

PESTICIDES



PESTICIDES

Self Assessment

(to be completed before reading Pesticides content)

1. Which of the following does NOT describe pesticides?
 - a. toxic chemicals
 - b. used to combat weeds, rodents, insects and fungi
 - c. administered through solid, liquid and gaseous forms
 - d. medicines for plants

 2. What is a possible route by which pesticides can get into the body?
 - a. skin
 - b. eyes
 - c. breathing
 - d. through the mouth
 - e. all of the above

 3. After working in the fields, what actions should be taken immediately upon arriving home?
 - a. shower with soap and water
 - b. change out of pesticide exposed clothing
 - c. place dirty clothes in a separate dirty laundry bin
 - d. all of the above

 4. What actions should be taken if skin is exposed to pesticides?
 - a. remove contaminated clothing
 - b. wash the skin with soap and water
 - c. if symptoms of pesticide exposure develop, go to the doctor and bring any available information about the pesticide
 - d. all of the above

 5. Which parts of the body are most sensitive to pesticide absorption?
 - a. legs, feet, ankles
 - b. armpits, forehead, jaw, scrotum
 - c. hands, buttocks, toes
 - d. chest, thighs, ears

 6. Which of the following are possible health effects of pesticide exposure?
 - a. drooling, pin-point pupils, trouble breathing
 - b. itchiness, skin rash, headaches
 - c. burning in nose and throat, vomiting
 - d. all of the above
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Self Assessment

(continued)

7. How can farmworkers reduce the risk of pesticide exposure?
 - a. wear clothing that covers the skin
 - b. wash hands before touching the face or using the toilet
 - c. stay out of areas that have been treated
 - d. never drink or wash with irrigation water
 - e. shower immediately upon arriving home
 - f. keep pesticide exposed clothing separate from family laundry
 - g. all of the above

8. Reusing empty pesticide containers is NOT dangerous.
 - a. True. With soap and water, pesticide containers can be made clean enough for reuse.
 - b. False. Pesticide containers should never be reused, as they will contain residues even after they have been washed.

9. Which of the following exposures to pesticides does NOT require seeking medical attention immediately?
 - a. pesticides in the eyes
 - b. ingestion / swallowing of pesticides
 - c. skin exposure with NO symptoms of pesticide poisoning after decontamination
 - d. inhalation / breathing of pesticide fumes
 - e. skin exposure with symptoms of pesticide poisoning after decontamination process

10. The restricted re-entry period:
 - a. prevents acute pesticide poisonings
 - b. does not prevent low-level chronic pesticide exposure
 - c. must be respected by all farmworkers, except only those with special training and a respirator
 - d. should be posted by the farmer with a re-entry date
 - e. all of the above

Answers: 1(d), 2(e), 3(d), 4(d), 5(b), 6(d), 7(g), 8(b), 9(c), 10(e)

PESTICIDES

Supporting Information for Outreach Workers

What are pesticides?

Pesticides are poisonous chemicals that are used to kill insects, weeds, fungi or rodents. Most pesticides are not natural, but are the products of a laboratory. There are a few pesticides, however, that are based on chemicals found in nature. Pesticides are named according to the type of pest they are meant to combat. The three main groups are insecticides, herbicides, and fungicides.

How are pesticides used?

Pesticides come in several different forms: liquids or sprays, powders, granules and gases. Each of these is applied in different ways. For example, liquids may be added to irrigation water and sprayed directly onto crops. Powders and granules may be distributed by cropduster planes or applied directly to the soil.

What are restricted entry intervals (REI)?

The restricted entry interval is the period of time that must be waited before reentering a pesticide treated field. Every pesticide has a designated restricted entry interval, and the only exception to the restriction is for individuals who have special training and wear special protective clothing and equipment. The grower should always post the name of the pesticide, when and where it was applied, the restricted entry interval, and when it is safe to reenter the field. The re-entry period is designed to prevent acute poisonings, but does not prevent low-level chronic exposure to pesticides.

How do pesticides enter the human body?

Pesticides have several opportunities to enter the body. The primary route is through our largest organ, the skin. Pesticides may also get into the eyes, be breathed in through the nose or mouth, or may be swallowed upon contact with the mouth. Pesticides may also be drunk accidentally or as part of a suicide attempt. It is essential to wash hands before smoking, eating, drinking, chewing gum, or using the toilet. These are all times that pesticides on the hands might touch the mouth or other mucus membrane skin and cause pesticide poisoning.

How can farmworkers be exposed to pesticides?

Pesticides linger on the surface of plants long after the treatment. Pesticides can also be found in the soil, in irrigation water, on equipment used on or near the fields, and on clothes. Pesticides may also drift into areas not directly being treated.

What determines how much of the chemical is absorbed into the body?

There are several factors that influence the absorption of pesticides into the body. The first factor is the part of the body exposed to the pesticide. For example, the skin on the forehead is 43 times more absorbent than the skin on the arch of the foot. In other words, if the same amount of pesticide were to fall on both the forehead and the foot, the pesticide would enter the body 43 times faster through the forehead. Some parts of the body that are especially susceptible are the forehead (43x), the armpit (26x), the jaw (93x), and the scrotum (300x). The other significant factor in pesticide absorption is the condition of the skin. Skin that is damaged with cuts, abrasions or rashes absorbs pesticides more readily than healthy skin. Hot, sweaty skin will absorb more pesticide than cool, dry skin.

