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Sample Training Activities

This chapter contains 15 sample training activities trainers can use during a Worker Protection Standard (WPS) pesticide safety training class.

Each activity includes the training theme, content objective, type of training techniques, the intended audience (e.g., workers or handlers), a list of materials and props, and the activity instructions. Many of the activities have been adapted to the situations and challenges that workers and handlers may face when working with pesticides.

Activity 1: Pesticide and Pesticide Residues at Work

Content Objective:

Trainees will become familiar with many of the areas and surfaces that might contain pesticides or pesticide residues at work.

Training Technique:

Workplace tour

Intended Audience:

Agricultural workers and pesticide handlers

Time:

10-20 minutes



Materials and Props:

Pre-selected areas or items that might contain pesticides or pesticide residues

Examples:

Storage areas, mixing and loading sites, fields, enclosed space production areas, protective clothing, personal protective equipment (PPE), or pesticide application equipment



Activity 1: Pesticide and Pesticide Residues at Work

Instructions

- Pre-select areas you can visit in the amount of time you have available during training. This will be easy if you are training at your own worksite. If not, ask someone to help you find some interesting locations at the training site where pesticides are used or stored.
- At the beginning of this activity, explain to the trainees they will tour several areas at the worksite. During the tour they will talk about where they might find pesticides or pesticide residues on certain items or in different areas of the agricultural establishment.

Activity 2: Pesticides and Pesticide Residues at the Worksite and Home

Content Objective:

Trainees will gain a better understanding of how they could become exposed to pesticides or pesticide residues at home and in their worksite, which can increase their knowledge of ways to minimize the risk of pesticide exposure.



Training Technique:

Discussion

Intended Audience:

Agricultural workers and
pesticide handlers

Time:

5-10 minutes

Materials and Props:

Prepared questions

Flipchart paper, easel and thick
markers

or

Dry erase board and dry erase
markers

Activity 2: Pesticides and Pesticide Residues at the Worksite and Home

Instructions

- Draw two columns on flipchart paper or a dry erase board.
- Title one column, “Worksite” and another column “Home.”
- Ask trainees to think about their worksites and the areas around their homes.
- After they have had a moment to think about the areas, ask them the questions listed below.
- Write trainees’ answers on the flipchart or dry erase board.
- Discuss important issues or areas of concern as they are presented.

Question #1: How could a person come into contact with pesticides or pesticide residues at work?

Possible Answers

- An agricultural worker could be exposed to pesticides if he or she enters an area that is still under a restricted-entry interval.
- A pesticide handler could be exposed to pesticides if they fail to wear the proper protective clothing or PPE.
- People could become exposed to pesticides if they are working near an application site and pesticide drifts onto them.
- Sometimes pesticides are applied through an irrigation system. If a person decides to rinse off their hands in the water from a sprinkler, they could become exposed to pesticides.
- A person who packs produce in the field can get exposed if the chlorine solution used to rinse the produce splashes in their eyes.

Activity 2: Pesticides and Pesticide Residues at the Worksite and Home

Question #2: What are some of the ways a person could come into contact with pesticides at home?

Possible Answers

- A child could get into pesticides or pesticide containers that are not stored in a secured location.
- Exposure could occur if pesticide contaminated work clothes, hats, shoes, or boots are left out or mixed in with the family's wash.
- Families that live near or on the edge of an agricultural field, may be exposed through pesticide spray drift.
- A person could accidentally ingest pesticides that someone has illegally stored in a food or beverage container or uses an empty pesticide container to store other liquids.
- Children often play with their parents' keys and cellphones. If these items were exposed to pesticides at work, they could come into contact with pesticide residues that might still be on these items.

CHAPTER 8

Activity 3: Preventing Pesticide Exposure for Agricultural Workers

Content Objective:

Trainees will learn how to prevent three possible pesticide exposure scenarios and similar situations that might occur at the worksite.

Training Technique:

Question and answer activity with drawings of potential pesticide exposure scenarios

Intended Audience:

Agricultural workers

Time:

5-10 minutes



Photo courtesy of Todd Fitchette, Western Farm Press

Materials and Props:

Drawings of hazardous situations
Prepared questions for each drawing

Activity 3: Preventing Pesticide Exposure for Agricultural Workers

Instructions

- Display or present pictures to trainees that illustrate agricultural workers in potentially dangerous situations.
- Ask trainees questions about the pictures and discuss how pesticide exposure can occur in each situation.
- Ask trainees to explain what they can do in the workplace and home to prevent similar situations.

Illustration A

Present “Illustration A” to the trainees and ask the following questions.

