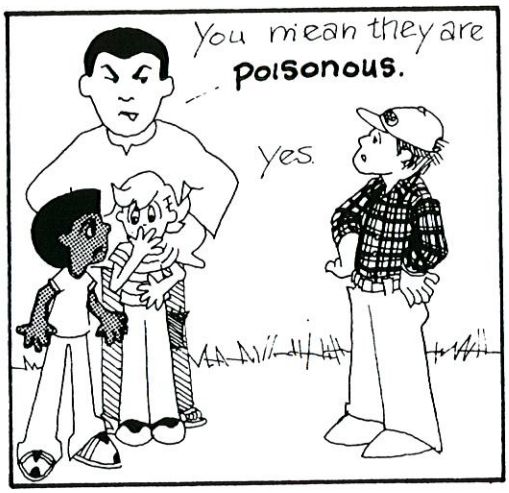
Unit 1

What Is a Pesticide?

A pesticide is a poison

Unfortunately, a substance that is poisonous for pests can also be poisonous for people.

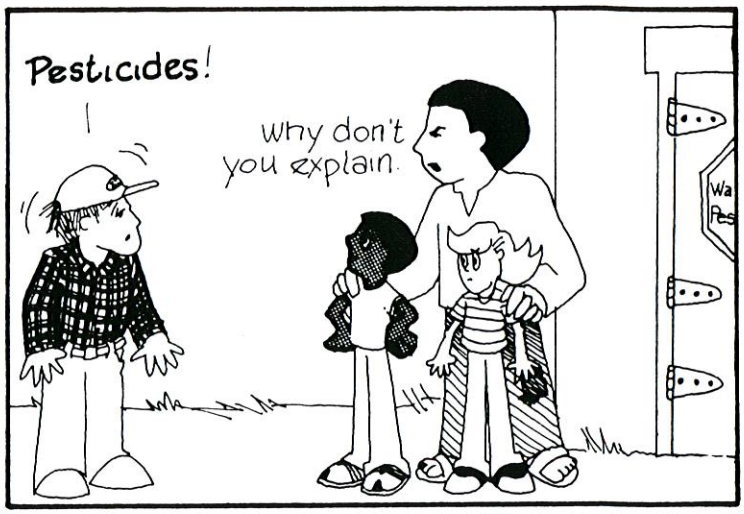
- Figures from the United Nations World Health Organization show that as many as 500,000 people worldwide are poisoned by pesticides every year.
- According to the National Center for Health, there are an average of 35 deaths per year in the United States from pesticide poisoning.
- The principal causes of pesticide deaths are carelessness and negligence. Young children are particularly vulnerable. Nearly 40 percent of hospital admissions in non-occupational cases of pesticide poisoning have been children under 5 years of age.
- Pesticides are estimated to kill or destroy more than 400,000 bee colonies annually.
- In 1971, New York State banned the use of DDT because of its ability to accumulate in the environment and its harmful effects on wildlife.



Because humans consider so many plants and animals in this world to be "pests," pesticides are used on an everyday basis.

- Ninety percent of American households use pesticides in the house, yard, or garden.
- Utility, railroad, and highway crews have long used herbicides to stem weed growth around rights-of-way.
- Agricultural yields have almost doubled whereas the use of pesticides has grown tenfold since 1945.

Pesticides help assure a high-quality food supply, provide protection from disease, and reduce the incidence of unwanted pests.



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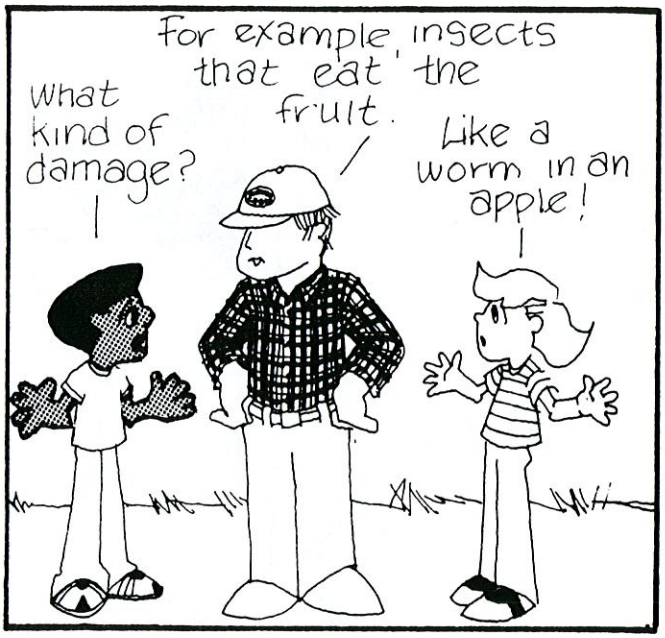


Farming is a risky business. The unpredictability of nature has always made the farmer's life difficult. Natural occurrences, like droughts or storms—and pests—all influence the success or failure of a farmer's crop.

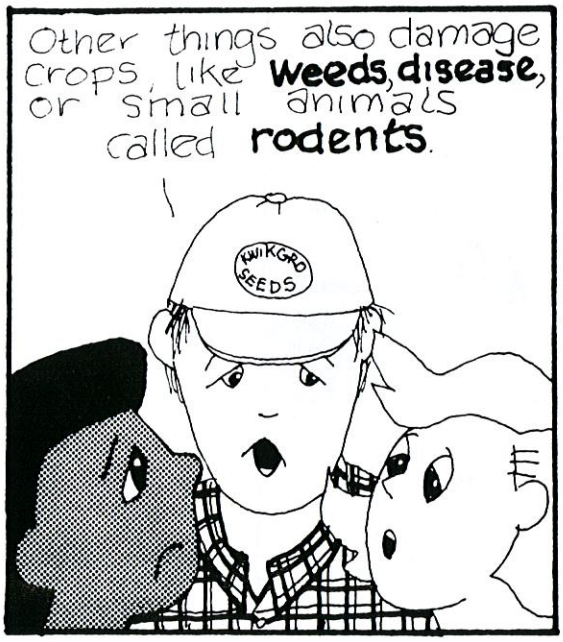
There's an old saying, "You can't do anything about the weather," but there is a belief you can do something about pests. Pesticides can be classified according to the types of pests they kill.

Insecticides control insects. Often this word is confused with the word "pesticide."

Fungicides control fungi, which cause mold, rot, and plant diseases.

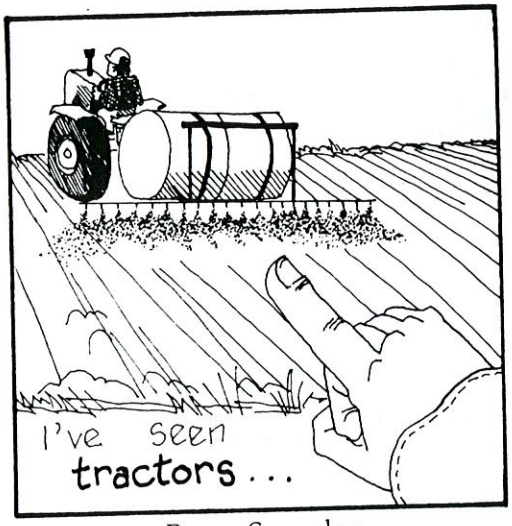
Herbicides control unwanted plants or weeds.

Rodenticides control rats, mice, other rodents, and even bats.

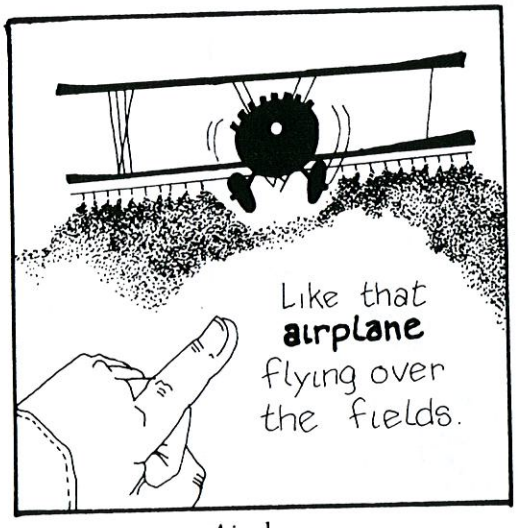


Notes:

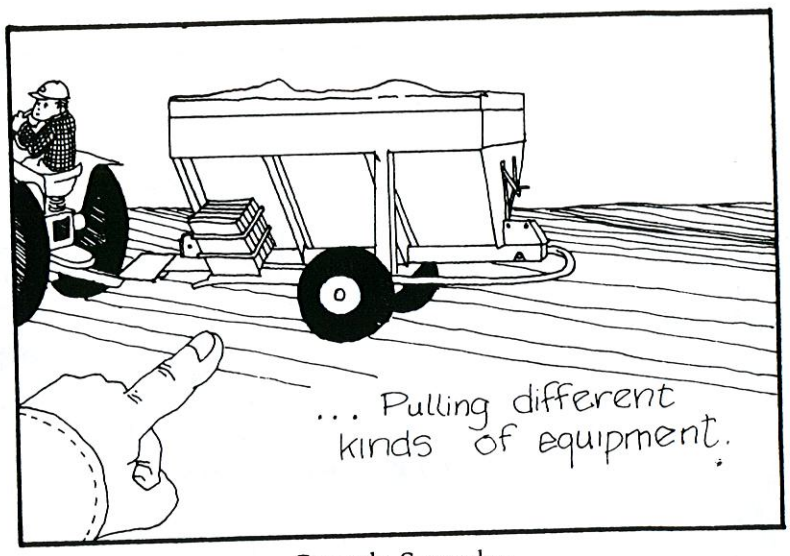
There are many different ways of applying pesticide. About 75 percent of all pesticides are applied as sprays by boom sprayers (see Photo Packet, photo 1) or airplanes (photo 2). Granule spreaders (photo 3) and a variety of speed sprayers (photo 4) and hand sprayers (photo 5) are also used.



