

# **Pesticide Safety Handbook**



## **Manual de Seguridad de los Pesticidas**



This booklet © 2002 by the Fred Hutchinson Cancer Research Center.

Curriculum development and reproduction made possible by grants from the NIEHS (P01ES09601) and US EPA (R826886).

Beti Thompson, Ph.D., Principal Investigator

# General Pesticide Information



# I. WHAT ARE PESTICIDES?

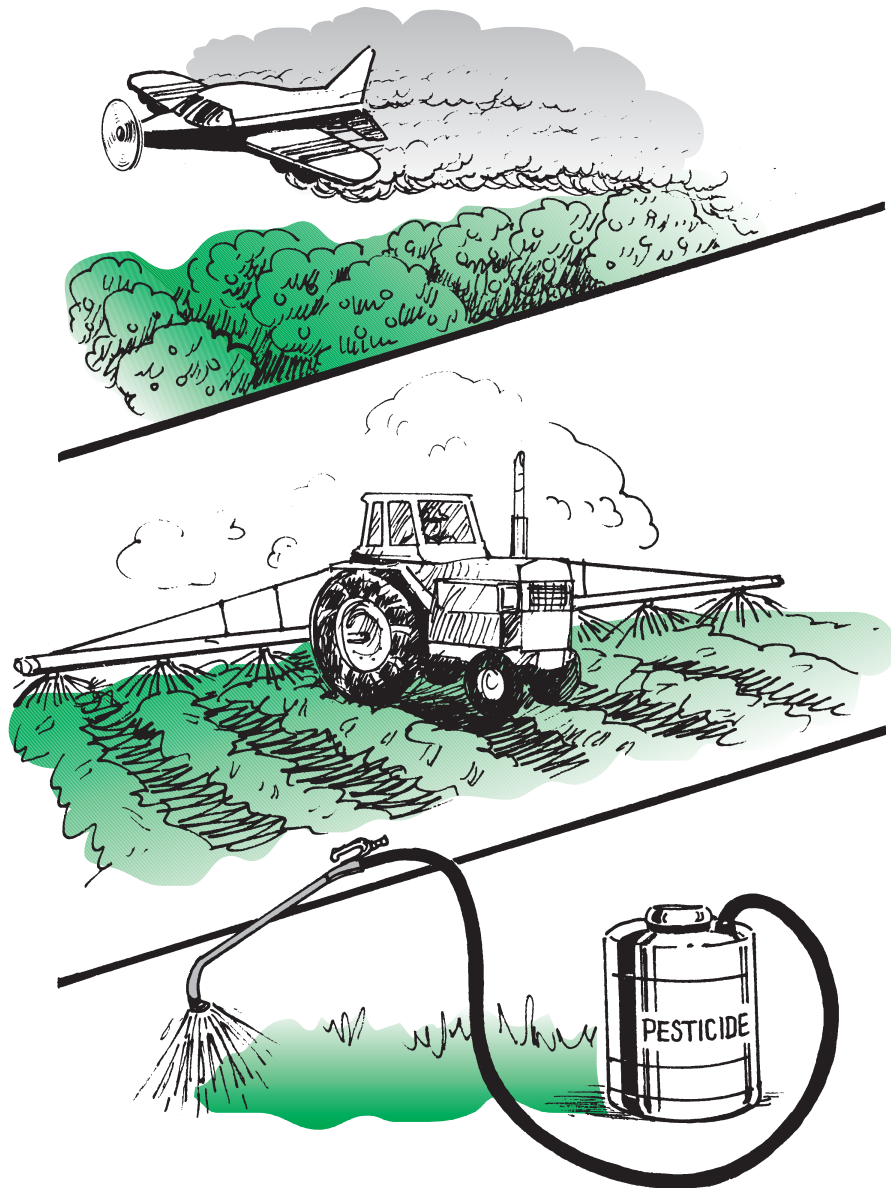
**Pesticides are chemicals that are used to control many types of pests. They come in different forms and are applied in several different ways.**

**Pesticides are used to control:**

- Insects
- Weeds
- Fungus
- Molds
- Rodents

**They come in the form of:**

- Liquids
- Powder
- Gases



## II. CONTACT WITH PESTICIDES

People are exposed to pesticides through their skin, mouth, eyes and nose.