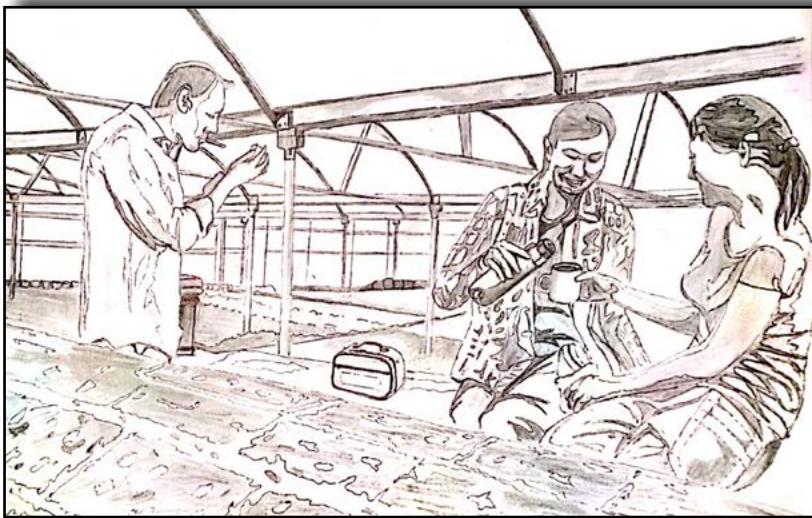


Image courtesy of Max Weber

Question #1: What are the agricultural workers doing in this picture?

Possible Answers:

- They are taking a lunch or coffee break inside a greenhouse.
- The man is also smoking a cigarette in an area where there might be pesticide residue.

Activity 3: Preventing Pesticide Exposure for Agricultural Workers

Question #2 – What are the potential health hazards for the agricultural workers?

Possible Answers:

- The man could inhale pesticides through the cigarette or contaminate the cigarette if he touches it with contaminated hands.
- One woman has a sandwich in her hand and she is touching the cup with her bare hand. If she has pesticide residues on her hand, she could transfer the residues to the sandwich or cup and get pesticides in her mouth.

Question #3 – What must agricultural workers do before they eat, drink, smoke, or use the restroom?

Possible Answer:

- They must wash their hands with soap and water.
- They also need to find a pesticide free area to take their lunch and cigarette breaks.

Question #4 - What items must the employer provide to agricultural workers so they can wash and dry their hands and where must these items be located?

Possible Answers:

- The employer needs to provide decontamination supplies no more than a 1/4 of a mile from where agricultural workers are working.
- The employer has to provide water, soap and towels.
- The employer needs to have soap, towels and at least 1 gallon of water available for each employee at the beginning of their workshift.

Activity 3: Preventing Pesticide Exposure for Agricultural Workers

Illustration B

Show the trainees “Illustration B” and ask the following questions.



Image courtesy of Max Weber

Question #1 - What is happening in this picture?

Possible Answers:

- Someone took their work boots into the house.
- The dog is chewing on one work boot and the baby is almost touching the other work boot.

Question #2 - Could the baby and the dog get exposed to pesticides in this situation? If yes, how?

Possible Answers:

- Yes, both the baby and the dog can get exposed to pesticides through their mouth or skin.
- Children are more sensitive to pesticides because they are small and their bodies are still developing.
- The baby has a lot of bare skin in this picture, plus babies often put their hands in their mouths.

Activity 3: Preventing Pesticide Exposure for Agricultural Workers

Question # 3 - What must agricultural workers do to prevent this type of situation?

Possible Answers:

- Agricultural workers can prevent this from happening by removing their boots before going inside.
- Agricultural workers can put their boots and other work clothing outside or in an area that is not accessible to children.
- They can prevent this situation by removing their work clothes and work boots when they get home, showering immediately, and changing into clean clothes. They should also make sure that their work clothes are stored and washed separately from the other family laundry.
- Children also like to play with their parents' cell phones and keys. Agricultural workers should also store these items out of the reach of children just in case the phones or keys have pesticide residues or other contaminants on them.

Activity 3: Preventing Pesticide Exposure for Agricultural Workers

Illustration C

Show the trainees “Illustration C” and ask the following questions.



Image courtesy of Max Weber

Question #1 - What is happening in this picture?

Possible Answers:

- The agricultural worker is drinking water from an irrigation ditch.
- The man is filling up his water bottle with canal water.

Question #2 - Why is this a hazardous situation?

Possible Answers:

- Sometimes pesticides are applied through an irrigation system. This process is called chemigation. Pesticides and other chemicals can also drift or run off into a canal or ditch water. The agricultural worker in this picture may be drinking and touching contaminated water.
- If pesticides were applied through the irrigation system before that day, residues could still be present in the water.
- Nobody should drink irrigation water. It can contain other contaminants and bacteria.

Activity 3: Preventing Pesticide Exposure for Agricultural Workers

Question #3 - How might pesticides or pesticide residues enter his body?

Possible Answers:

- He could get the pesticides on his skin when he touches the water.
- He could swallow pesticide residues when he drinks the water.
- He could get pesticides in his eyes if he touches his eyes with contaminated hands.

Question #4 - Who is responsible for providing clean water for agricultural workers?

Possible Answers:

- The employer is responsible for providing clean water for all agricultural workers.
- The employer needs to provide water, soap, and single-use towels and these must be located no more than a 1/4 of a mile from the area where agricultural workers are working.