Boom Spreader



Airplane



Granule Spreader

Notes:

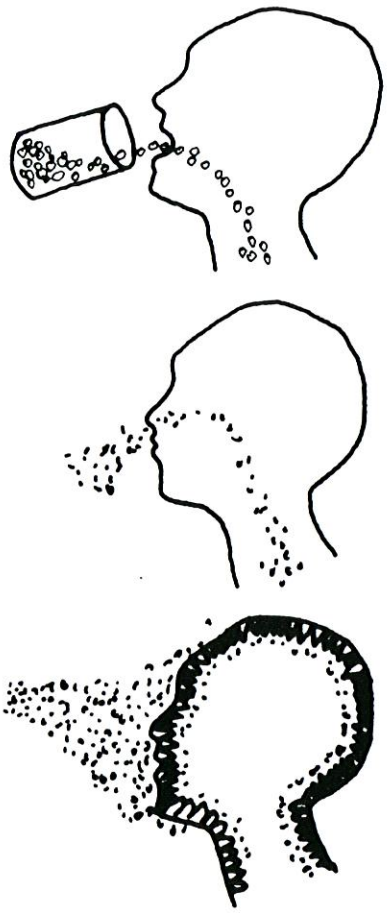
Unit 2

The Dangers of Pesticides

Pesticides are everywhere

750,000,000 pounds of pesticides are applied each year to agricultural crops. Considering all the different formulations (powders, sprays, pellets, or granules), it is not surprising that hospital cases for pesticide poisoning are two times higher for farmers and farmworkers than for any other occupational group.

The poisoning rate is so high partly because pesticides can enter the body in three ways.



Oral

Pesticides can enter the body through the mouth. They can be taken in by mistake by persons eating or smoking in the fields or when improperly stored in food containers.

Inhalation

Pesticides in the form of dusts, spray mists, or fumes can be breathed into the lungs.

Dermal

Pesticides can also be taken in through the skin. Wearing clothing wet through with pesticides or allowing pesticides to fall directly on the skin during spraying can be dangerous. Dry materials—dusts, powders, or granules—can also be absorbed. Some pesticides do not pass through the skin very quickly. Others can be as dangerous entering through the skin as when taken by mouth.

Pesticides pass through the skin on some areas of the body more quickly than on other areas. The eyes are especially susceptible. The back of the hands and the wrists absorb more than the palms do. The armpits, back of the neck, groin, and feet take in pesticides easily, too. Cuts and scrapes allow pesticides to enter even more easily.

as the message has passed, the acetylcholine is removed from the nervous system by an enzyme called cholinesterase (ChE). If the acetylcholine were allowed to remain, the nerve impulses would continue to pass through, and the result would be, in effect, an overload of the nervous system.

Unfortunately, the organophosphate pesticide interferes chemically with the cholinesterase enzyme and neutralizes its ability to remove the acetylcholine. The result is a continuous passing of nerve impulses and an overloading of the nervous system.

Carbamates

Many carbamates are only moderately or slightly toxic, but a few are among the most toxic of pesticides. Though they are chemically different from the organophosphates, their effects upon the nervous system are essentially the same.

Different families of pesticides produce a variety of different symptoms because each chemical family attacks the body in a different way.

Notes:

Symptoms of pesticide poisoning

Mild poisoning

Headache, fatigue, weakness, dizziness, restlessness, nervousness, perspiration, nausea, diarrhea, loss of appetite, loss of weight, thirst, moodiness, soreness in joints, skin irritation, eye irritation, irritation of nose and throat.

Moderate poisoning

Nausea, diarrhea, excessive saliva or sweating, stomach cramps, trembling, lack of muscle coordination, muscle twitches, extreme weakness, mental confusion, blurred vision, difficulty in breathing, cough, rapid pulse, flushed or yellow skin, weeping.

Severe poisoning

Fever, intense thirst, increased rate of breathing, vomiting, uncontrollable muscle twitches, pinpoint pupils, convulsions, inability to breathe, unconsciousness.

Unit 3

Protection from Pesticide Poisoning

Pesticides can be hazardous

Pesticides can be very confusing and frightening, but they need not be. Remember that pesticides are neither inherently bad nor do they automatically injure people. Many pesticide-related incidents occur because people do not understand what a pesticide is or its potential hazards.

Ignorance and carelessness are two reasons why pesticides can be dangerous: what people don't know *can* hurt them.

Stress to your students the importance of the following precautions:

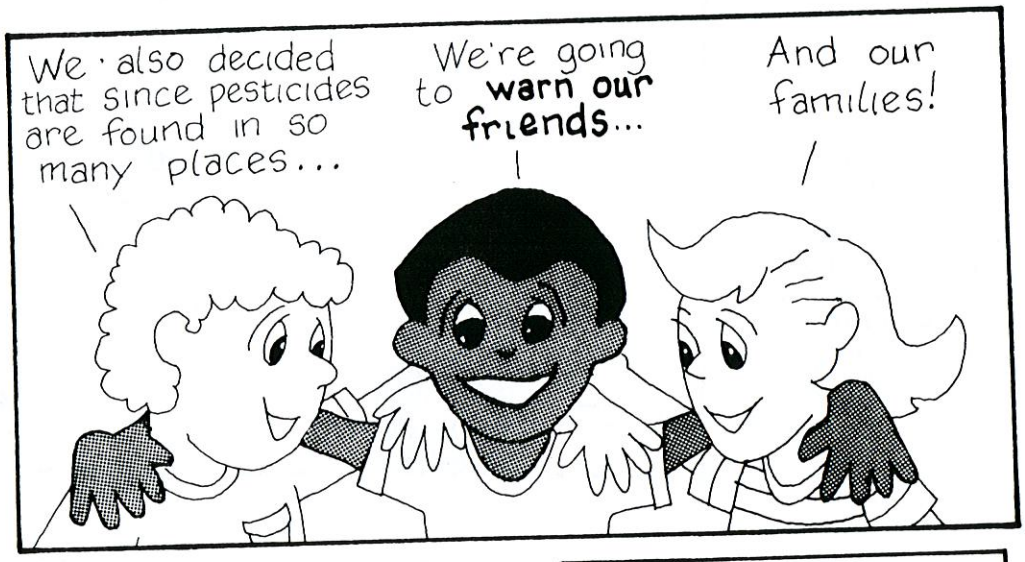
- Avoid storage areas. Most farmers store the pesticides they use in a storage shed or fenced-off area. These areas should be locked and identified with a pesticide warning sign.
- Avoid any person seen mixing or applying pesticides.
- Avoid any field being sprayed or recently sprayed until past the required reentry time, in some cases two days.
- Avoid machinery used to apply pesticides. Even when not in use, machinery can be covered with pesticides.
- Take care with clothes worn by persons working with pesticides. These are likely to be covered with pesticides and should not be washed with the family's clothes or left where children might play with them.
- Avoid used containers and dump sites.

Notes:

Pesticides are present in varying amounts and different locations throughout the agricultural setting. Just as scientists talk of "background radiation" when discussing the dangers of atomic radiation, one can think of there being a "background level" of pesticides to which farmers and farmworkers are constantly exposed. You may not have to get sick right away to be harmed by pesticides.

The effect of pesticides is still a mystery. No one knows for certain what the long-term effects are, but there is increasing evidence that frequent, low-level exposure may accumulate to cause illness and disease many years later. Some pesticides now in use are suspected of causing cancer and other side effects including sterility, birth defects, miscarriages, liver damage, nerve damage, and brain damage.

Digger McGee has gone, but pesticide safety is everybody's responsibility.



Danny, Laurie, and Juan have got the right idea . . .

Spread the word!

The more people who know the better. A lot of people—adults as well as young children—do not realize the potential dangers of pesticides.

Teaching Tools

Glossary

Acute poisoning: Severe poisoning that occurs after a single overexposure to a pesticide.

Carbamate pesticides: A family of pesticides that are chemically similar. They all attack a pest in the same way. Common ones are carbaryl, carbofuran, and methomyl.

Chlorinated hydrocarbons: A family of pesticides that are chemically similar in that they all contain chlorine. They are generally very persistent as compared with carbamates or organophosphates. Examples include chlordane, lindane, and methoxychlor.

Chronic poisoning: Poisoning that occurs as a result of small, repeated doses of pesticides over a long period of time.

Days to harvest: The least number of days between the last pesticide application and the safe harvest date, as set by law.

Drift: The movement by wind and air currents of droplets or particles of a pesticide from the target area to an area not intended to be treated.

Environment: Surroundings, usually water, air, soil, plants, and wildlife.

Environmental Protection Agency (EPA): The federal agency responsible for generating and enforcing pesticide rules and regulations.

Food chain: A way of describing how all animals depend on other animals or plants for food. An action affecting one link may be passed along to others in the chain.

Formulation: A mixture of one or more pesticides plus other materials such as carriers, diluents, and so forth, needed to make pesticides safe and easy to store, dilute, and apply. The formulation is the form in which the pesticide is bought; it does not include water or other substances used to complete the final mix.

Fungicide: Pesticide used to control organisms (fungi) that cause molds, rots, and plant diseases.

Granules: Pellets; a pesticide formulation of dry, ready-to-use, low-concentrate pesticide plus an inert carrier. The particles are all about the same size and are larger than those making up a dust pesticide.

Herbicide: Pesticide that is used to control unwanted plants.

Insecticide: Pesticide that is used to control or prevent damage caused by insects.

Lethal: Deadly, toxic.

Organophosphate pesticides: A family of pesticides that are chemically similar in that they all contain phosphorus. They are generally less persistent than the chlorinated hydrocarbon family. Examples include malathion and parathion.