Some people are exposed to pesticides in their jobs (farmworkers, warehouse workers), others are exposed to pesticides in their homes, and still others are exposed through the food they eat. Farmworkers can carry pesticides into their homes where family members can become exposed if they are not careful.

## III. SYMPTOMS OF PESTICIDE EXPOSURE

People exposed to pesticides may experience a number of health symptoms.

### Mild Symptoms



Headache



Dizziness



Weakness, fatigue



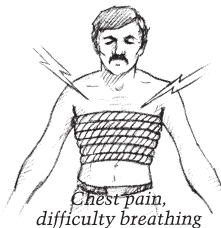
Nausea, vomiting,  
diarrhea



Excessive sweating



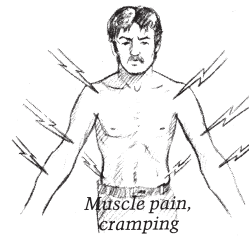
Blurry vision



Chest pain,  
difficulty breathing



Increased secretions from  
eyes, nose, and mouth



Muscle pain,  
cramping

Even with only mild symptoms, a worker can feel uncomfortable. Eyes can water and get red and itchy. Skin can get red bumps and feel itchy.

- Dizziness, faintness
- Coughing
- Wheezing or trouble breathing
- Blurry vision
- Fainting
- Drooling from mouth or nose
- Vomiting
- Very bad headaches
- Small pupils of the eyes

### Severe Symptoms

Some of these symptoms may feel like a cold, flu, or heat exhaustion. Some people may have an allergic reaction to plants, fertilizers, or other chemicals used in agriculture. It is best to see a doctor if any of these symptoms are present.

☠ **Very severe pesticide poisoning can lead to death.**

## IV. IF SOMEONE HAS PESTICIDE-RELATED SYMPTOMS

**If experiencing symptoms, seek medical attention.**

Remember to **ACT** quickly:

### **Ask – Ask other workers if they have experienced the same symptoms.**

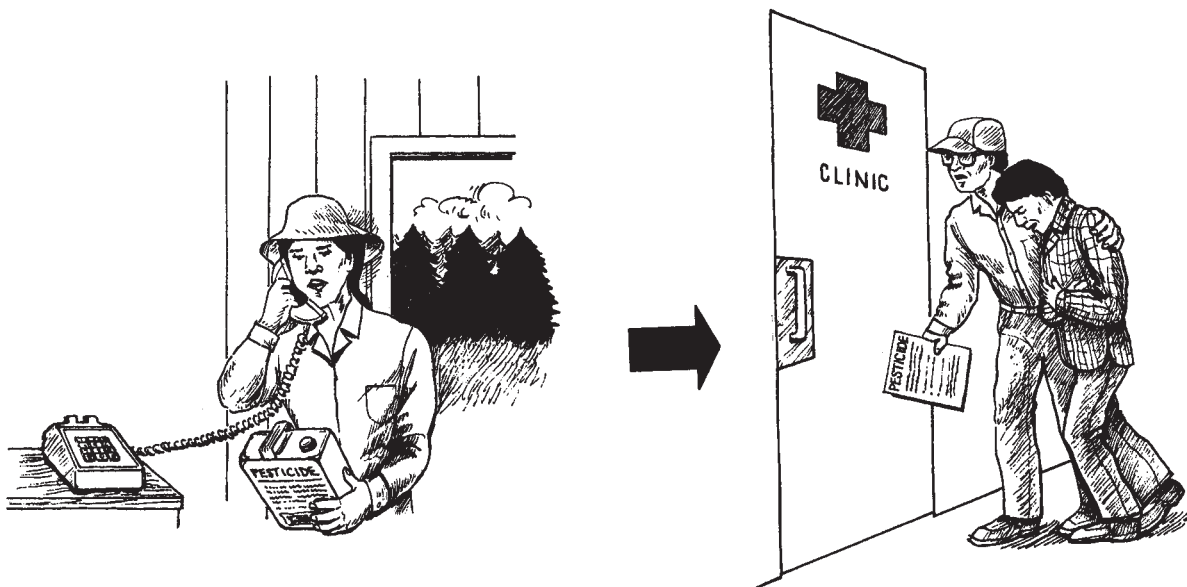
- If others began feeling sick at the same time and have the same symptoms, then the symptoms may be related to a common pesticide exposure. Symptoms of pesticide exposure usually begin only minutes or hours after the initial contact.