What are the acute health effects of pesticides?

Pesticides can cause skin rashes or pain in the nose, throat or eyes. They may also cause vomiting, sweatiness, headache, muscle pain and cramping. Other signs of pesticide poisoning include drooling, trouble breathing and small or pin-point pupils. Pesticides may affect some individuals more than others. Certain health effects do not show up in an individual until years later.

What are the possible long term effects of pesticide exposure?

There are various chronic or delayed health effects of pesticide exposure, such as sensitization and allergic reactions, infertility in men, miscarriages, birth defects, weakening of the nervous system, mental and psychological effects, and tumors/cancer.

How can farmworkers reduce the risk of pesticide exposure? Farmworkers can:

- Wear clothes that cover the skin such as: long pants, long-sleeved shirts, socks, shoes, gloves and a hat.
- Wash hands with soap and water before eating, drinking, smoking or using the toilet.
- Stay out of areas where pesticides are being/have been applied. This includes areas with a sign and areas that the boss designates that are not marked with a sign. If pesticide is drifting into an area where workers are working, get out!
- Never take empty pesticide containers home. Even if rinsed out, the residue of the pesticide lingers in the container and is dangerous.
- Never bring agricultural chemicals into the home. Many chemicals that are legally used in the field are not permitted to be used at home due to toxicity.
- Change immediately out of pesticide exposed clothes before coming into contact with family or friends. Keep pesticide exposed clothes in a separate dirty laundry bin for washing. Shower with soap and water upon arriving home each day.
- Keep children away from areas where pesticides might be found.
- Do not drink, bathe or wash food in irrigation ditches because irrigation water may contain pesticides.

How can farmworkers protect their families / housemates from pesticide exposure?

- Practice routine decontamination by washing hands before eating, drinking, using tobacco products, chewing gum or using the toilet while at work.
 - Refrain from hugging, picking up children, or lounging in the house in pesticide contaminated clothing to avoid exposing others.
 - Shower with soap and water as soon as possible upon arriving home.
 - Put on fresh or uncontaminated clothing after showering.
 - Store contaminated clothing in a separate dirty laundry bin from other clothes.
 - Wash pesticide exposed clothing separately, and with caution. Gloves are a good idea to protect hands from being exposed during the action of washing. If possible, clothes should be rinsed and the water drained before continuing with the rest of the wash cycle. Hanging laundry out to dry in the sun can help break down any residual pesticide contamination in clothes.
 - Clothing should be washed before wearing again.
 - Do not take empty pesticide containers for use in the home. Even after washing them out, they may still contain residues and be unsafe.
 - Do not store pesticides in an unlabeled container.
-

Supporting information for outreach workers: Pesticides curriculum - 3

What steps should a farmworker take if he/she believes that a pesticide exposure has taken place?

- Practice the appropriate steps for decontamination.
- Inquire if other workers have similar symptoms.
- Report the symptoms to the boss or foreman.
- Leave the field if possible.
- Go to the clinic for diagnosis.

What is the correct procedure to follow. . .***if a worker's skin has been exposed to pesticides?***

- Remove contaminated clothing from the part of the body that was exposed.
- Rinse the pesticides off with water.
- Wash the area with soap and water as soon as possible.
- Put on clean, uncontaminated clothing.
- If symptoms of pesticide poisoning develop, seek medical care.

if a worker swallows a pesticide?

- Seek medical attention, either by calling 911 or poison control, or by driving to the doctor if it would be faster than waiting for assistance to arrive.
- Collect the name of the pesticide, the first aid instructions from the container, and the dates of application (if appropriate). Taking the label from the pesticide container might be useful if there is no other way to convey the information.
- If it is impossible to call for help, or while waiting for help to arrive, follow the first aid directions on the pesticide label.

if a worker gets pesticides in the eyes?

- Immediately rinse the eye with a gentle stream of clean water or with an eye flush kit for at least 15 minutes.
- Seek medical attention immediately.

if someone breathes a pesticide?

- The first step is to get the worker to fresh air immediately, but not if it compromises another worker's safety. If the victim is in an enclosed area, a rescue should not be attempted without proper breathing equipment and adequate training in its use.
 - Call for help if there is no one immediately available who is trained to use a respirator.
 - Move the victim to a location with fresh, circulating air and loosen the worker's clothing to ease breathing.
 - If the worker is not breathing, begin artificial respiration and call for medical help.
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PESTICIDES

Self Assessment

(to be completed after reading Pesticides content)

1. What is a pesticide?
 2. How can pesticides get into the body?
 3. Where are pesticides found?
 4. What actions can a farmworker take to decontaminate a skin exposure?
 5. What should a farmworker wear to protect the body while working in the field?
 6. What are the two factors that affect how much pesticide is absorbed into the skin?
 7. Name 5 common symptoms of pesticide exposure.
 8. A farmworker should wash his/her hands before which activities?
 9. What can a farmworker do to protect the people that he/she lives with?
 10. What are some long term health effects of pesticide exposure?
 11. What are the correct steps to take if pesticides get into the eyes?
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Self Assessment