CHAPTER 8

Activity 4: Recognizing and Preventing Exposure for Pesticide Handlers

Content Objective:

Trainees will learn to recognize situations that could lead to pesticide exposure and how to prevent these situations from happening at work.

Training Technique:

Question and answer with photos of potential exposure scenarios

Intended Audience:

Pesticide handlers

Time:

10-15 minutes



Materials and Props:

3-4 photos or drawings of situations that could lead to pesticide exposure

Activity 4: Recognizing and Preventing Exposure for Pesticide Handlers

Instructions

- Before training, select photos showing situations that might lead to pesticide exposure. Print the photos or put them in a digital slide so the trainees can see them clearly.
- Use the photos to lead a discussion on how to prevent pesticide exposure at work. The following are four staged photos with associated activity ideas. You can also find or stage your own photos for this activity.

Photo A



Question: What is happening in this picture?

Answer: The man cut a hole in his mask so he could smoke a cigarette while he works.

Question: How could he get exposed?

Answer: He could inhale the pesticide through the cigarette and through the damaged mask.

Question: How can handlers prevent this exposure situation?

Answer: Pesticide handlers must not alter PPE in any way. Handlers who smoke cigarettes should take cigarette breaks away from areas with pesticides or pesticide residues and never carry a packet of cigarettes when working with pesticides.

Activity 4: Recognizing and Preventing Exposure for Pesticide Handlers

Photo B

Question: What is happening in this picture?

Answer: He is trying to adjust a spray nozzle.

Question: How could this person get contaminated?

Answer: He could get pesticides on his hands because he is not wearing gloves. The sprayer could be pressurized and spray pesticides in his eyes or onto his face.



Question: How can he prevent exposure?

Answer: He should wear the required PPE whenever he adjusts or opens pesticide sprayers.

Photo C



Question: What is happening in this picture?

Answer: The pesticide handlers are sitting at a picnic table. They still have their PPE on and their spray equipment is next to them. There are drink cups on the table near them, as well.

Activity 4: Recognizing and Preventing Exposure for Pesticide Handlers

Question: How could pesticides enter the employees' body?

Answer: They could inhale pesticide residues from the air since the top of the sprayer is off. They could get pesticides on their skin or clothes from residues on the table or bench. If they don't wash their hands, they could ingest residues from contaminated food when they pick it up to eat it.

Question: How can they prevent exposure?

Answer: They should wash their hands before they eat, drink, smoke, use a cell phone, or go to the restroom. They shouldn't have PPE or application equipment near areas where people eat or store food.

Photo D

Question: What is happening in this picture?

Answer: A man is cleaning up a spilled pesticide from a public parking lot.

Question: How could he get exposed?



Answer: He is not wearing PPE, such as gloves or a mask, so he could inhale the pesticide or get it on his skin.

Question: How can he prevent exposure?

Answer: He should wear label-required PPE and make sure the area is secure so other people, pets, or wildlife do not come in contact with the spilled pesticide.

Activity 5: Routes of Pesticide Exposure

Content Objective:

Trainees will be able to list the four routes through which pesticides can enter the body and understand how exposure can occur.

Training Technique:

Sharing stories or personal experiences

Intended Audience:

Agricultural workers and pesticide handlers

Time:

10-15 minutes

**Materials and Props:**

At least one story about a pesticide exposure case as backup

Activity 5: Routes of Pesticide Exposure

Instructions

Begin this activity by asking the trainees,

- “What are the four routes of entry? How could pesticides get into your body?”

Give them time to think and respond to the question. Most will come up with at least two of the four routes of exposure.

- The correct answer is, “Pesticides can enter through your skin, eyes, nose (inhalation), and through your mouth if you swallow a pesticide.”

Ask trainees if they or someone they know has been exposed to pesticides and if they would please share the story with the class. They can share a story about something that happened at work, at home, or a story they heard in the news.

Have a story ready just in case the trainees are not able to think of a story or are too embarrassed to share a story with the rest of the class.

If you don't have a story of your own, search the Internet for a story that was in the newspaper. You can also ask someone from a regulatory agency to give you an example of a case that involved a person in the agricultural industry.

Several states maintain databases of pesticide illnesses and injuries cases. For example, the California Department of Pesticide Regulations has a Pesticide Illness Surveillance Program. The results are available on-line and may be great tools for this activity. The data can be found on the following site.

cdpr.ca.gov/docs/whs/pisp.htm

Activity 6: Routine Decontamination After Working with Pesticides

Content Objective:

Trainees will understand the importance of washing their hands with soap and water after working with pesticides.