### **Check – Find out which pesticides were sprayed.**

- It is important to know what chemicals were sprayed so your doctor can correctly identify and treat your symptoms. Ask your supervisor or crew leader for this information.

### **Tell your doctor – Go to a clinic or hospital to seek medical attention.**

- If there is even a slight possibility that your symptoms are due to exposure to pesticides, **tell your doctor this.**



**Note:** If you become sick due to hazards at work, you have the right to file a claim for workers' compensation benefits. Your doctor can help you open a claim. These benefits can pay for medical expenses and a portion of wages, if you are too sick to work.

## V. Frequently Asked Questions About Pesticide Exposure

### **Do pesticides cause asthma?**

Little research has looked at pesticide use and asthma. People who have asthma may find that working with dust and chemicals makes their asthma worse. It is recommended that all people with respiratory conditions limit their exposure.

### **Do pesticides cause cancer?**

Some pesticides used in agriculture are known or suspected to cause cancer in laboratory animals, such as mice. Research suggests that pesticides may cause some types of cancer in humans as well, such as Non-Hodgkins lymphoma, leukemia, soft tissue sarcoma, and cancers of the brain and liver. For adults, cancer can take up to 10 or 15 years to develop; for children, it can develop much sooner.

Being exposed to pesticides that cause cancer does not necessarily mean that you will get cancer. It only means that your chances of getting cancer are greater. There are many things that affect your risk.

### **What are the long-term risks of pesticides?**

Warning labels on pesticides talk about immediate health risks, but not long-term effects. In addition to certain types of cancer, pesticide exposure may be related to changes in the brain and nervous system. Reproduction may also be affected. Young children may be at greatest risk because their brains and nervous systems are developing and don't have the defenses that adults do.

### **Can exposure to pesticides cause miscarriages?**

Some studies show that a woman's exposure to pesticides during the first months of pregnancy can be related to miscarriages. We don't yet know whether pesticides are related to birth defects in children. We also do not know whether a mother or father's exposure to pesticides before the baby is conceived is related to miscarriage or infant malformations.



## VI. Myths

### **Pesticides don't really cause all the problems people talk about. I have been exposed for years, and I am fine.**

Some people may never experience any harm from working with pesticides. Others, however, may get sick even from low doses of pesticides. Young children or fetuses may be at greatest risk. Reducing the amount of pesticides that enter your home may improve the health of your children.

### **You are safe if you experience no symptoms after 24 hours of exposure to pesticides.**

You may see the effects of pesticides months, even years after exposure, so it is important to reduce the amount of exposure that you and your family have.

### **We should wait to protect ourselves from pesticides until we know for sure the health effects.**

It may be years before we really know the full effects pesticides have on our health. Once we do know, it may be too late to reverse the effects, so it is important to protect ourselves now.

### **Protecting ourselves from pesticides is uncomfortable.**

Years ago, many workers did not wear protective equipment when working with pesticides in the fields. However, much research suggests that protective equipment should be worn. This equipment helps reduce the amount of pesticides that enter our bodies and homes. It is worth a little discomfort to protect you and your family.

### **The health symptoms that agricultural workers experience are due to heat stress or heat exhaustion.**

Some workers may feel sick after working in the sun; some may even experience heat stress or heat exhaustion. Pesticide exposure also can make people feel sick. Because heat and pesticide symptoms can be similar, it is hard for most of us to tell the difference. That is why it is important for a doctor to make this diagnosis.

Drinking a lot of fresh water can help keep you from getting sick – it helps prevent heat exhaustion and can also help pesticides pass through your body.



# Pesticides & The Worker



# I. SAFE HABITS AT WORK

## Wear appropriate protective clothing.

Field workers can be exposed to pesticides from the dust that falls from leaves and branches. Both applicators and field workers can come in contact with spray that drifts from a nearby field. Workers also can be sprayed accidentally with pesticides.

Field workers should protect themselves from pesticides at work by wearing all of the following:

- Hat or bandana
- Long sleeve shirt
- Long pants
- Socks
- Closed-toed shoes or boots



Sprayers, applicators, and handlers of pesticides should always wear the personal protective equipment (PPE) listed on the pesticide label while handling pesticides.