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Unit 1 Objectives

What is a pesticide?

To help the learner understand the concept of "poison."

To help the learner understand the concept of "pesticide."

To help the learner understand that some pesticides can be strong and long-lasting.

Why are pesticides used?

To help the learner understand that pesticides are used to protect crops from harmful pests.

To help the learner understand that some pesticides form an invisible covering that cannot be easily washed off a crop.

Where do pesticides come from?

To increase the learner's ability to identify pesticide containers visually.

To increase the learner's ability to identify visually four pieces of equipment used to apply pesticides.

Unit 3 Objectives

Where are pesticides found?

To help the learner realize that pesticides may be found throughout the environment in the trees, ground, or buildings on or near the farm.

To increase the learner's understanding that it is useless to try to rinse out an empty pesticide container and why pesticide equipment should be avoided.

How to protect yourself from exposure to pesticides

To increase the learner's understanding of why all fruits and vegetables should be washed before eating.

To help the learner understand what steps to take when spraying is occurring near the home (e.g., take clothes off the line, go inside and close windows).

To increase the learner's understanding of the need to help educate family and friends about the dangers of pesticides.

Unit 1 Think sheet

What is a pesticide?

1. In the story, Juan, Laurie, and Digger found out that poisons are used in the fields.

   What do you think a poison is?

   Give some examples of where and why poisons are used.

2. In the story, what was a pesticide used for?

   Is a pesticide a poison?

   In the story, what things does a pesticide kill?

3. The farmer also says, "Pesticides can stay on my crops a long time. . . . They kill the bugs and weeds in my crops."
   How long do you think the pesticide stays on the crops?

4. At the end of the story, why didn't Juan, Laurie, Digger, and the farmer run through the fields?

Unit 2 Think sheet

What are the dangers of pesticides?

1. How might Danny have gotten sick?

   What are the three ways Dr. Franklin says pesticides can make a person sick?

2. What is a symptom?

   What were the symptoms of Danny's sickness?

   Have you ever felt like that?

   What other illnesses could make you feel that way?

3. In the story, the farmer talks about "reentry time." What is it?

4. In the story, find the three things that the farmer wears to protect himself when he works with pesticides.

What to do if you are exposed to pesticides

1. When Danny felt sick, who did he go to for help?

   When you feel sick, who do you go to for help?

   Why?

Think Sheet

Unit 1 Exercises

Circle the letter in front of the correct answer:

1. A pesticide is a
   a. plant disease
   b. food for animals
   c. poison that kills living things that are harmful to crops

2. Pesticides can be applied to crops by using
   a. hoses
   b. boom sprayers, granule spreaders, and airplanes
   c. airplanes only

3. Pesticides are poisonous to the insects that eat the farmer's crops. This means the insects are
   a. killed by pesticides
   b. not affected by pesticides
   c. scared away by pesticides

4. Farmers use pesticides
   a. because they do not cost much money
   b. to attract insects
   c. to protect crops

5. Pesticides
   a. cannot harm you
   b. can be strong and long-lasting
   c. can be seen on fruits and vegetables

True or False?

1. _____ A pesticide kills living things that are harmful to crops.

2. _____ Some insects, weeds, rodents, and diseases are harmful to crops.

Unit 2 Exercises

True or False?

1. _____ A person who feels dizzy may have been exposed to pesticides.

2. _____ After a field has been sprayed it is safe to go into it right away.

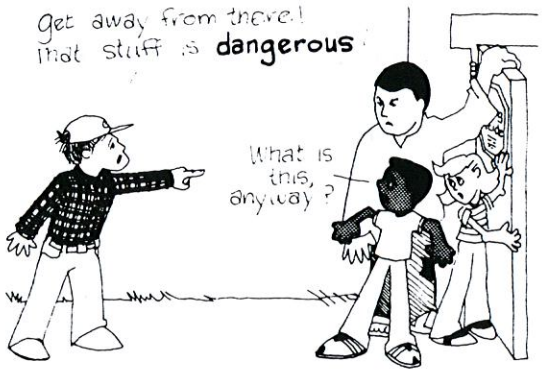
3. _____ Farmers do not have to wear protective clothing while working with pesticides.

Cross out the wrong answers.

1. People can be exposed to pesticide poisoning
   a. only by breathing
   b. only by touching
   c. by breathing, touching, or eating

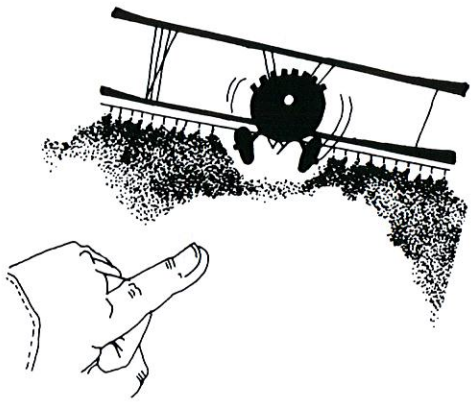
2. When a farmer mixes and applies pesticides he sometimes wears
   a. a mask, goggles, and rubber gloves
   b. a t-shirt and short pants
   c. a tie and jacket

3. If you think you are getting sick from pesticides you should
   a. get plenty of sleep
   b. take aspirin
   c. call a doctor right away



Unit 3 Exercises

True or false?



1. _____ You should always stay away from a farmer's pesticide equipment.

2. _____ You do not have to wash pesticides off fruits and vegetables.

3. _____ It is easy to see if there are pesticides on a crop.

Cross out the wrong answer(s).

1. If you see someone spraying near your home

   a. go inside

   b. do nothing

   c. go inside your house and close all the windows

2. Pesticides are

   a. often strong and long-lasting

   b. harmless

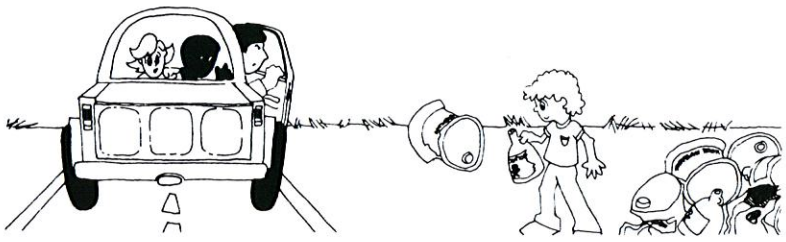
   c. used only on leaves

3. An empty pesticide container is dangerous because

   a. someone may lose it

   b. it may still have small amounts of pesticides in it

   c. it may litter the area



Exercises

For further information contact:

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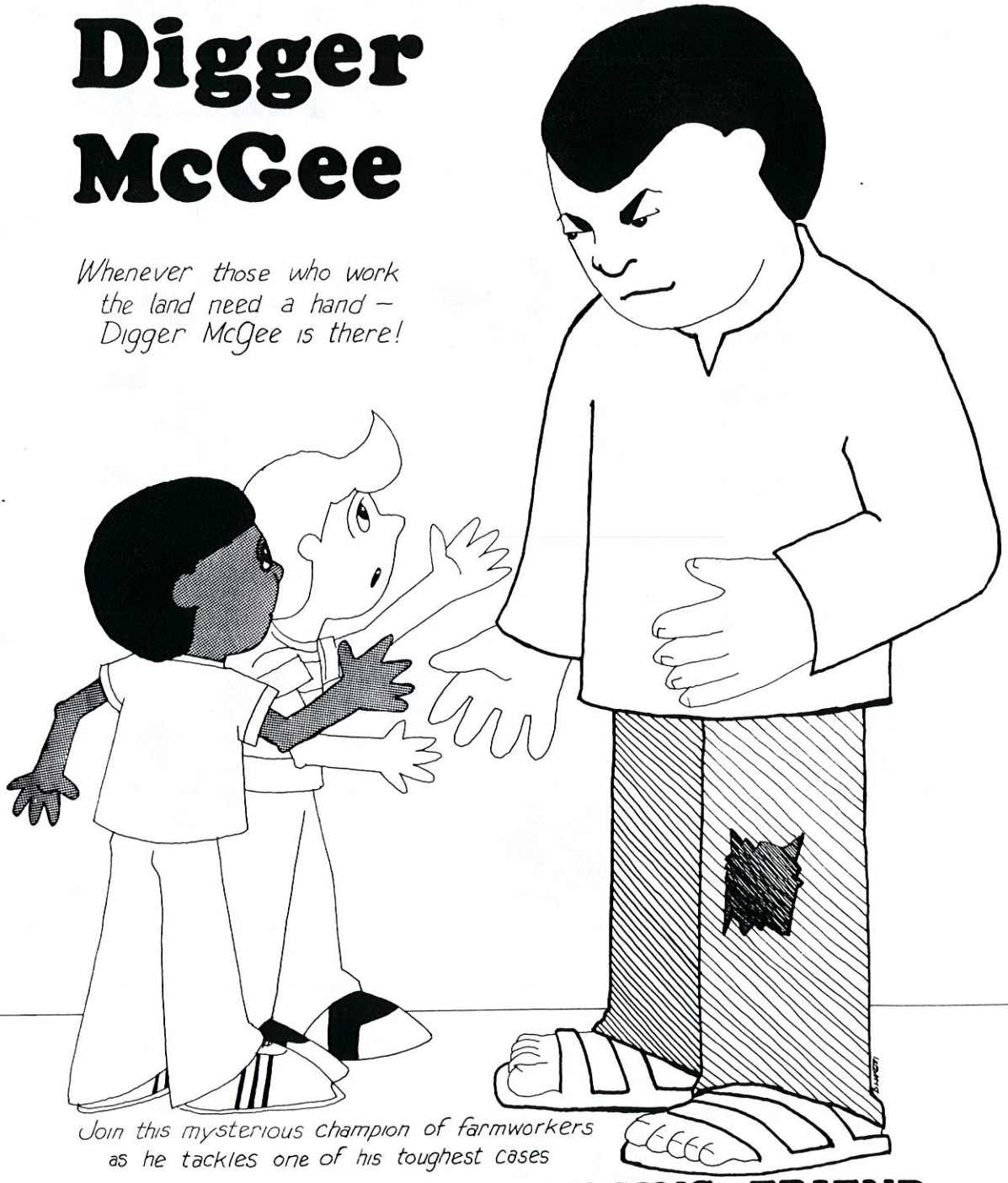
Ithaca, New York 14853
607-256-2243

The Adventures of Digger McGee

Whenever those who work the land need a hand – Digger McGee is there!