Training Technique:

Role play and demonstration with fluorescent tracer

Intended Audience:

Agricultural workers and pesticide handlers

Time:

10-15 minutes

Materials and Props:

Glo Germ® kit that includes Glo Germ® powder or lotion and a black light

A room that gets dark enough or has a light switch so trainees can see the powder or gel under the black light



Activity 6: Routine Decontamination After Working with Pesticides

Instructions

- Before the activity (and when no one is watching), put Glo Germ® powder on your hands. Try to put just enough powder on your hands so it can transfer from your hand to other people or objects, but not enough for trainees to notice you have something on your hands.
- This is a good activity to start after a break so you have time to prepare for it.
- When trainees return, your hands will be “contaminated” with the powder.
- If you have an opportunity, shake a trainee’s hand, hand out paperwork, or ask if you can borrow a person’s pen or booklet for a moment.
- Continue training through the next topic. If you ask volunteers to write their ideas on a flipchart or dry erase board, make sure you touch the pen or marker that they will use first before you hand it to them.
- After about 5-10 minutes, tell trainees that during the break you helped to clean up a pesticide spill and forgot to wash your hands afterwards.
- Tell them you may have “accidentally contaminated” them or other objects in the room.

Activity 6: Routine Decontamination After Working with Pesticides

- Now turn off the room's light and shine the fluorescent light on your hands. Tell them that what you actually have on your hands is called Glo Germ®. It is not toxic, but is used to show people how easily pesticides can transfer from one place or person to another.
- Shine the fluorescent light around the room and show trainees all of the items that you contaminated because you didn't wash your hands after you touched pesticides.
- Tell trainees that this activity demonstrates the importance of washing their hands after using pesticides and before eating, drinking, smoking, chewing gum, or using the restroom.
- If you are training pesticide handlers, tell them it is important to wash their hands with soap and water after they touch pesticide containers, application equipment, tractors, and personal protective equipment.
- This activity was adapted from the Fluorescent Tracer Manual: An Educational Tool for Pesticide Safety Training Educators. Pacific Northwest Agricultural Safety and Health Center (PNASH). Additional training ideas can be found in their training booklet: deohs.washington.edu/pnash/fluorescent_tracer/#ftmanual
- The Glo Germ® kit can be ordered at glogerm.com or by calling 800-842-6622.

CHAPTER 8

Activity 7: Symptoms of Pesticide Exposures

Content Objective:

Trainees will be able to list symptoms that might occur immediately after someone is exposed to pesticides and give examples of health effects that could result from long-term exposure to pesticides.

**Training Technique:**

Question and answer session

Intended Audience:

Agricultural workers and pesticide handlers

Time:

5-10 minutes

Materials and Props:

Flipchart paper, pens and an easel, or

Dry erase board, eraser and dry erase pens

Activity 7: Symptoms of Pesticide Exposures

Instructions

- Tell trainees you are going to talk about symptoms that might occur if a person is exposed to pesticides.
- Ask everyone to give you an example of symptoms a person might experience immediately after being exposed to pesticides. Most trainees' answers will include headache, upset stomach, dizziness, or a rash.
- If trainees have a hard time thinking of possible symptoms prompt them with some of the following questions:
“What might happen if you splash a pesticide in your eye?”
“How might you feel if you swallowed a pesticide or entered an area that someone had recently sprayed with pesticides?”
“What types of symptoms could you have if you spilled a pesticide on your hand?”
- Now ask them to give you examples of long-term health effects that might be linked to pesticide exposure. This is a more difficult question so you may want to wait 10 seconds for a response. If trainees haven't answered, explain that doctors and scientists who study pesticides have discovered that some have been associated with cancer, fertility problems, birth defects, Parkinson's disease, and chemical sensitivity.
- Explain that not everyone will get sick or have symptoms if they are exposed to pesticides. It depends on the pesticide involved, the toxicity and the amount of the product, the way a person was exposed to it and how often. Each person is also different and some people may be more sensitive to pesticides than others. Some people develop an allergic reaction to pesticides over time. There are many factors and therefore it is important that people who use pesticides take safety measure seriously so they can reduce exposure.

Activity 8: Employees' Rights in Cases of Pesticide Exposure

Content Objective:

Trainees will have a better understanding of the pesticide application information that is available to them at the worksite and what they should do if they suspect they have been exposed to pesticides.

Training Technique:

Case study

Intended Audience:

Agricultural workers and pesticide handlers

Time:

10-15 minutes



Materials and Props:

A story about a pesticide exposure situation (a real story or one you created)

At least 5 questions following the story so trainees can discuss their rights to receive medical care if they are exposed to pesticides at work.



Image courtesy of J. Hollyer, University of Hawai'i at Mānoa

Activity 8: Employees' Rights in Cases of Pesticide Exposure

Instructions

Read the following story to the trainees and tell them something similar could happen at a nursery on a busy day. After reading the story, ask them the questions. If they can't come up with the right answers, be sure to tell them the correct response.

Rash and a Rush

A worker was working her normal shift watering and removing dead leaves off of plants at a nursery. It was a very hot and humid day. Her hands were so sweaty that her work gloves kept slipping off. She decided to take off her gloves and continue working. After a few minutes she noticed she was getting a rash on her wrists and forearms. She tried to rinse them in cool water, but they were still bothering her. Her arms seemed to burn more because she was sweating. She told her supervisor she needed to take a break to go home to get some allergy medicine or cream for the rash she got after touching the plants.

Unfortunately, her supervisor just got a call that a truck full of plants was going to arrive in 5 minutes and he needed her to stay to help unload the plants. He told her that after she was finished unloading the truck she could go home and take the rest of the day off.