(continued)

12. What are the correct steps to take if pesticides are swallowed?

 13. What are the correct steps to take if pesticides are inhaled?

 14. Why are restricted entry intervals important?
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PESTICIDES

Self Assessment

(Answers)

1. What is a pesticide?
[A pesticide is a toxic chemical used to kill weeds, insects, rodents, or fungi.]
 2. How can pesticides get into the body?
[Pesticides can enter the body through the skin, mouth, nose, or eyes.]
 3. Where are pesticides found?
[Pesticides linger on plants and soil long after the treatment. Farmworkers may contact the chemical while working in the fields, on equipment, on clothing, in irrigation water, and through drift.]
 4. What actions can a farmworker take to decontaminate a skin exposure?
[Remove clothing from the site of exposure, rinse with water, wash with soapy water, put on clean clothes, watch for other signs or symptoms of pesticide poisoning]
 5. What should a farmworker wear to protect the body while working in the field?
[long-sleeved shirt, long pants, socks, full shoes, gloves, a hat, bandana to cover face if needed]
 6. What are the two factors that affect how much pesticide is absorbed into the skin?
[(1)the part of the body and (2)the condition of the skin – wounds, hot/sweaty]
 7. Name 5 common symptoms of pesticide exposure.
[skin rash, burning in throat or nose, headache, cramps, vomiting, diarrhea, sweatiness, muscle pain and twitching, pin-point pupils, drooling, trouble breathing]
 8. A farmworker should wash his/her hands before which activities?
[eating, drinking, smoking, chewing gum, touching face, using toilet]
 9. What can a farmworker do to protect the people that he/she lives with?
[not make physical contact until showered and clothes are changed, keep pesticide exposed clothing in a separate dirty laundry container, not bring home pesticide containers, wash clothing separately and hang in sun to dry, do not store pesticides in an unlabeled container]
 10. What are some long term health effects of pesticide exposure?
[infertility in men, birth defects, miscarriages, cancers or tumors, sensitization and allergic reactions, nervous system problems, mental and psychological effects]
 11. What are the correct steps to take if pesticides get into the eyes?
[immediately rinse the eye with copious amounts of clean water for at least 15 minutes, seek medical care]
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Self Assessment

(Answers continued)

12. What are the correct steps to take if pesticides are swallowed?
[call 911 or drive victim to medical care if that is faster than waiting on the ambulance; call poison control or use first aid directions on pesticide container while waiting for medical help to arrive; try to take the label of the pesticide with the victim to the medical center]
 13. What are the correct steps to take if pesticides are inhaled?
[get the worker to fresh air and loosen clothing, perform rescue breathing if worker is not breathing, call 911 for medical care; if worker is in an enclosed area, only rescue the victim if trained and equipped with respirator, otherwise, seek assistance from someone who is trained]
 14. Why are restricted entry intervals important?
[Restricted entry intervals can help prevent acute pesticide poisonings. They do not, however, prevent low-level chronic exposure to pesticides.]
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PESTICIDES

Teaching Objectives

The facilitator and farmworker participants will discuss:

1. What are the routes of pesticide entry into the body; where and how do farmworkers come into contact with pesticides?

- a. routes of entry include skin, breathing, swallowing, eyes
- b. residues on plants, clothing and equipment; irrigation water; drift

2. What are means to reduce the risk of pesticide exposure? How can pesticides be kept out of the home?

- a. protective clothing that covers skin, head, hands, mouth
- b. wash hands before touching any part of face
- c. stay out of areas where pesticides have been applied
- d. never take empty containers or agricultural chemicals home. change out of clothing immediately upon arriving home, keep exposed clothing in separate location from family clothes, shower before coming into physical contact with anyone
- f. do not use irrigation water for drinking, rinsing, washing hands, cooling off

3. What are the acute and long-term health effects of pesticide exposure?

- a. acute effects include skin rashes, vomiting, headache, sweatiness, muscle pain, pin-point pupils, drooling and trouble breathing
- b. long-term effects include sensitization, allergic reactions, infertility in men, miscarriages, birth defects, tumors, mental health effects, nervous system effects

4. What is the correct first aid procedure for pesticide injury and poisoning? What are the steps for emergency decontamination?

- a. skin exposure / emergency decontamination
- b. eye exposure
- c. swallowing
- d. breathing

5. What are restricted entry intervals?

- a. every pesticide has a designated REI
 - b. everyone must heed the REI except those trained in the use of protective equipment
 - c. prevents acute exposure, but does not prevent low-level chronic exposure
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PESTICIDES

Motivating / Learning Activity

The motivating / learning activity is an opportunity to support knowledge acquisition and comprehension among participants on a given health topic. These activities should be interactive and should begin to engage farmworkers in critical thought about the application of health information.

This is an opportunity to engage the group and to assess the comfort level and knowledge on the subject. You may find that the workers are very familiar with the topic and only require a review. Or, you may find that the subject is completely new for the workers or that there are misconceptions or mistaken ideas among the group. For this reason, it is a good idea to briefly note comments by the workers for further discussion.