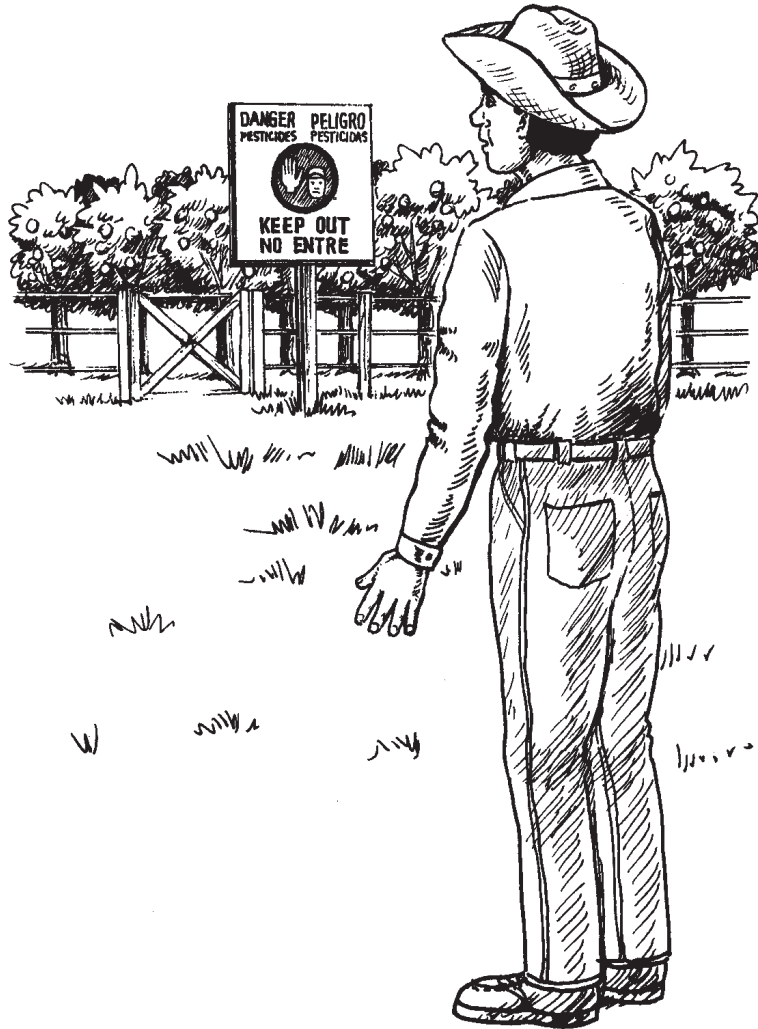
PPE may include:

- Chemically resistant suit
- Respirator
- Gloves
- Goggles
- Boots

If personal protective equipment is dirty, torn, or does not fit well, ask your boss to provide the necessary safety equipment.

**It is a violation of the law for an employer to fire or discriminate against a worker for exercising health and safety rights.**

## Do Not Enter Recently Sprayed Fields.

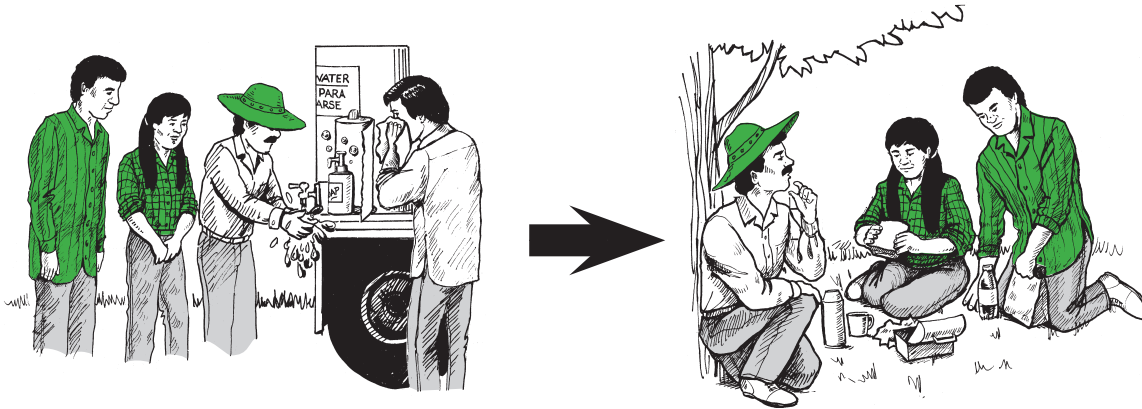


The Environmental Protection Agency (EPA) sets rules for each pesticide that say when it is safe to return to a field that has been sprayed. The waiting period depends on the type of pesticide used.