Question 1:

What should the worker in this story have done if she thought she was exposed to pesticides at work?

Answer: She should have told her boss or supervisor immediately.

She should have found out the name of the pesticide that caused her symptoms and get medical help.

Question 2:

How can workers find out about pesticide applications at work?

Activity 8: Employees' Rights in Cases of Pesticide Exposure

Answer: The employer must keep a list of pesticide applications at a location that is accessible to all employees during their normal work hours.

Question 3:

How can workers know if plants in an enclosed space, such as a greenhouse, have been sprayed with pesticides?

Answer: Before each shift, workers can check the pesticide application records for locations of pesticide applications at the worksite. All enclosed space production areas require posting if the pesticide's restricted-entry interval is greater than 4 hours.

Question 4:

What should the supervisor have done in this situation?

Answer: If the agricultural worker told her supervisor that she was exposed to pesticides, the supervisor should have helped her decontaminate her skin and have someone transport her to a doctor, if needed.

The supervisor must provide a copy of the SDS to the medical provider directly or through the worker.

Question 5:

What were the agricultural worker's rights if she thought she was exposed to pesticides at work?

Answer: Even though this is a difficult situation for the supervisor because of the timeliness of the plant delivery, the worker's health and safety was important. The worker had the right to receive medical attention and transportation to a nearby medical facility for workplace illnesses and injuries. She should never have been instructed to drive herself home for medicine or rest if she was feeling ill.

CHAPTER 8

Activity 9: First Aid for Pesticide Exposure

Content Objective:

Trainees will learn the steps to properly respond to pesticide exposure by following first aid instructions listed on pesticide labels

Training Technique:

Role play, hands-on activity

**Intended Audience:**

Pesticide handlers

Time:

20-25 minutes

**Materials and Props:**

Illustrations of pesticide exposure scenes (samples in activity 4)

One pesticide label or safety data sheet (SDS) per exposure scene

Activity 9: First Aid for Pesticide Exposure

Instructions

- Explain that you are going to review the proper way to respond to a pesticide exposure situation, followed by a role play activity that will allow trainees to practice following pesticide label first aid instructions from the label or SDS.
- Ask trainees the following questions.

Question: How can you help a handler who gets pesticide in their eyes?

Answer: Hold their eyes open and rinse with a soft, steady stream of clean water. Rinse their eyes for 15 minutes, if possible. **Do not use eye drops.** Get medical attention.

Question: How can you help someone who has pesticide on his or her skin?

Answer: Remove contaminated clothing and wash the skin with plenty of water and soap. If symptoms develop, get medical attention.

Question: What is the first thing you should do to properly assist someone who has swallowed a pesticide?

Answer: Read the label or SDS directions to determine if vomiting should be induced or if drinking water, milk, or another substance is recommended. Some labels or SDS may recommend administering activated charcoal because the pesticides will bind to the charcoal. Never induce vomiting or give liquids to an unconscious person. Some pesticides are corrosive and may cause internal damage by vomiting. Many others contain petroleum distillates, which may get into the lungs and cause serious damage if the victim vomits. If neither the label nor SDS is available, call 911 or Poison Control for guidance.

Activity 9: First Aid for Pesticide Exposure

In all cases of swallowed pesticides, get medical help immediately. Do not spend time provoking vomiting or administering treatments unless there isn't a medical facility close by.

Question: What is the first step you should take if you are responding to someone who has inhaled pesticide vapors?

Answer: If a person is overcome by pesticide vapors in an enclosed area, open doors and turn on ventilation to the area, if possible. Put on an appropriate respirator before entering then move the injured person to an open area for fresh air. Next, help to restore breathing if needed and only if you are trained in first aid and CPR and have no risk of becoming contaminated in the process. Get the victim medical help immediately.

- Set up five or six stations around the room for the role play activity.
- Each station should have a photo or drawing of a pesticide exposure scene and a pesticide label or SDS. Sample photos have been included in activity 4, but you may take photos of situations that better represent the worksite or your area.
- Ask trainees to form small groups (one group for each station).
- After they have formed their groups, ask each group to go to one of the stations.
- Explain that each station will have a picture of a pesticide exposure scene and a pesticide product label or SDS. One person will play the role of the victim as shown in the picture. The others will respond to the emergency and attempt to help the victim by following the first aid instructions on the pesticide label or SDS.

Activity 9: First Aid for Pesticide Exposure

- Each group will spend about five minutes at each station and will rotate clockwise to the next station. When they reach a new station, they should change roles so that everyone has an opportunity to play the role of a victim and a responder.
- Instruct trainees to look at the pictures and read the first aid information on the pesticide label or SDS to help them decide how to correctly respond to each scenario.
- After they have had an opportunity to rotate through at least three different stations ask the following questions:

Questions:

- Were any of these situations difficult to respond to? If so, why?
- Were you able to find the first aid information easily on the pesticide label or the SDS?
- Which pesticide labels or SDSs were most difficult to follow?
- Why is it important that pesticide handlers read and understand the label before they begin to work with a pesticide?
- How might these situations be difficult for people who are not familiar with pesticide labels and SDSs?
- How would these situations be even more difficult for people who have difficulties reading labels and SDSs, which are often only available in English?