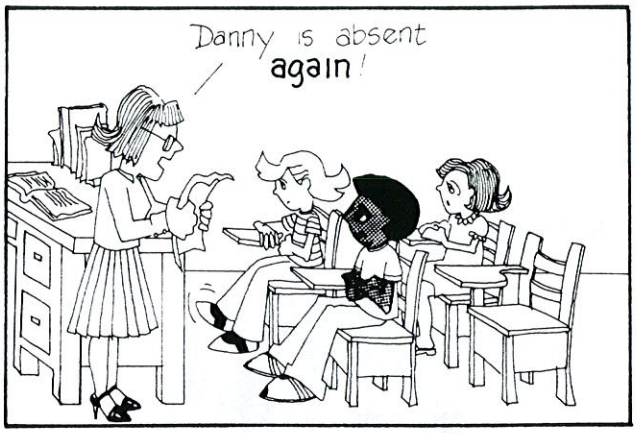


Join this mysterious champion of farmworkers as he tackles one of his toughest cases

THE CASE of the MISSING FRIEND

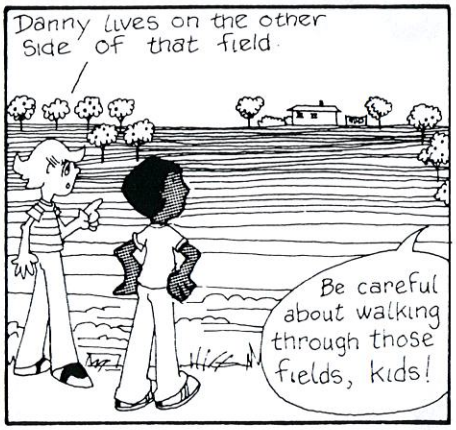
A teaching tool of the Pesticide Education Packet

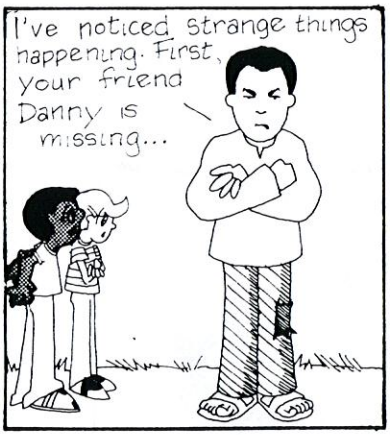
Illustrated by Debra Lee-Wilburn

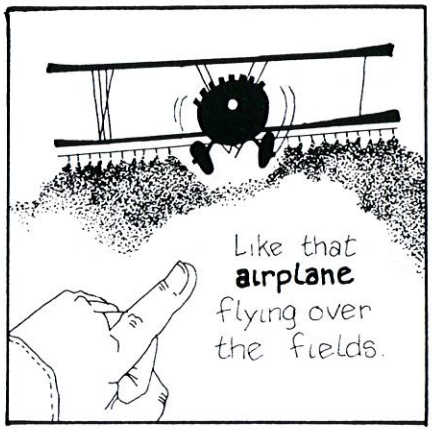


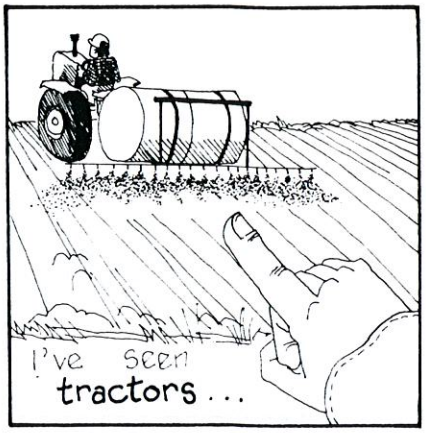
Digger McGee in

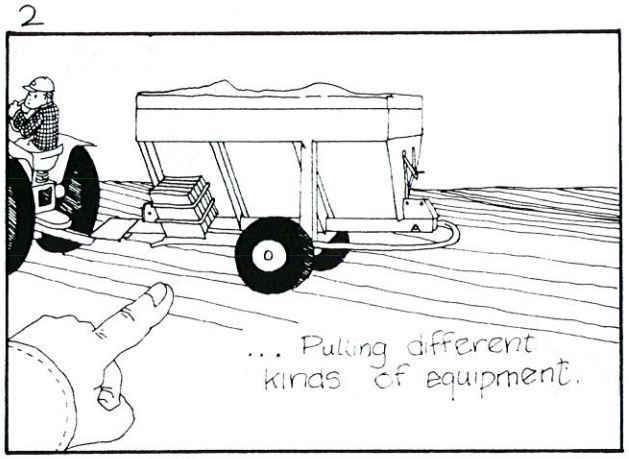
THE CASE of the MISSING FRIEND!

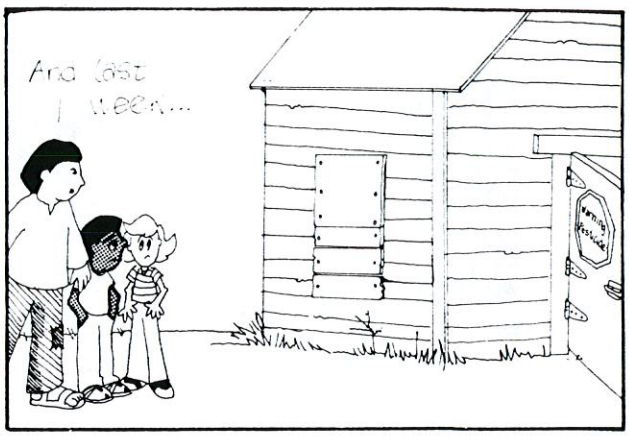








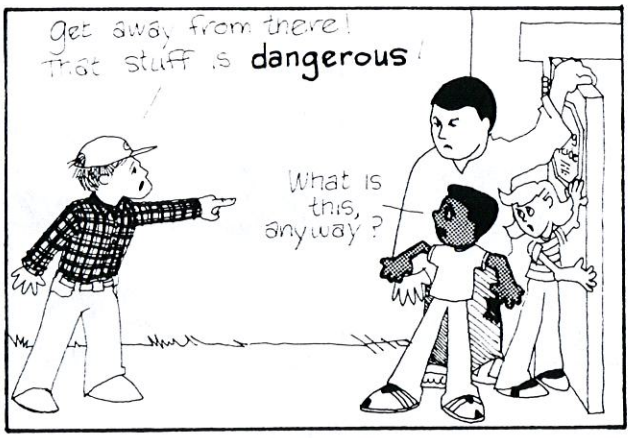

... Pulling different kinds of equipment.

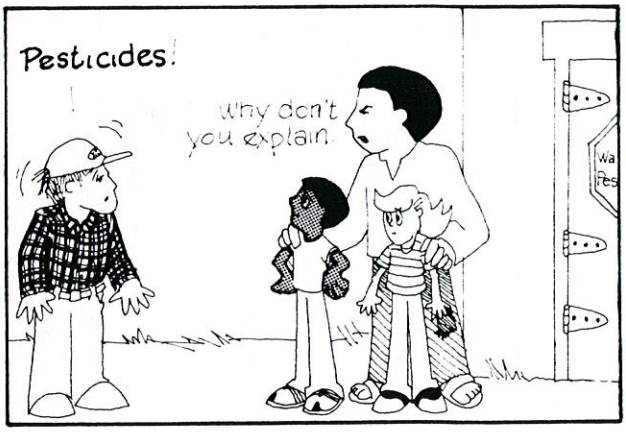

And last week...

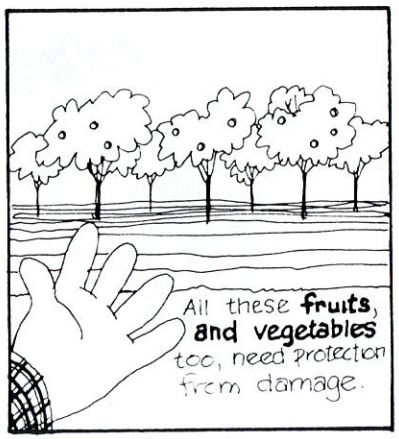

I found this!