After spraying, some farms will have a sign posted that says, “Do Not Enter.” You **should not enter** the marked area unless you have special training and protection.

The general rule is that if leaves and branches are wet with chemicals, you should stay out of the field. For certain pesticides, even if the residues are dry, workers should stay out of the field for a certain period of time. If you are not sure whether a field is safe to enter, ask your boss or supervisor.

## Wash hands frequently with soap and water.



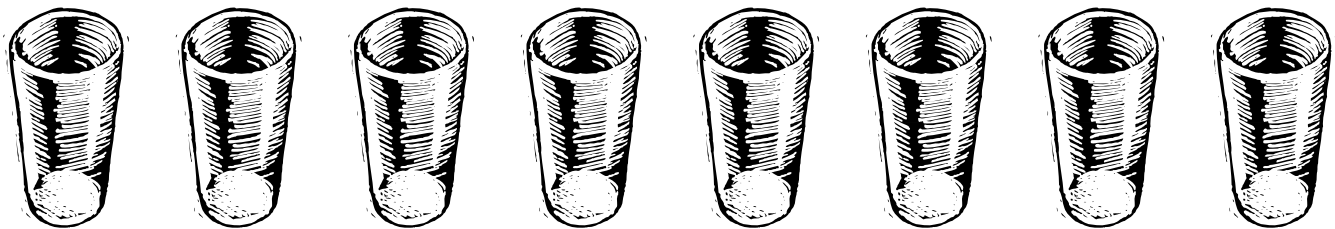
Pesticide residues stay on hands and may contaminate food and other items. Hands should always be washed before:

- Eating
- Drinking
- Smoking or chewing tobacco
- Using the bathroom

Frequent hand washing also reduces the absorption of pesticides into the body in two ways:

- 1) Washing hands removes pesticides so they spend less time on your skin.
- 2) Having clean hands lessens the chance that pesticides will get into your eyes or nose.

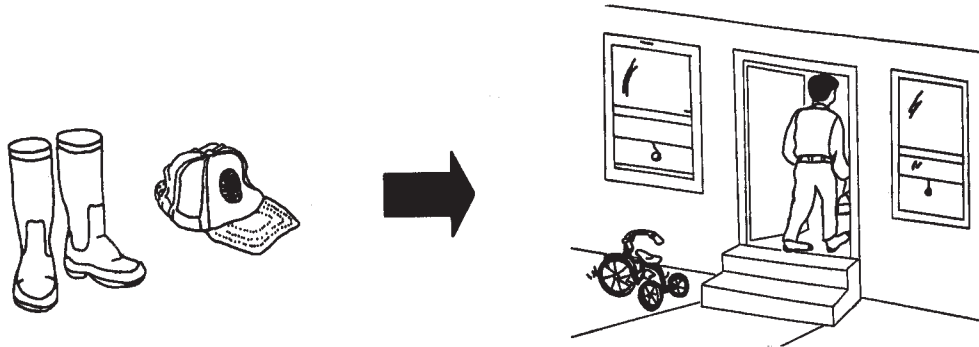
## Drink 6 – 8 glasses of water every day.



- Drinking large quantities of water helps the body eliminate toxic chemicals such as pesticides.
- Drinking water may prevent heat exhaustion and dehydration during long hours of work in the sun. **It is important to drink water instead of soda and/or alcohol. Alcohol and caffeine both dry out the body.**

## II. COMING HOME FROM WORK

**Take off boots and hat before entering home.**



- Boots, gloves, and hats that were worn in the field should be removed **before entering the home**. You should also change out of work clothes, either at work or outside.
- After undressing, place work clothes in a plastic bag or special container to protect the person who will wash them.
- Store work clothes out of the reach of children.
- **Wash hands after work**, before coming in contact with family members, especially children.

**Shower and put on clean clothes immediately after coming home.**

- Take a shower, not a bath, to remove pesticides after work. Wash hair and clean under fingernails and toenails.
- Put on clean clothes after showering and before hugging or playing with children.



## Wash work clothes after wearing them once.

Clothes can contain pesticides, dust, plant toxins, and other things that can irritate a person's skin.