Activity 10: Pesticide Toxicity: LD₅₀

Content Objective:

Trainees will have a better understanding of the different toxicity levels of the pesticides they use at work and how those levels are determined

Training Technique:

Role play

Intended Audience:

Pesticide handlers

Time:

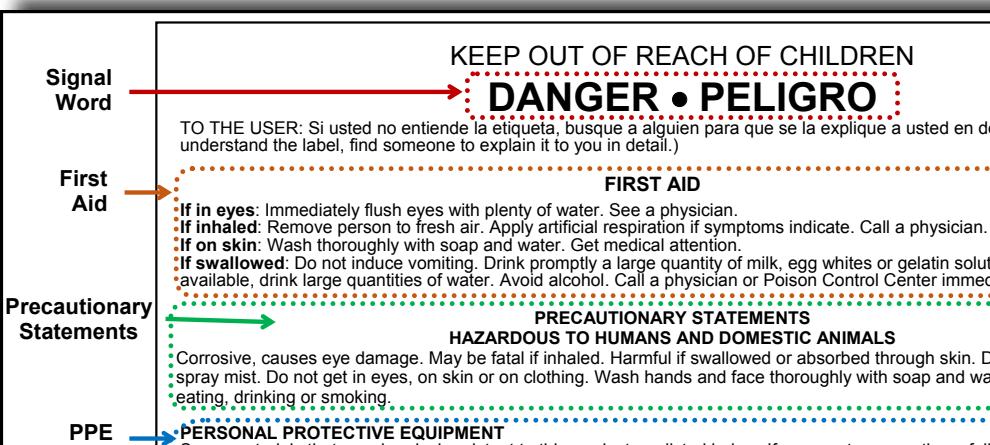
10-15 minutes



Materials and Props:

Individually-wrapped candy (the worst tasting the better)

7 volunteers



Activity 10: Pesticide Toxicity: LD₅₀

Instructions

- Explain to the trainees that pesticides are divided into four toxicity levels. Each level is represented by a signal word: Danger, Warning and Caution.

The most toxic pesticides will have the word “Danger” on the label.

The pesticides in the second toxicity category will have the word “Warning” on their labels.

Pesticides in the third category will have the word “Caution” on their labels.

*The fourth toxicity category may also carry the word “Caution” on the label, **but a signal word is not required.***

- Tell the trainees that this will be a very simple demonstration to show them how pesticide toxicity levels are determined.
- Ask for seven volunteers to come to the front of the room for an activity involving candy. One person will play the role of a pesticide manufacturer while the others will pretend to be laboratory animals. They can choose to be guinea pigs, mice, etc.
- Tell the volunteers that the pesticide manufacturer has a great new product they would like to register but first they have to run several tests on the pesticide. One test determines the toxicity level of the product.
- The toxicity level is tested using LD₅₀, which stands for Lethal Dose = 50%. The LD₅₀ is the amount of the pesticide that it would take to kill half (50%) of the laboratory animals in the study. This is complicated, but the activity will simplify the concept.

Activity 10: Pesticide Toxicity: LD₅₀

- Give the bag of candy to the trainee who volunteered to be the pesticide manufacturer.
- Tell the manufacturer that each piece of candy is one dose of pesticide and that he or she needs to find out how many doses it will take to kill half of the lab animals.
- Ask the manufacturer to give each “lab animal” a piece of candy.
- Tell the “lab animals” to eat their “dose of pesticide” at the same time. Note: Some people can pretend to eat the candy if they prefer not to eat it.
- Ask them, “Did any of you die from that first dose?”
- One person usually acts like they are dying at this point. So ask the audience, “If one of the six lab animals dies, is that half of the original population?” It is not, since 1 is not half of 6.
- Tell the manufacturer that it is time to give the second dose. The manufacturer must give each of the remaining 5 lab animals a piece of candy, which is another pretend dose of pesticide.
- Ask the lab animals, “Did any of you die from that first dose?” At this point, two more people usually act like they died from the second dose.
- Ask the audience, “Now we have three dead lab animals out of the original six. Is that half of the original population?” The answer is yes. Therefore, that amount is the LD₅₀.
- In summary, a pesticide with a low LD₅₀ is more toxic than one with a high LD₅₀ because it takes only a small amount to kill half of the test animals. A pesticide with a very low LD₅₀ would have the signal word “Danger” on the label, followed by “Warning,” which is moderately toxic, and then “Caution,” a slightly toxic pesticide.

CHAPTER 8

Activity 11: Selecting Personal Protective Equipment (PPE)

Content Objective:

Trainees will be able to select the correct personal protective equipment listed on a pesticide label for the task they will perform.