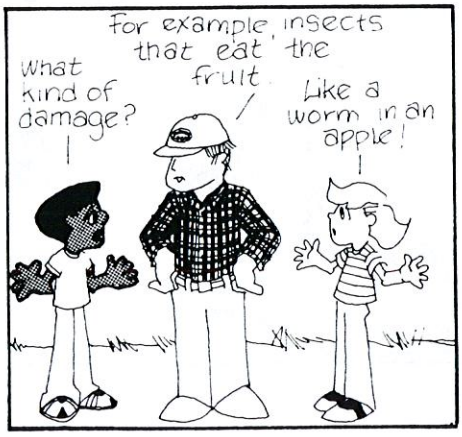

WARNING
PESTICIDES
FIRE WILL CAUSE TOXIC FUMES

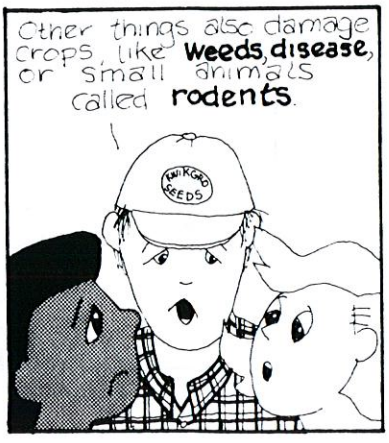

WARNING
ARTHO
ARTHO
FLY KILLER D
DANGER

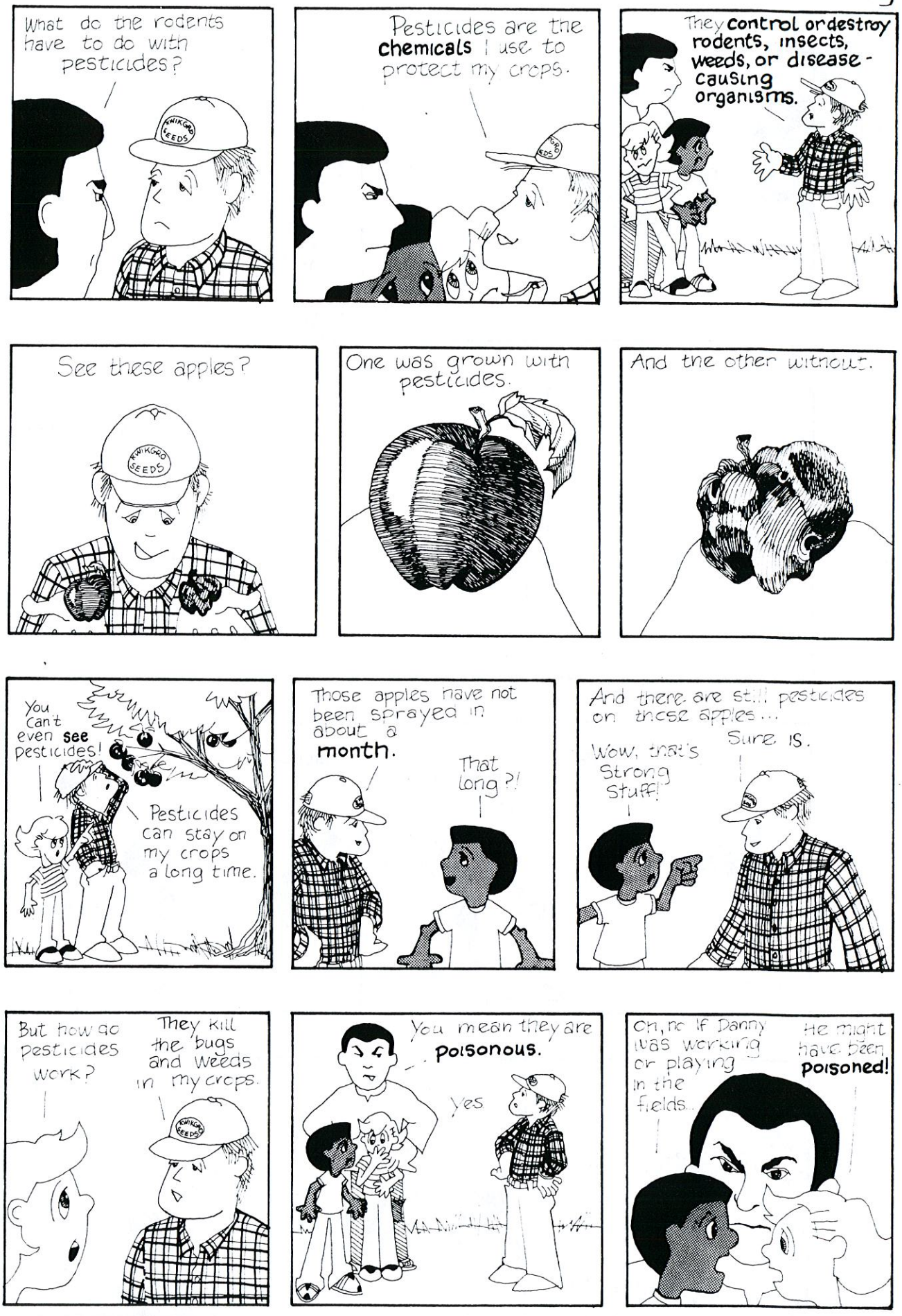

Get away from there! That stuff is dangerous!
What is this, anyway?

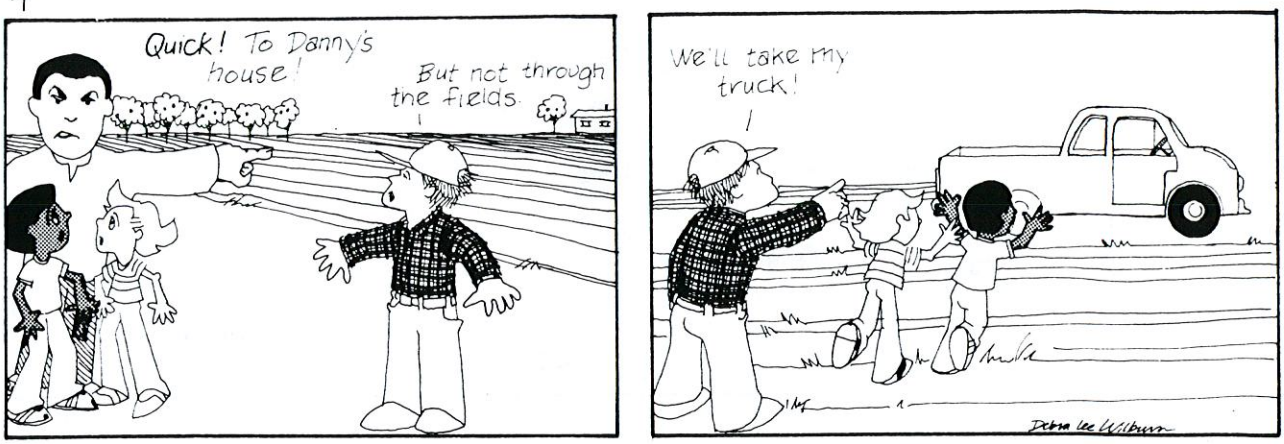

Pesticides!
Why don't you explain.


All these fruits, and vegetables too, need protection from damage.


For example insects that eat the fruit
What kind of damage?
Like a worm in an apple!


Other things also damage crops, like weeds, disease, or small animals called rodents.


What do the rodents have to do with pesticides?
KWIKGRO SEEDS
Pesticides are the chemicals I use to protect my crops.
They control or destroy rodents, insects, weeds, or disease-causing organisms.
See these apples?
One was grown with pesticides.
And the other without.
You can't even see pesticides!
Pesticides can stay on my crops a long time.
Those apples have not been sprayed in about a month.
That long?!
And there are still pesticides on these apples...
Wow, that's strong stuff!
Sure is.
But how do pesticides work?
They kill the bugs and weeds in my crops.
You mean they are poisonous.
Yes
Oh, no! If Danny was working or playing in the fields...
He might have been poisoned!



Will Danny be all right ?!

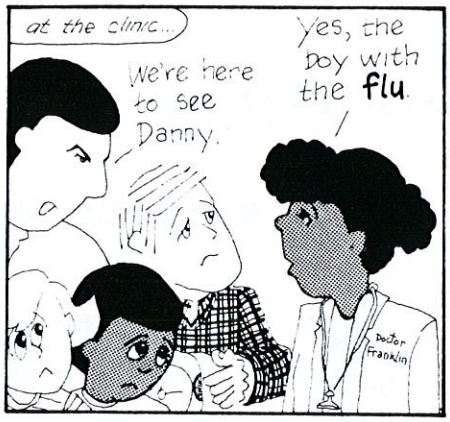
Find out in the next episode of

DIGGER McGEE

episode two

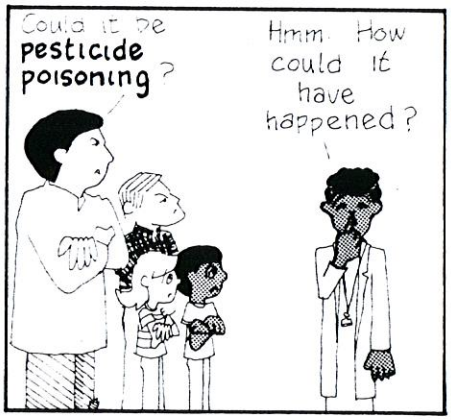

Is Danny here?
No. He was so sick that we took him to the clinic.

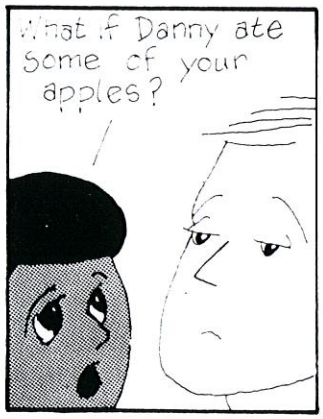

Let's go to the clinic!


at the clinic..
We're here to see Danny.
Yes, the boy with the flu.
Doctor Franklin


What makes you think he has the flu?


He had all the symptoms. He felt weak, dizzy, and he was sweating. He was also sick to his stomach


Could it be pesticide poisoning?
Hmm. How could it have happened?


What if Danny ate some of your apples?


If the apples were sprayed recently and he didn't wash them, Danny could get sick
yes, Danny could become ill because he did not wash apples sprayed with pesticides.


I think there is more. I have been watching your fields. After you spray, you stay away from the area for several days.