A few suggested activities are:

- Cabbage game with questions related to pesticides (where can you be exposed, what are the routes of exposure, what are symptoms, treatment, prevention strategies)
 - Read [El Terror Invisible](#) (the fotonovela) aloud, invite questions from the participants
 - Use video, either [El Terror Invisible](#) or [Siguiendo El Sol](#), as the primary teaching tool with questions and discussion afterwards
 - Use a photo of scene or symptoms and invite workers to describe what they see, what they perceive the problem to be
 - Use the EPA flipchart to guide a discussion on pesticide exposure and prevention
 - Read birth defects or spraying case study from *Farmworker News* and follow-up with discussion of prevention and treatment
 - Use jeopardy game to review specifics about pesticide exposure (especially if the group seems familiar with the topic)
 - Brainstorming activity: using a volunteer for the anatomical model, identify the routes of entry, have group brainstorm how pesticides could enter through those four routes, and ways to prevent those occurrences
 - Demonstration: have a worker act out and explain the steps for decontaminating self and clothing after working in a field where pesticides were used. Other participants can ask questions or suggest corrections or alternative methods.
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Empowerment Activity

The goal of an empowerment activity is to develop skills, learn a new task, consider action to change one's situation, and / or begin exploring how to help oneself.

This is an important opportunity to identify what the farmworkers can do to prevent pesticide exposure themselves.

- Do they have access to long-sleeved shirts, hats, long pants, full coverage shoes, gloves?
- Can they obtain one change of clothes for each day of work in the fields?
- Can they find a box to hold pesticide contaminated clothes separately from other laundry?
- Can they rig an outside laundry line to hang pesticide exposed clothing in the sun to dry after washing?
- Do they know the correct first aid in case of a pesticide exposure?

A few suggested activities are:

Bring unlabeled bottles and/or cups that contain various liquids to illustrate how easy it is to mistakenly drink pesticides if they are put into unlabeled containers.

Reality check - If you talk about the different entry points for pesticides, the biggest one (literally!) is the skin! Covering the body and washing with soap and water are the best prevention!

Teach first aid for farmworkers:

- Do not enter an enclosed area to rescue a worker without the proper personal protective equipment
 - How to rinse eyes and for how long
 - If worker comes in contact with pesticide, remove pesticide-contaminated clothes and wash skin with soap and water – immediately!
 - If inhaled, remove the individual to less contaminated spot
 - Call 911 for eye exposure, inhalation, and swallowing of pesticides. For a skin exposure, decontaminate and watch for signs of pesticide poisoning.
 - Call poison control with the name of the pesticide if there is any doubt about the correct course of action.
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PESTICIDES

Sample Class Plan

Subject: pesticide exposure

Date:

Time:

Topic: What are the routes of pesticide entry into the body; where and how do farmworkers come into contact with pesticides? (teaching objective 1 from pesticide module)

Key points, information, skills or activities

As a result of this health education session, participants will:

1. Recall that routes of entry include skin, breathing, swallowing, eyes
2. Recognize that pesticide residues may be on plants, clothing and equipment; irrigation water; drift

Teaching methods

- Brainstorming
- Discussion
- Using visual aids
- Cabbage game
- Participatory reading of fotonovela
- Video reinforcement

Materials and preparation needed

- Chart or board to record participants' ideas
- Cabbage game prepared with relevant questions
- Anatomical model or poster of human body
- Video and/or fotonovela
- Pictures/drawings of farmworkers in field
- Case study from Farmworker News

Supporting media

Language and reading-level appropriate brochures or flyers to distribute NCFHP approved content in case of questions

Sample Class Plan: Pesticides curriculum - 2

To begin, invite farmworker participants to identify their experiences with pesticides, what they know and what they'd like to know about the subject.

1. Explain the routes through which pesticides may enter the body.

- The primary route of entry for pesticides is through the skin.
- Other opportunities are through the eyes, the mouth, and by breathing pesticides into the throat and lungs.
- Understanding the routes of entry helps identify best avenues to prevent pesticide exposure – [primarily, cover the skin!] - and allows brainstorming of ways that pesticides could come into contact with those entry points.

▼ Learning activities

- Use a drawing of a worker in the field; invite participants to identify possible routes of entry.
- Watch part of the video to witness the exposure section.
- Read the fotonovela as a group.
- Use an anatomical model to identify routes

2. Describe the potential exposures for farmworkers to come into contact with pesticides.

- Pesticides may be in the soil, on the plants, on hand implements or farm equipment, in the irrigation water, or it may drift on the air.
- It is important for a worker to take precautions at all times, even when there is not a known pesticide application, since pesticides are invisible.

▼ Learning activities

- Brainstorm all the objects that farmworkers touch in the fields; are these possible means of exposure?
- View video and discuss the invisibility of pesticides and the potential of contacting pesticides while working
- Read case study from Farmworker News; identify potential means of exposure

Suggested review activities (choose one or two)

- play the cabbage game with a variety of questions to assess learning
 - ask if there were any points that were unclear
 - invite questions from the group
 - distribute written/pictorial materials to reinforce the information learned
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PESTICIDES

Support for Learning Activities

These are a few suggested questions for the cabbage game. Feel free to write your own questions in addition to or instead of these. If the question is true/false, have the worker or another participant restate the sentence so that it will be true.