Training Technique:

Small group, hands-on activity

Intended Audience:

Pesticide handlers

Time:

20 minutes



Materials and Props:

2 or 3 different pesticide labels - you can find copies of labels for training purposes at:

cdms.net/Label-Database

Various types of PPE listed on the pesticide labels that you have pre-selected for this activity



Activity 11: Selecting Personal Protective Equipment (PPE)

Instructions

- Divide the class into three groups, and provide each group with a different pesticide label, flipchart paper and pens.
- Instruct them to each take a role for this activity. They will need a person to read the PPE section of their label aloud, another person will write the PPE items on the flipchart paper, the third person will select and dress up in the PPE listed on their label. The fourth person will present their findings to the rest of the class while referring to the list they created on the flipchart paper and their model “pesticide handlers.”
- Ask trainees to locate the PPE section of their labels and decide what PPE is required to be worn when handling the pesticide.
- If they find that the label contains different PPE for different tasks (i.e., overhead spraying, cleaning equipment, etc.) ask them to select one and specify the task when they present it to the class.
- Place PPE items on a table so they are easily accessible for the trainees.
- Instruct the groups to look through the PPE and to select those items that are listed on their pesticide label.
- One person should put on the PPE or set it aside to hold up during the presentation.
- At the end of this activity, have the trainees present what they selected based on the label instructions for their chosen pesticide handling task.
- Have the correct answers in case the trainees do not select the correct PPE.

Activity 12: Factors that Could Contribute to Surface Water and Groundwater Contamination

Content Objective:

Trainees will become aware of ways water sources (such as lakes or streams) can become contaminated.

Training Technique:

Hands-on demonstration

Intended Audience:

Pesticide handlers

Time:

15-20 minutes



Photo courtesy of Catherine Weber

Materials and Props:

6 plastic disposable transparent cups

A jug or bottle of water

Food coloring (at least 3 colors)

5 volunteers

Activity 12: Factors that Could Contribute to Surface Water and Groundwater Contamination

Instructions

- Ask 5 people to volunteer to participate in the activity.
- Ask the volunteers to stand side-by-side in front of the class so that the other trainees can see them.
- Provide each volunteer with a plastic cup.
- Explain to the volunteers that they will assume a new identity and a job that may require them to use a pesticide. You may give them ideas such as a store owner, a gardener, or someone who works in a laboratory.
- After they have had a moment to choose their “new identity” ask the first participant to tell the class who they are and why they use a pesticide. **For example:**
“I am a homeowner and I use pesticides on the weeds in my yard.”
- After the first volunteer has presented their situation, put one drop of food coloring and about a 1/2 cup of water into their glass to represent the chemical they are using.
- Ask the next volunteer to share a different scenario. **For example:**
“I own a restaurant and I use pesticides to kill the cockroaches in the kitchen.”
- Add water and a different color to the second volunteer’s cup to represent the pesticide that they use.
- Continue this process until each volunteer has had a chance to present a scenario.
- Now introduce yourself.
“I am the river.” (You may make it more personal by naming a local river).

Activity 12: Factors that Could Contribute to Surface Water and Groundwater Contamination

- Add a little water to your plastic cup. Walk up to the first person and ask,
"How could your pesticide get into the river?"
- The participant might answer,
"I poured my leftover pesticide down the drain" or
"I sprayed pesticides outside on a windy day."
- After each volunteer presents a way they could contaminate the river, ask them to pour a little bit of the liquid from their cup into your cup.
- Continue until each volunteer has poured a bit of the liquid from their cup into your cup.
- At the end of the activity, the water in the cup representing the river should be very brown. Hold the cup of water up so everyone can see it.
- Ask the trainees if they would like to drink the water, fish in it, or swim in it.
- Explain this activity is a bit exaggerated, but it demonstrates how different situations could lead to water contamination. It is important everyone (in addition to people who work in agricultural production) thinks about their actions when handling various types of pesticides, chemicals, or hazardous substances. We all have a role in protecting our environment.
- Surface water, such as irrigation canals, rivers, streams, lakes and groundwater are sensitive to pesticide contamination. Drift from nearby pesticide applications and runoff from rain or irrigation can carry pesticides into surface water. Rain and irrigation water can also carry pesticides down to groundwater. This creates a serious problem because of our need for water for irrigation, drinking, and human recreation. Effects on aquatic life and other animals can also impact the entire ecosystem.

CHAPTER 8

Activity 13: Cleaning up Pesticide Spills

Content Objective:

Trainees will learn the proper way to clean up small pesticide spills to prevent environmental contamination.