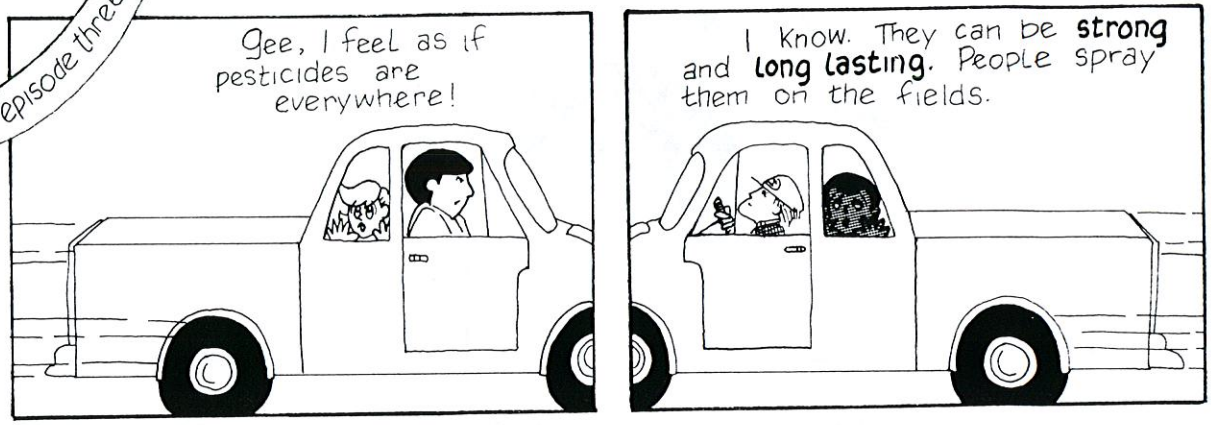

Yes. We call that "reentry time." To be safe you should not go into a sprayed field for several days.

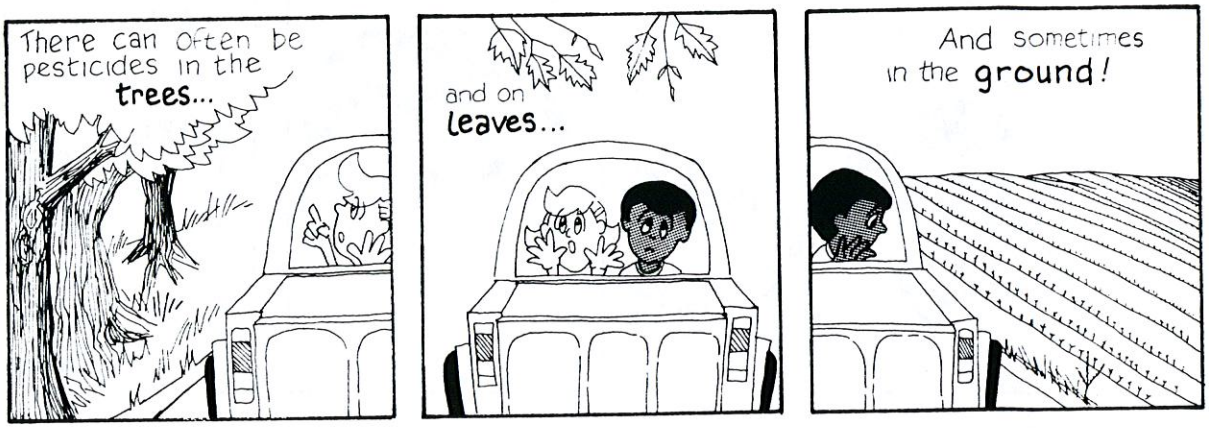
WHERE

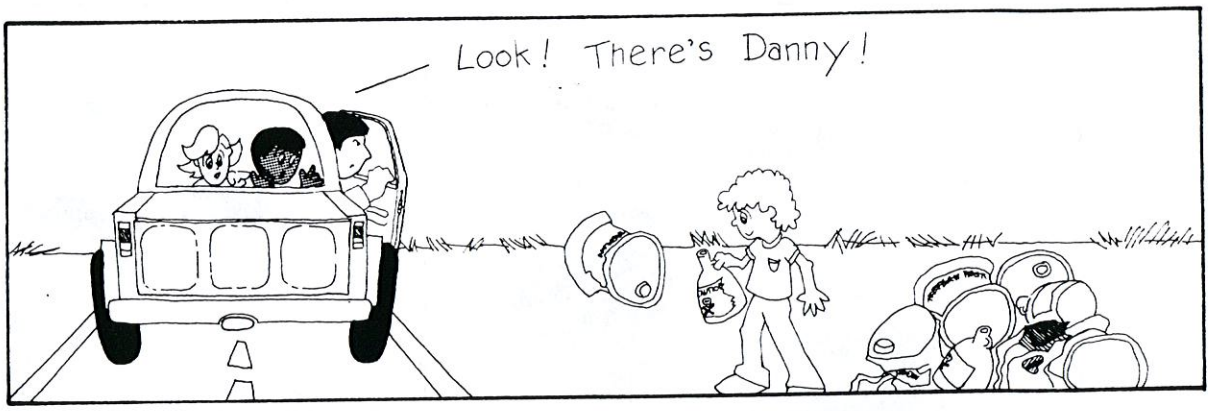
IS

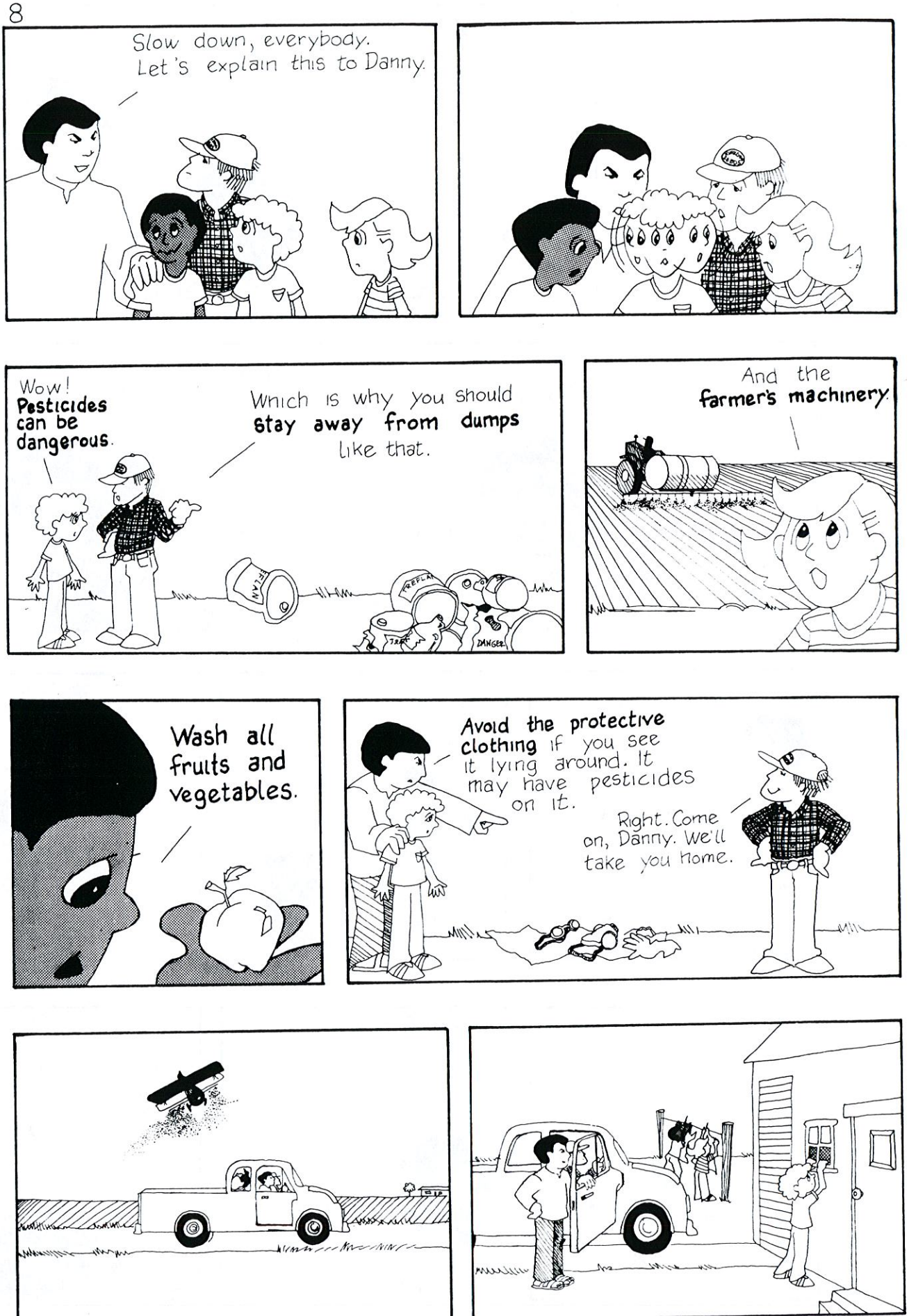
DANNY?