- What are the four routes by which pesticides can get into the body?
- Can skin exposure to pesticides cause pesticide poisoning?
- Name 5 common symptoms of pesticide poisoning.
- Name 3 long-term or chronic effects of pesticide exposure.
- How can not washing hands at work lead to swallowing pesticide residues?
- How can not washing hands at work lead to eye exposure?
- Name 3 things you should never do at work until after you have washed your hands.
- Irrigation water is a safe place to wash hands and rinse off food. True or false?
- What 2 things should you do as soon as you get home from working in areas where pesticides have been used?
- Pesticide containers can be used at home with no health risks to my family. True or false?
- How should you wash and dry your work clothes?
- What are 5 things you can do to reduce your risk of pesticide exposure?
- What is the correct first aid for a skin exposure to pesticides?
- What is the correct first aid for an eye exposure?
- What is a restricted entry interval?

List of follow-up questions for fotonovela, photograph or case study activity:

- What is happening in this picture / story / case study?
- What caused the fieldworker to be exposed to pesticides?
- What could (character name here) have done differently to prevent pesticide exposure?
- What are other ways that farmworkers can be exposed to pesticides?
- What was the correct first aid response to the pesticide exposure in the story / picture / case study?
- What are the symptoms of pesticide exposure illustrated in the story / picture / case study?
- How can the farmworker protect family or housemates from pesticide exposure?
- What are some long-term effects of pesticide exposure?
- What are the four entry points for pesticides on the human body?
- Which pesticide exposures always indicate a trip to the medical center?

If using a photograph or case study to initiate discussion and workers identify other conditions besides the target health education topic, the facilitator may say: "That is one problem that _____ may experience, but that isn't the problem today. What other conditions/problems can cause _____ to look or feel this way?"

Support for Learning Activities: Pesticides curriculum - 2

Possible Jeopardy questions (with suggested point values):

- 100 : What are the four routes by which pesticides can get into the body?
 - 100 : How can not washing hands at work lead to swallowing pesticide residues?
 - 100 : How can not washing hands at work lead to eye exposure?
 - 100 : Can skin exposure to pesticides cause pesticide poisoning?
 - 200 : Name 5 common symptoms of pesticide poisoning.
 - 200 : Name 3 long-term or chronic effects of pesticide exposure.
 - 200 : Name 3 things you should never do at work until after you have washed your hands.
 - 200 : What 2 things should you do as soon as you get home from working in areas where pesticides have been used?
 - 300 : Pesticide containers can be used at home with no health risks to my family.
True or false?
 - 300 : Irrigation water is a safe place to wash hands and rinse off food. True or false?
 - 300 : When should you call 911 for emergency help?
 - 400 : How much water should a worker drink each day?
 - 400 : How should you wash and dry your work clothes?
 - 400 : What are 5 things you can do to reduce your risk of pesticide exposure?
 - 500 : What is the correct first aid for a skin exposure to pesticides?
 - 500 : What is the correct first aid for an eye exposure?
 - 500 : What is a restricted entry interval?
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PESTICIDES

Recommended Resources for Outreach Workers

♦ Video **Chasing the Sun
Siguiendo El Sol**

National Center for Farmworker Health
1994 English/Spanish
30mn, 5mn review
Farmworkers

This bilingual video covers the basics of pesticide safety training through a mock pesticide training session. The storyline is that of a small group of agricultural workers who are all taking a pesticide training class together. The class consists of one day indoors with the trainers, and a second session on site in the fields. The information is complete and empowering. Interestingly, the video uses a blend of Spanglish, English and Spanish to convey the message. Although the video is a bit long, it is a good resource to use with both single farmworkers and with farmworker families.

EPA-735-V-96002
National Service Center for Environmental Publications (Free)

♦ Cassette **Radio Pesticida: A Program for Pesticide Safety Education with Hispanic
Agricultural Workers**

AFOP
1997
6 cassettes English/Spanish

This resource is a packet of six cassettes along with a guide for the service provider or trainer. The cassettes include a public service announcement, five mini-dramas and their accompanying talk shows. The topics covered are: pesticide drift, what happens if you come into contact with pesticides, be safe at home, be safe at work and training is important. This program was designed to be used as a radio campaign, but is appropriate for use in a training session. The kit is a good supplement to a training program, but does not constitute a complete training. The guide is in both English and Spanish, but the tapes are Spanish only.

EPA-735-V-97-001
National Service Center for Environmental Publications (Free)
AFOP (\$50.00)

Recommended Resources for Outreach Workers: Pesticides curriculum - 2

♦ Flipchart **Protect Yourself from Pesticides-Safety Training for Agricultural Workers**

EPA

1993

84pgs English/Spanish

Agricultural employers, Farmworkers

This 11"x 17" bilingual (Spanish/English) flipchart serves as a visual tool to be used in pesticide safety trainings. One side offers illustrations only, while the trainer has access to the corresponding captions on the reverse side. This resource is used by the AFOP (Association of Farmworker Opportunity Programs) / AmeriCorps members during their training sessions. The flipchart is black and white, but trainers often choose to color the illustrations to make the resource more interesting.