### Following these steps will help reduce pesticide exposure in the home.

#### Washing work clothes:

- Wash work clothes after wearing one time, even if they are not very dirty.
- Wash work clothes separately from family clothes. Pesticide residues on workers' clothes can contaminate family clothing.
- Wear rubber gloves while handling dirty work clothes or transfer the clothing directly from a plastic bag into the washer. Wash hands when finished.
- Use detergent and hot water at full water level. Set the water level on high, even for small loads, so that the pesticides can be well rinsed.

#### Drying and storing work clothes:

- Dry work clothes outside on a clothesline in direct sunlight. The sunlight will help break down the pesticides. However, if pesticides have been sprayed recently on fields nearby, dry clothes inside in a clothes dryer.
- Once dry, store work clothes separately from family clothes.





## III. Myths

### **I will lose my job if my employer finds out that I have gone to a doctor because I have been exposed to pesticides.**

According to state law, you cannot lose your job because you report exposure to pesticides or open a claim for workers' compensation benefits. If this has happened to you or to anyone that you know, seek legal advice (see Resources in Our Community pamphlet).

### **When workers experience symptoms from working in the fields, it is often an allergic reaction to the plant, not a reaction to the chemical.**

Some workers may experience allergy symptoms similar to pesticide-related symptoms. Nevertheless, these and other symptoms may be associated with exposure to pesticides as well. Make sure to explain all of your symptoms to your doctor.

### **My children will never experience any effects of pesticides because I am a field worker, not an applicator or sprayer.**

Field workers are often exposed to pesticide residues from leaves and branches. The residues that are taken home may affect children.

### **Showering when I am hot will put my body in shock.**

Showering when you are hot won't put your body in shock. However, if it is more comfortable, shower in lukewarm water. Once your body is comfortable, adjust the temperature to suit your needs. If you are extremely uncomfortable showering right away, drink a glass of cold water and let your body cool for a few minutes before showering.

### **Showering immediately after work or washing hands in cold water will cause arthritis.**

Arthritis is caused by a bone injury or joint disease, not by cold water. Even though showering or washing hands in cold water may be uncomfortable for someone with arthritis, it does not cause or worsen arthritis.