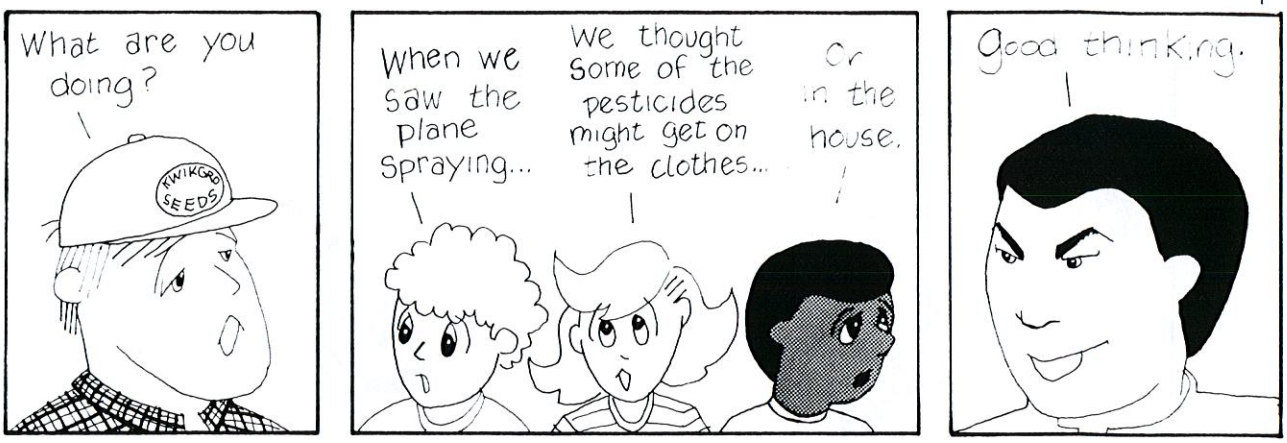
episode three

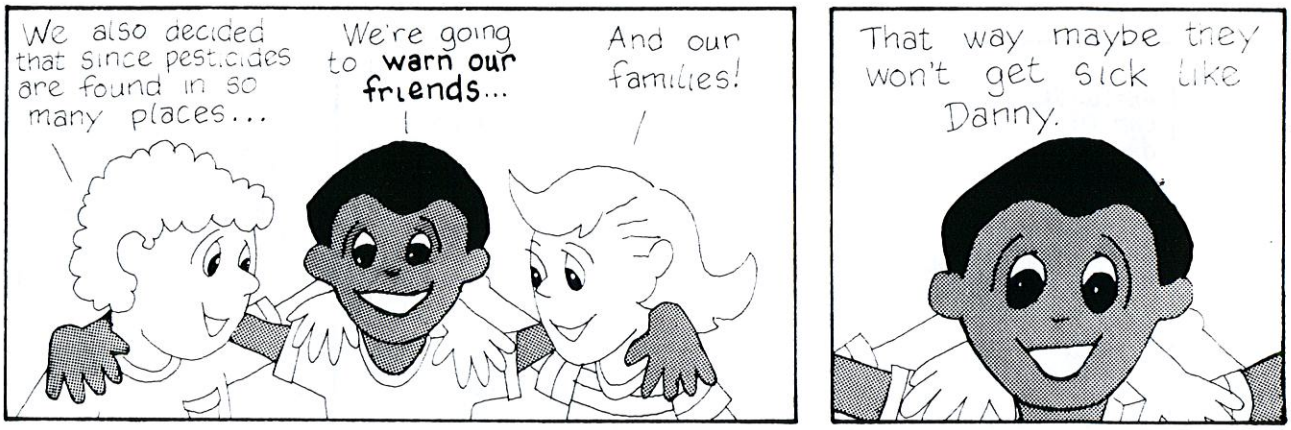


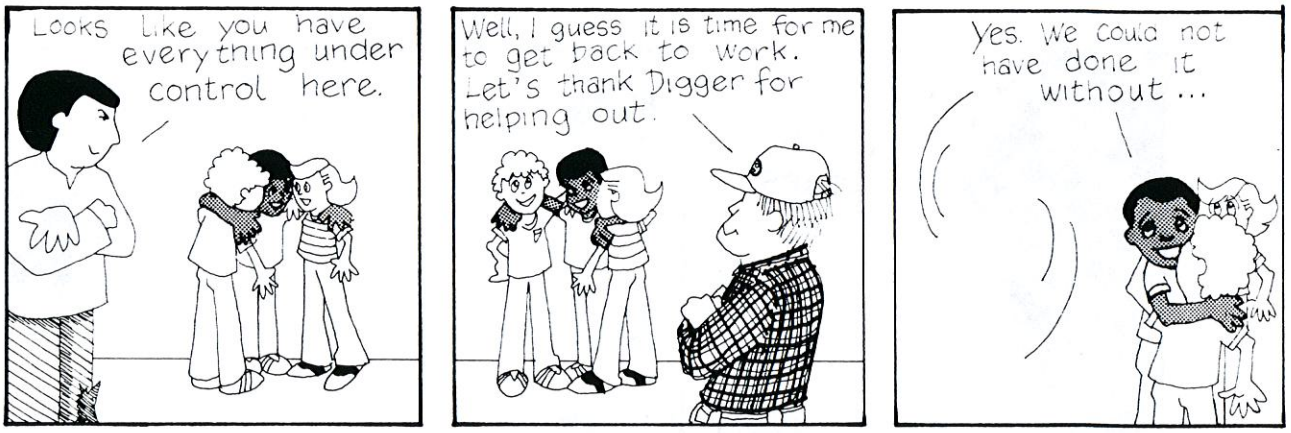





Slow down, everybody. Let's explain this to Danny.
Wow! Pesticides can be dangerous.
Which is why you should stay away from dumps like that.
And the farmer's machinery.
Wash all fruits and vegetables.
Avoid the protective clothing if you see it lying around. It may have pesticides on it.
Right. Come on, Danny. We'll take you home.


What are you doing?
KWIKGRO SEEDS
When we saw the plane Spraying...
We thought Some of the pesticides might get on the clothes...
Or in the house.
Good thinking.


We also decided that since pesticides are found in so many places...
We're going to warn our friends...
And our families!
That way maybe they won't get sick like Danny.


Looks like you have everything under control here.
Well, I guess it is time for me to get back to work. Let's thank Digger for helping out.
Yes. We could not have done it without...


Where did he go?!
Who was he, anyway?
Digger McGee!
Nobody knows where he is from...
Or where he goes.
But whenever those who work the land need a hand - Digger McGee is there!

Activity 1-C

Learning Objective: To help the learner understand that some pesticides can be strong and long-lasting.

Experiment: You will need a cup, an eyedropper, water, and vinegar.

a. Tell the learner to pretend that the vinegar is pesticide.

b. Put a drop into the cup, saying this amount of pesticide could be enough to kill a grown person.

c. Fill the cup with water. Ask the student if (s)he would drink from it. Discuss his/her response.

d. Empty the cup and refill it with water only. Ask the student if (s)he would drink from it now.

e. Discuss the fact that pesticides are strong and long-lasting and that this water could still be poisonous.

f. Repeat this demonstration at least twice, or more if necessary, to impress this information on the learner.

Activity 1-E

Learning Objective: To help the learner understand that some pesticides form an invisible covering that cannot be easily washed off a crop.

Experiment: You will need some vegetable oil, water, and a wash basin.

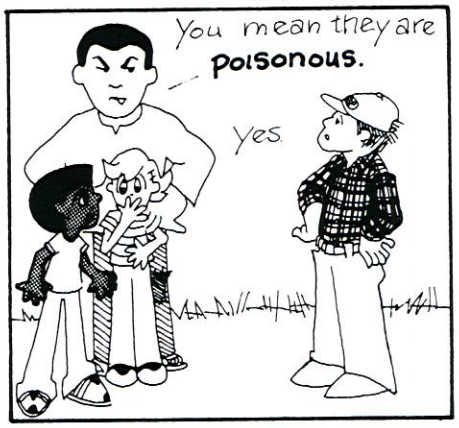
a. Ask the learner to give examples of protective coverings (s)he is familiar with such as a tablecloth on a table, plastic wrap around a sandwich, a football helmet, or a pot holder.

How to Use the Activity Cards

These activities exactly parallel the Objectives stated at the beginning of the Teaching Tools section of the Pesticide Education Packet. Activity Cards 1-A to 1-G correspond to Unit 1 Objectives; Activity Cards 2-A to 2-E to Unit 2 Objectives; and Activity Cards 3-A to 3-E to Unit 3 Objectives.

Blank cards are provided on which you can design your own activities.

Activity 1-A



Learning Objective: To help the learner understand the concept of "poison."

Methods & Discussions: Help the learner define the word "poison." Talk about poisons that may be familiar to the child such as poisoned bait set out for rats, ant traps, or fly spray. A more creative example would be to cite how Sleeping Beauty was poisoned by the Wicked Witch.

Activity 1-D

Learning Objective: To help the learner understand that pesticides are used to protect crops from harmful pests.

Methods & Discussions: Introduce the photographs of two crops, one treated with pesticides, the other without (Photo Packet, 8 and 9). Ask why there is a difference.

Discuss with the child the following situation: You just bought an apple from a farmer, took a bite of it, and found two worms. Ask the child if (s)he would buy another apple from the farmer. Relate this experience to why farmers use pesticides.

b. Discuss how these coverings act as protectors.

c. Ask the learner to rub the oil over his/her hands.

d. Pour a small quantity of water over his/her hands and ask the learner to try to rub the oil off.

e. Point out that the oil has formed a protective covering that cannot be seen or easily washed off.

f. Ask the student to compare how the oil covers his/her hands to the way pesticides cover fruits and vegetables.

Activity

Activity 1-B

Learning Objective: To help the learner understand the concept of "pesticide."

Methods & Discussions: Help the learner look up the word "pesticide" in the dictionary. Stress that pesticides are poisons used to control or destroy pests.

Activity 2-B

Pesticide Education Packet

Learning Objective: To help the learner recognize at least three symptoms of pesticide poisoning (e.g., dizziness, sweating, headaches, or nausea).

Methods & Discussions:

a. Present the child with an apple.

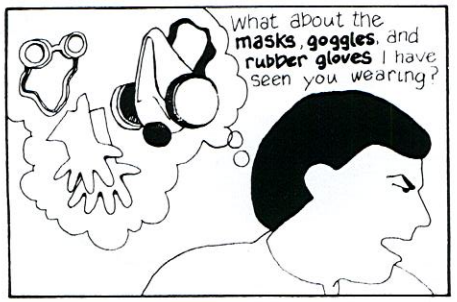
b. Tell him/her that it is covered with pesticides.

c. Ask him/her if (s)he would eat it and explain why or why not.

d. Ask the child to explain what (s)he thinks would happen if (s)he got sick from pesticides. Explain the symptoms of pesticide poisoning.