University of Florida, Pub SM-48

Gempler's FC-100 (professional trainers) (\$25.95)

FC-198 (growers)

♦ Poster **Protect Yourself from Pesticides**
Protejase de los Pesticidas

EPA

1993

1pg English/Spanish

Farmworkers

This is the EPA approved pesticide safety poster (24" x 36") that highlights the basic steps needed to protect oneself from pesticide exposure. This is the same material given in the brochure and pamphlet. The colors are bright and attention getting, and the illustrations and descriptions are easy-to-read in addition to being bilingual in English and Spanish. This valuable resource can be used to fulfill the WPS requirement for a posting of safety information when placed in a central location. It also includes a section on emergency medical information.

EPA, 735-H-93-001

National Service Center for Environmental Publications (Free)

♦ Manual **Protect Yourself from Pesticides-Guide for Agricultural Workers**
Protejase de los Pesticidas-Guia para los Trabajadores Agricolas

EPA

1993

43pgs English/Spanish

Farmworkers

This manual provides all of the information required by the Worker Protection Standard for training farmworkers. It includes illustrations with captions in both English and Spanish. The issues covered are: how to protect oneself from pesticides, where pesticides are encountered, how pesticides can hurt you, what to do if pesticide exposure occurs, and how the law protects the farmworker. A review is given at the end. The information is presented in basic and readable. This manual is also available in Creole, Vietnamese, Chinese, Tagalog, Ilokano, Polish and Laotian (the order number is different for languages besides Spanish and English).

Recommended Resources for Outreach Workers: Pesticides curriculum - 3

EPA-735-B-93-002

National Service Center for Environmental Publications (Free)

Gempler's HW20 (\$.99)

♦ Manual **Recognition and Management of Pesticide Poisonings**
Reconocimiento y Manejo de los Envenenamientos por Pesticidas

EPA

1999

236pgs English/Spanish

Health care providers, Migrant centers

This manual serves as a tool to assist health professionals in better recognizing and treating pesticide-related illnesses. The manual focuses on acute/short term health problems that may occur in the agricultural and non-agricultural sectors. Signs and symptoms of poisonings, toxicology, confirmation of poisoning and treatment approaches are listed for different pesticide products. The index of sign and symptoms, as well as the index of pesticide products is helpful for quick reference. Although this book is directed at health professionals and includes technical information, it is a good resource to have on hand in all clinics or near farms in case of an emergency. This manual does not focus on prevention, but rather outlines treatment. There are two separate manuals, one in English and the other in Spanish.

EPA-735-R-98-003 (English), 735-R-98-004 (Spanish)

National Service Center for Environmental Publications (Free)

♦ Flyer **What to do when clothes are soiled with pesticide**

Iowa State University Extension

2000

2pgs English

Agricultural employers, Farmworkers

This flyer gives the precautionary steps to take when laundering pesticide-soiled clothing. This resource reminds the reader that pesticide contamination may be invisible. It also warns that washing only reduces risk of exposure, but does not eliminate it. This is one of the more comprehensive resources on this subject.

Iowa State University Extension-PM 16636-(Free-single copies)

Available online at: <http://www.extension.iastate.edu/Publications/PM1663B.pdf>

♦ Flyer **Learn about pesticides and clothes**

Iowa State University

1995

2pgs English

Agricultural employers, Farmworkers, Families of growers and farmworkers

This resource explains why proper laundering of pesticide contaminated clothing is important, which clothing is best to wear, and how to safely launder the garments. A pesticide clothing safety quiz is given, along with a box highlighting a few of the most important tips.

Iowa State University Extension-PM 1265f-(Free-single copies)

Available online at: <http://www.extension.iastate.edu/Publications/PM1265F.pdf>

Recommended Resources for Outreach Workers: Pesticides curriculum - 4

- ◆ **Manual WPS Training for Fieldworkers: Teaching Workers How to Protect Themselves from Pesticide Hazards in the Workplace**

University of California Statewide Integrated Pest Management Project

1997

91 pages; English

Outreach workers

This instructor's manual is designed to be used with the video, **Protecting Yourself From Pesticide Hazards in the Workplace**. The manual provides an instructor with ideas and examples of interactive activities to increase comprehension of the pesticide-related workplace hazards and ways workers can avoid these hazards. The video and accompanying activities cover all the points that must be addressed when conducting Worker Protection Standard (WPS) training for fieldworkers. The manual is available online in a pdf format which is suitable for copying. Both the manual and video are public-domain resources. The manual also provides an appendix of clear and simple drawings that can be used to illustrate significant points within the training session and to generate discussion.

Available online at: <http://www.ipm.ucdavis.edu/IPMPROJECT/pesttrain.html>

- ◆ **Article Cuidado con los Pesticidas**

Farmworker News Vol 8 Issue 2

Spring II 2002

Two columns Spanish/English

Outreach workers, Farmworkers

This brief article summarizes the main points of pesticide safety in a clear and concise manner. The discussion includes: a working definition of pesticides, prevention strategies, possible locations of exposure to pesticides, how they can hurt farmworkers, and what to do if a worker is exposed.