# Pesticides in the Home and Family



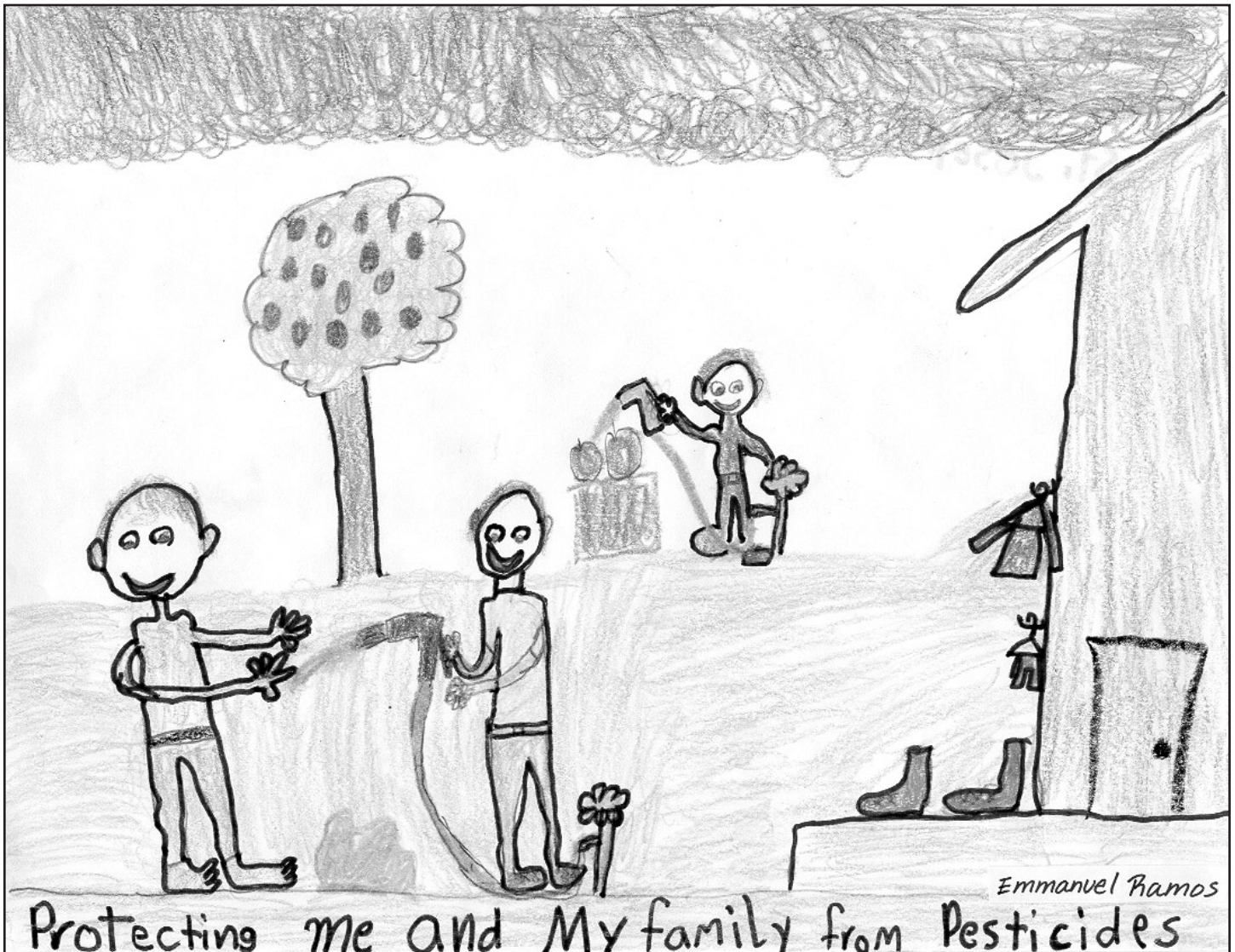
# I. INTRODUCTION

Pesticides can be carried into the home in many ways:

- Dust on skin or work clothes
- Spray drift from a nearby field
- Lawns and gardens
- Household pets

Also, some pesticides are used in the home to kill insects.

Pesticides in the field are exposed to water and sunlight. The sunlight helps break down the pesticides. Once they are inside, pesticides are not exposed to water or sunlight, and they break down more slowly than pesticides outdoors. Some research has found that pesticides tracked into the home can rise to levels 100 times higher than outdoor levels. This is why it is important to reduce the amount of pesticides that are brought into the home.



## II. PESTICIDES & CHILDREN

Children are exposed to pesticides from many sources. Children may come into contact with pesticides from dust on their parent's work clothing, shoes, or hats, or even from the fur and paws of household pets. Children can be exposed from the dust on floors and rugs in homes or vehicles. Some children may play in fields or areas where the soil or lawn is contaminated with pesticides. Eating food that hasn't been washed can also expose children to pesticides.

Young children continually put their hands in their mouths and may eat pesticides from contaminated hands. Children's bodies and brains are small and still developing. Their bodies are less able than adults' to clear or eliminate pesticides.

**Wash children's hands and toys frequently.**



It is important to wash children's hands, toys, and other objects frequently.

Remove outdoor playthings when pesticides are being sprayed on nearby fields. If it is not possible to remove playthings, wash them frequently with soap and water.

**Do not let children play in fields or swim in irrigation ditches.**

Sometimes it is difficult to know when pesticides have been sprayed, so it is best never to allow children to enter a field at any time.



**When picking up children from daycare,  
use a clean blanket or towel.**

If you have to pick up your children from daycare before you change out of work clothes, wrap a clean blanket or towel around your child.

### III. WASHING FRUITS & VEGETABLES

**Always wash fruits and vegetables before eating them.**

Because pesticide residues can remain on fruits and vegetables for long periods of time, it is important to wash them with running water before eating them.

**Note:** Do not wipe fruits and vegetables on work clothes because they may have pesticides on them.



## IV. HOME, CAR & PETS

Clean your home, car, and pets regularly.



### Home

- Vacuum carpets and mop floors frequently.
- Keep mops and brooms away from children.

### Car

- Wash car often.
- Vacuum car regularly to remove pesticide residues from seats and carpets.