Activity 2-D

Pesticide Education Packet



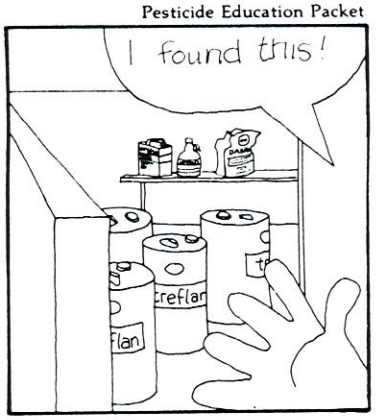
Learning Objective: To help the learner recognize protective gear and why it is worn.

Methods & Discussion: Introduce the photo of the farmer in his protective gear (Photo Packet, 20). Discuss how the gear protects the farmer. Review with the children the principles of absorption, inhalation, and swallowing and relate these principles to the use of the protective gear. (See ACTIVITY 2-A)

Ask the child to describe protective clothing (s)he wears such as raincoats, boots, or gloves.

Activity 1-F

Pesticide Education Packet



Learning Objective:
To increase the learner's ability to identify pesticide containers visually.

Methods & Discussions: Introduce the photos of the pesticide containers (Photo Packet, 10, 11, and 12). Show the learner that some of the labels have a poison symbol or the words "danger" or "caution." Ask the child to consider where these containers might be found. Show the photo of the storage shed (Photo Packet, 13) and the photo of the warning sign on the building (Photo Packet, 14) as an example.

Activity 2-A

Pesticide Education Packet

Learning Objective:
To increase the learner's knowledge that pesticides can be inhaled, swallowed, or absorbed through the skin.

Experiment: You will need a white or light-colored sponge and water dyed heavily with food coloring or india ink; a bottle of strong-smelling perfume; something to eat or drink.

Part I.

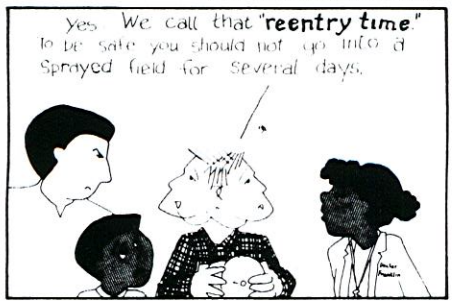
a. Use the sponge and colored water to demonstrate absorption.

b. Discuss what happens to the student's clothes when (s)he is caught in the rain.

c. Introduce and discuss the pictures from the Photo Packet (15, 16, 17) that illustrate the three ways pesticides are introduced into the body.

Activity 2-C

Pesticide Education Packet



Learning Objective:
To clarify the learner's understanding of the phrase "reentry time."

Methods & Objectives: Ask the child if (s)he would go into a field that had just been sprayed and explain why or why not.

From the Photo Packet (18) introduce the picture of a "reentry time" sign. Discuss the meaning of the sign and why it is important to wait several days before reentering a field.

Ask the learner to describe other warning signs with which (s)he is familiar, such as Mr. Yuk, STOP, DANGER, and other symbols. Show and discuss the "stop" pesticide sign (Photo Packet, 19).

Activity 2-E

Pesticide Education Packet

Learning Objective: To help the learner realize the importance of contacting a doctor in case of pesticide poisoning.

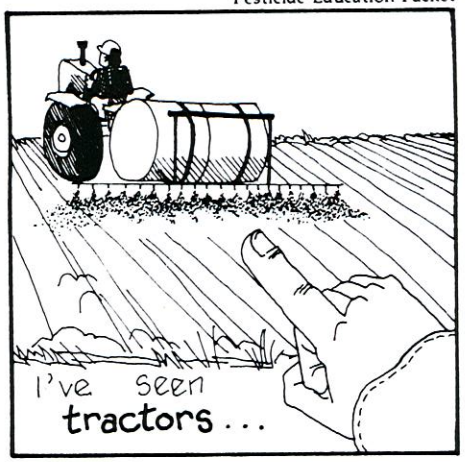
Methods & Discussions: Discuss with the learner why people visit a doctor when they are sick. Begin by asking the child if (s)he has ever been to a doctor or clinic. Talk about why (s)he went and how (s)he felt about it. Help clarify the learner's understanding of when and why it is important to see a doctor.

Explain to the child that bringing the label can help the doctor treat pesticide poisoning.

Discuss other ways to get help if a doctor is not available, for example, contact parents, teachers, or friends. Discuss what these people might do to help such as calling an ambulance, getting a ride to the doctor, or calling the poison control unit in your area. Stress the importance of *not* trying to treat poisoning cases without a physician's assistance.

Activity 1-G

Pesticide Education Packet



Learning Objective:
To increase the learner's ability to identify visually four pieces of equipment used to apply pesticides.

Methods & Discussions: Introduce the photographs of the different types of pesticide equipment (Photo Packet, 1, 2, 3, 4, 5). Discuss with the child how each is used.

Part II.

a. Open the perfume and saturate a paper towel until the student smells the odor.

b. Discuss how the smell enters the body.

c. Have the child give examples of things that are normally inhaled, eaten, or touched such as candy bars, perfumes, and skin lotions.

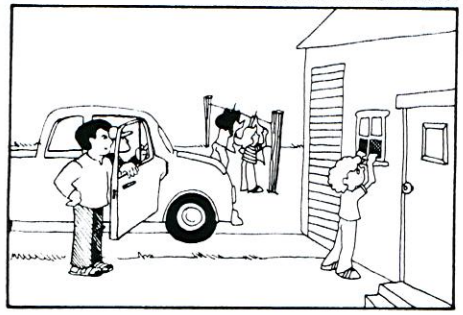
Part III.

a. Provide something for the child to eat or drink.

b. Discuss how poisons can be accidentally swallowed (using unwashed pesticide container, drinking improperly labeled fluid, eating unwashed fruit, and so forth).

c. Ask the learner to name things that would be dangerous to eat, breathe, or touch, such as wild mushrooms, propane gas, or rat poison.

Activity 3-D



Learning Objective: To help the learner understand what steps to take when spraying is occurring near the home (e.g., take clothes off the line, go inside and close the windows.)

Experiment: You will need a can of spray paint, a large piece of white construction paper, and some newspaper.

a. Lay the newspaper down to protect the desk from the paint.

b. On the construction paper, have the learner draw a map of a farm showing the fields, barns, and houses near the fields.

c. Have the child spray just the "field" with the spray paint.

Activity 3-A

Learning Objective: To help the learner realize that pesticides may be found throughout the environment in the trees, ground, or buildings on or near the farm.

Experiment: You will need three cups, a crayon, salt, sugar, glass slides, an eyedropper, a heat source (could be a cigarette lighter), a brick, and a piece of wood.

a. Fill each cup with water.

b. Drop a handful of salt into the first cup and label it #1. Add nothing to the second cup and label it #2. Add sugar to the third cup and label it #3.

c. Ask the learner what happened to the salt and sugar. Are they still in the cup?

Activity 3-E

Learning Objective: To increase the learner's understanding of the need to help educate family and friends about the dangers of pesticides.

Methods and Discussions: Ask the child why (s)he would warn friends and family about the dangers of pesticides.

Explore what the child knows about pesticides: why they are used, why they are dangerous to humans and other living beings, and why people need to protect themselves.

Activity 3-B

Learning Objective: To increase the learner's understanding of how useless it is to try to rinse out any empty pesticide container and why these containers and pesticide equipment should be avoided.

Methods & Discussions: Refer back to ACTIVITY 1-C and remind the child that pesticides can be strong and long-lasting. If necessary, repeat the experiment.

Ask the learner if (s)he would reuse an empty pesticide container to carry water. Why or why not?

Expand the discussion to include why these containers, and all other pesticide equipment, should be avoided.

d. Afterward, point out that some of the paint drifted elsewhere on the map, onto the houses and barns.

e. Relate this drifting to pesticide spraying and ask the child why (s)he thinks clothes should have been taken off the line, windows closed, and spray areas avoided during spraying.

Activity

d. Using the eyedroppers, take a sample from each cup and put it on the glass slides, labeling them #1, #2, and #3.

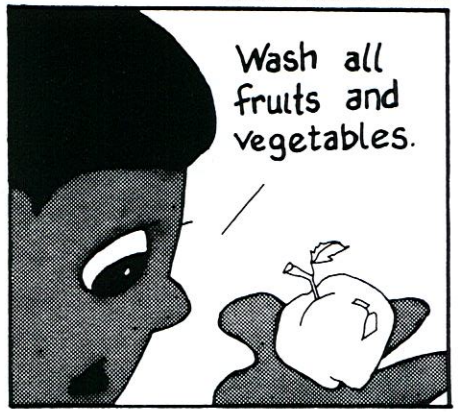
e. Put the heat source to the glass slides. Note that the sugar and salt crystals reappear as the water evaporates. Discuss.

f. Have the learner put a drop of solution #1 on the brick and a drop of solution #3 on the wood. Ask the learner what becomes of the salt and sugar.

g. Explain to the learner that a similar process occurs with pesticides, which can soak into the wood and bricks of houses near the fields. The pesticides can also soak into the ground and get onto trees and plants.

Activity 3-C

Learning Objective:
To increase the learner's understanding of why all fruits and vegetables should be washed before eating.



Methods & Discussions: Present the child with an apple. Remind him/her that once applied, pesticides are difficult to see. Tell the child the apple has been sprayed with pesticides, but you are not sure when; it could have been yesterday or three weeks ago.

Ask the child if (s)he thinks it is safe to eat the apple. Why or why not? Ask him/her to think of a way to make sure the apple would be safe to eat.