Available online at: www.ncfh.org/

- ◆ **Article Los Pesticidas Pueden Causar Defectos en sus Hijos**

Farmworker News Vol 7 Issue 2

Spring 2001

Two columns Spanish/English

Outreach workers, Farmworkers

This brief case study discusses Maria's experience of having two children who were both born with a birth defect that may have been caused by pesticide exposure due to her work in orange fields in Florida. The case study ends by prompting farmworkers to think of ways to prevent pesticide exposure and offers several suggestions.

Available online at: www.ncfh.org/

Recommended Resources for Outreach Workers: Pesticides curriculum - 5

♦ Article **Una Familia de Trabajadores Agricultores es Rociada con Pesticida**

Farmworker News Vol 7 Issue 5

Fall 2001

Two columns Spanish/English

Outreach workers, farmworkers

This case study details a situation in which a family was sprayed by pesticides while working in the fields. The follow-up conversation to this case study should include a discussion of how the exposure to pesticides might have been prevented.

Available online at: www.ncfh.org/

♦ Brochure **Pesticides and Human Health**

North Carolina Cooperative Extension Service

April 1998

Three page tri-fold (8.5 x 11) available in English/Spanish

Outreach workers, farmworkers

Although this brochure was actually written to be distributed to the farmworkers themselves, the format, text-heaviness, and literacy level suggest that the material may not be appropriate for all farmworkers. The information contained within the brochure is very thorough and covers the routes of entry, both short and long-term health effects/symptoms, first aid tips, health and safety tips, information on other health conditions that can be confused with pesticide poisoning, and some discussion of the Worker Protection Standard (WPS).

Available online at: <http://www.tox.ncsu.edu/extension/pesticides.htm>

♦ Paper/Resource List **Pesticide safety training materials for farmworkers: an annotated bibliography**

Center for Urban and Regional Studies, the University of NC at Chapel Hill

Spring 1998

38+ pages, English

Outreach workers, Outreach coordinators

This is a useful publication that highlights the results of a review of farmworker agricultural safety and health intervention materials from around the United States. Each reviewed material is identified by category, format, language, length, and target audience. This publication has been a model for establishing a list of materials for other health topics for the NCFHP.

Available online at:

http://www.iatp.org/labels/library/admin/uploadedfiles/Farmworker_Pesticide_Safety_Training_Resources.pdf

Recommended Resources for Outreach Workers: Pesticides curriculum - 6

- ♦ Manual **Preventing Agricultural Chemical Exposure: a safety program manual**
The PACE Project: Wake Forest University Environmental Justice and Community-Based Participatory Research projects
2003
86 pages, English/Spanish
Outreach workers, Farmworkers

The Preventing Agricultural Chemical Exposure among North Carolina Farmworkers (PACE) Project uses a community participation framework to ensure that the community plays a significant role in identifying and resolving health problems resulting from pesticide exposure. This training manual provides step-by-step instructions on the procedures for organizing a pesticide safety program for migrant and seasonal farmworkers.

Available through:

Wake Forest University Environmental Justice and Community-Based Participatory Research projects
Thomas Arcury, Principal Investigator,
Casa a Campo
tarcury@wfubmc.edu (336) 716-9126
Department of Family and Community Medicine , Medical Center Boulevard
Winston-Salem, NC 27157-1084

- ♦ Guide **Steps to Protect Yourself from Pesticides**
EPA
October 1995
23 pages, English/Spanish
Farmworkers

This guide offers a brief overview of the basic steps farmworkers can take to protect themselves from pesticide exposure. This training material is written at a low literacy level and has understandable graphics. The last page of the material states that pesticide training will be offered in 5 days – this may be removed if needed should the material be used in health education where a follow-up training will not be available.

Available at: <http://www.cdc.gov/nasd/docs/d000701-d000800/d000734/d000734.html>

- ♦ Fotonovela **Aunque Cerca . . . Sano**
Migrant Clinicians Network
2002
16 pages, Spanish
Farmworkers with children

A Spanish language comic book developed by the Migrant Clinician's Network and Farm Safety 4 Just Kids, this story helps migrant farmworkers teach their children to avoid pesticide exposure, and helps outreach workers conduct meaningful interventions when necessary. Most relevant for farmworker families.

Available online at: http://www.migrantclinician.org/_resources/aunque_comic_book.pdf

Recommended Resources for Outreach Workers: Pesticides curriculum - 7

- ◆ Game and Instruction Guide **La loteria de los pesticidas**
University of California, Statewide Integrated Pest Management Project
1994
deck of 54 cards, 16 bingo cards, instructions, English/Spanish
Applicators

This is a game played in Latin America that is similar to bingo and in this case is designed to teach pesticide safety. The cards include information about general pesticide knowledge, protective equipment, employer responsibilities, and working safely and staying clean of pesticides. Could be useful to reinforce pesticide training or as a way to test the knowledge base of participants. The game does not cover the Worker Protection Standard, and seems to be more targeted to individuals working in application rather than in the fields.

Information on ordering available at: http://www.ipm.ucdavis.edu/IPMPROJECT/ADS/manual_laloteria.html#ordering

- ◆ Brochure **El terror invisible**
Wake Forest University School of Medicine, PACE project
6 pages;Spanish
Farmworkers

This comic strip style brochure is clearly formatted and explains how although pesticides may be invisible and odorless, they can still cause long-term health problems. There is a brief listing of the main points in pesticide exposure prevention, but the authors did not thoroughly explain the importance of separating pesticide exposed laundry from other clothing for washing. The literacy level and images are both appropriate for farmworkers in general, although this is not the most complete material to serve the purpose of farmworker education.