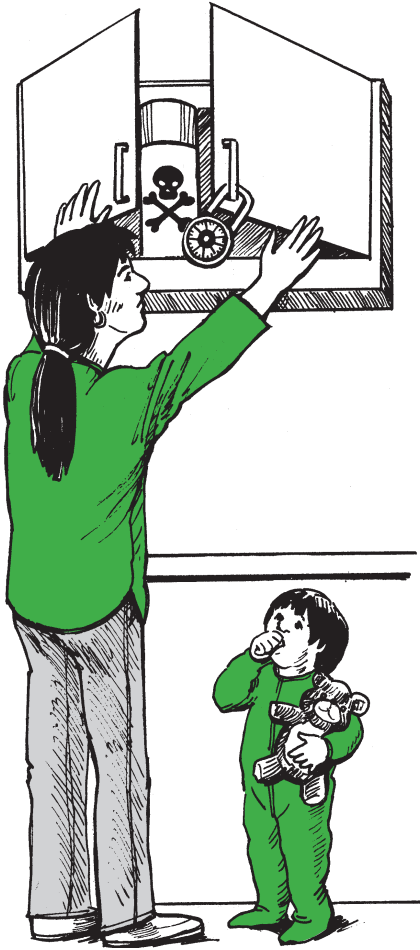
### Pets

- Keep pets outside if possible.
- Bathe them frequently.
- Minimize the use of flea collars or flea powder. Keep collars and powders away from children.



## V. PESTICIDE STORAGE & ALTERNATIVES

Use and store pesticides safely.



- Store all chemicals and pesticides in a locked place out of children's reach.
- Keep pesticides in their original containers. Never put chemicals in unmarked containers or in food or drink containers.
- Never bring pesticides home from work. Pesticides used in the fields are extremely strong and are not appropriate for home use.
- Do not allow pesticides, empty pesticide containers, or pesticide-contaminated materials to be brought into the home.

## Use pesticide alternatives in the home and garden.

It is possible to maintain a home and garden without using pesticides and other hazardous chemicals.

It is important to store food in sealed containers and to keep the kitchen and other areas swept and free of food. Be sure to keep lids on trash bins.







Following are some other safe ideas for a clean and pest-free home and garden:

## HOME




### Cleaners

Type of Cleaner	Alternative	Directions
All Purpose	Murphy's Oil Soap	Use a drop of Murphy's Oil Soap on a wet wash cloth and scrub.
Drain	Baking soda, boiling water and vinegar	Pour ½ cup of baking soda down the drain first, then ½ cup vinegar. Let it fizz for a few minutes, then pour about 2 quarts boiling water down drain. Use a plunger or mechanical snake as needed.
Linoleum Floors, Windows, Mirrors	Vinegar and water	For floors, mop with a mixture of ½ cup vinegar in a bucket of warm water. For windows and mirrors, add ¼ cup vinegar to a spray bottle containing water. Spray on surface and rub with a rag or newspaper.
Oven	Baking soda and water	Mix 1 cup of baking soda and enough water to make a paste. Apply to oven surface and let stand for about 5 minutes. Scrub using a scouring pad. Do not use on self-cleaning ovens.
Toilet Bowl, Tub & Sink	Baking soda and Murphy's Oil Soap	Sprinkle baking soda on the surface. Add a couple drops of Murphy's Oil Soap. Scrub and rinse.

## Pests

Pest	Alternative	Directions
Ants 	Powdered sugar and powdered borax. Salt, red chili pepper dried mint or sage.	Mix equal parts of powdered sugar and powdered borax. Pour this mixture or salt, red chili pepper, dried mint or sage where ants enter your home.
Cockroaches 	Powdered sugar, baking soda or borax and bay leaves (optional)	Mix equal parts of powdered sugar and baking soda or borax and sprinkle in corners and around baseboard. Place bay leaves around cracks in walls and cupboards.
Fleas 	Garlic tablets, vitamin B or Brewers yeast	Feed your pet garlic tablets, vitamin B or brewer's yeast.
Flies 	Sticky flypaper or flyswatter and mint sprigs or ground basil leaves	Use either flypaper, a flyswatter, or both. In addition, lay mint sprigs or ground basil leaves around window and doorway area.
Moths 	Cedar blocks or bags of dried lemon peels, dried lavender, bay leaves, whole cloves, dried rosemary, mint or whole peppercorns	Put in cheesecloth and hang in closet.
Rats 	Rat traps or rat sticky paper	Place the rat traps or sticky paper where you see rats. Be sure they are out of reach of children.

## GARDEN

Pest	Alternative	Directions
Ants 	Onions, powdered charcoal or bone meal	Plant onions or place powdered charcoal or bone meal around the garden.
Aphids 	Water and soap	Mix water and soap and spray the plant.
Beetles, caterpillars 	Water and soap	Drop pest in a can containing a mixture of soap and water.



For Healthy Kids  
  
Para Niños Saludables

206-667-4216