Available online at: <http://www.cdc.gov/nasd/docs/d000101-d000200/d000143/d000143.pdf>

- ◆ Video clip **El terror invisible**
Wake Forest School of Medicine, PACE project
2002
Spanish with English subtitles
Farmworkers

This clip is part of a 53 minute video that includes a pesticide education section, a handler section and finally a brief section on green tobacco sickness called El Monstruo Verde. In the first segment, a Spanish-speaking designated trainer helps his co-workers learn about pesticide safety. Topics include 1) short- and long-term health effects of exposure to pesticides and their residues, 2) symptoms of exposure, 3) signs of pesticide poisoning, 4) ways to reduce exposure to pesticide residues, and 5) legal protections for workers. This segment includes information for field workers as required by the Worker Protection Standard. The education stresses potential exposure through pesticide residue on crops and addresses some traditional health beliefs found among latino communities. There is an emphasis on empowerment and workers determining actions that they can themselves take to reduce the risk of pesticide exposure.

Available through:

Wake Forest University Environmental Justice and Community-Based Participatory

Recommended Resources for Outreach Workers: Pesticides curriculum - 8

Research projects

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Department of Family and Community Medicine , Medical Center Boulevard

Winston-Salem, NC 27157-1084

♦ Medical Briefing Kit **Pesticides and Human Health: A Resource for Health Care Professionals**

Physicians for Social Responsibility and Californians for Pesticide Reform

60 pages, softbound, English

Health Care Professionals

This resource kit utilizes and references over 150 studies that link pesticides with a variety of acute and chronic conditions, including cancer, neurological damage, reproductive and developmental hazards, and immune-system and endocrine disruptions. The format covers pesticide health effects by toxic endpoint symptomatically and is referenced with endnotes. This guide adheres to the Precautionary Principle: "when an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically. The proponent of an activity, rather than the public, should bear the burden of proof."

Information available through: <http://www.psrla.org/resources.htm>

♦ Education Guide **Cosecha Dolorosa: campesinos y pesticidas, parte uno**

Marion Moses, MD and the Pesticide Education Center in San Francisco

71 pages, Spanish

Outreach workers, Farmworkers

Cosecha Dolorosa is an educational series about pesticides that includes both videos and manuals for field workers and applicators/mixers. The manual offers simple, concise information with chapters discussing: how workers may be exposed, chronic and acute health effects, what to do if a worker has been exposed, blood testing for pesticide exposure, how to reduce the risk of exposure, warnings against re-entry, and laws related to pesticides. The book is written in an easy-to-follow question and answer format, with inviting black and white sketches along the margins. The appendices offer a host of other resources and related information. The book would be useful as a guide for outreach workers, to facilitate answering questions, and in a participatory reading group. The information is reliant on text, however, as none of the images completely relay the educational messages. For this reason, outreach workers must consider the literacy levels of the groups' participants before engaging in a participatory reading session.

Available through the author with a check payment. Dr. Marion Moses, PO Box 225279, San Francisco CA 94122. Telephone: 415-391-8511.

Recommended Resources for Outreach Workers: Pesticides curriculum - 9

- ◆ Brochure **Cultivating the seeds of knowledge: what you should know about pesticides**
North Carolina Department of Labor, Agricultural Safety and Health Section
2 pages front/back, English
Outreach workers, Farmworkers

This brochure, though written only in English, describes what pesticides are, how they threaten the human body, common symptoms, long-term health effects, safety and first aid tips, and offers some discussion of workers' legal rights with regard to pesticides. The document is geared toward tobacco workers, and offers information about pesticides commonly used in tobacco, as well as acknowledging that pesticide exposure can be diagnostically confused with green tobacco sickness.

Available online at: <http://www.dol.state.nc.us/ash/postengl.pdf>

- ◆ Scholarly Article
Quandt SA, Arcury TA, Austin CK, Saavedra RM. **Farmworker and farmer perceptions of farmworker agricultural chemical exposure in North Carolina.** Human Organization Fall 98. 57(3):359-68.

This article discusses formative research using in-depth interviews and focus groups to elicit beliefs and knowledge about exposure from farmers and farmworkers in North Carolina with the aim to develop culturally appropriate interventions to reduce farmworker exposure to agricultural chemicals. The study shows that farmworkers and farmers hold strikingly different beliefs concerning the exposure of farmworkers to agricultural chemicals. The article identifies the challenges faced in reducing farmworker exposure to chemicals based on the disconnect between the knowledge and beliefs of farmers.

- ◆ Scholarly Article
Arcury TA, Quandt SA, Russell GB. **Pesticide safety among farmworkers: perceived risk and perceived control as factors reflecting environmental justice.** Environ Health Perspect. 2002 Apr;110 Suppl 2:233-40.

This study examined how pesticide safety information relates to perceptions among farmworkers of risk, and control in the use of pesticides. The researchers posit that for pesticide education efforts to be truly successful, attention must be paid to farmworker control of implementing safety measures in the workplace.