Training Technique:

Discussion and hands-on practice

Intended Audience:

Pesticide handlers

Time:

20 minutes

**Materials and Props:**

Water to simulate pesticides

Kitty litter or soil

Small hand broom

Dust pan

Concrete surface

Buckets to hold hazardous waste

Caution tape

3 volunteers

Activity 13: Cleaning up Pesticide Spills

Instructions

- Begin this activity by assessing trainees' knowledge by asking them if they have ever had experience cleaning up a pesticide spill.
- Ask trainees why it would be important to clean up a pesticide spill quickly and correctly. Follow this with a discussion of the importance of cleaning up pesticide spills immediately and effectively as a way to protect the environment, groundwater, soil, people, etc.
- Explain they will now have an opportunity to practice or observe how to properly clean up a liquid pesticide spill on concrete. They will also discuss how to correctly clean up other types of spills such as a powdered pesticide spill on concrete and a liquid spill on soil.
- If weather and location permit, do this activity outdoors on a flat surface, as it might be messy.
- Begin the activity by pouring water on the concrete. This will represent a liquid pesticide spill on a concrete surface.
- Ask for three volunteers. One will isolate the area. Another volunteer will explain the steps to take to clean up the spill. The third volunteer will follow the clean-up instructions provided by the second volunteer. If no one in the group feels comfortable providing instructions, you can provide the instructions as the second volunteer carries out the actions.
- Tell the volunteers they may use the materials that have been provided to clean up the spill. They will have a roll of caution tape, an absorbent material (such as non-clumping kitty litter, soil, or sawdust), a small hand broom and dust pan to brush up the spill, and buckets in which to place the material once they have cleaned it up.

Activity 13: Cleaning up Pesticide Spills

- Ask one volunteer to unroll the caution tape around the hazardous area to prevent others from getting too close to the spill.
- Ask another volunteer (or you) to explain the steps to clean up the spill as volunteer #3 follows those instructions. Encourage the other trainees to watch to make sure that the volunteers are properly responding to the situation. The correct steps to take when cleaning up a liquid spill are to put on the PPE listed on the pesticide label. Starting at the edges of the spill and working inward, cover the spill with something absorbent, such as kitty litter or soil. Sweep this into sealable plastic bags or buckets. If the pesticide is highly toxic or if the spill is large, a professional spill team should be called to do the cleanup. The bag or bucket must be labeled with all of the information pertaining to the spill such as the name of the owner or company, a contact person and their phone number, the name of pesticide, date, etc.
- Continue the activity by leading the following discussion on how to properly respond to other spill situations.

Question: What is the proper way to clean up a powdered pesticide that has spilled onto concrete?

Answer: First, lightly wet the powdered material or cover it with a tarp to prevent it from blowing away. Continue with the above steps that were listed for cleaning up a liquid spill on concrete.

Question: What is the proper way to clean up a liquid spill on soil?

Answer: Dig out the spilled pesticide with a shovel and place the contaminated material in a bucket or bag. Make sure you have removed all of the pesticide in the soil by digging out the area 6 inches deeper and wider than the area that is wet. The bag or bucket must be labeled with all of the information pertaining to the spill, such as the name of the owner or company, contact person and phone number, name of pesticide, date, etc.

Activity 13: Cleaning up Pesticide Spills

Question: How should you respond to any type of pesticide spill on a public roadway or public area?

Answer: Isolate the area of the spill and call the appropriate local hazardous material response team—this may be “HazMat” or the local fire department.

Question: Once the hazardous material has been placed in a bucket or plastic bag and properly labeled, where should this hazardous waste be disposed?

Answer: Call the local regulatory agency for instructions and phone numbers. The local regulatory agency may have specific programs to assist with this type of situation, as well. Employers should have emergency procedures and phone numbers in place in case of such an incident.

Question: How can pesticide handlers reduce the chance of spilling pesticides?

Answer: Follow safe practices and concentrate on their actions when working with pesticides. Employers must provide pesticide handlers with yearly training so they know how to properly mix, load, and apply pesticides and how to correctly respond to emergency situations, such as spills.

Activity 14: Pesticide Drift

Content Objective:

Trainees will gain an understanding of how pesticides can drift onto non-target areas, and ways to prevent drift when they work with pesticides.

Training Technique:

Question and answer session with discussion

Hands-on demonstration of how pesticide drift could occur

Intended Audience:

Pesticide handlers

Time:

20 minutes

**Materials and Props:**

Electric fan

Extension cord

New backpack sprayer (never contained pesticides)

Water (poured into backpack sprayer)

Water-sensitive paper

Plant (a house plant would be sufficient)

Prepared questions and possible answers

1 volunteer

Note: Depending on the trainees' experiences and prior knowledge these questions might be difficult for trainees to answer. Prepare possible examples to prompt them to think about situations.

Activity 14: Pesticide Drift

Instructions

- Introduce this topic by talking about various factors that contribute to environmental contamination and asking the following questions.

Question: What are some of the ways in which pesticides can leave an application site?

Possible Answers: Pesticides might leach through the soil, evaporate, or run off if it rains shortly after an application. People might pick fruit that has pesticide residue on it. If someone drives a tractor through a field, pesticide residues might stick to the wheels. A pesticide might drift onto other areas if it is applied on a windy day.

Question: What percentage of a pesticide could potentially leave the application site during or following an application?

Possible Answers: Trainees will guess various percentages of pesticide that might leave the site if some of the above situations occur.

Actual Answer: In good conditions, nearly all of the pesticide stays on the application site. However, in poor conditions or if the application is not managed well, it has been estimated that as much as 55% of the applied pesticide can potentially leave the application site due to several factors, such as those already mentioned.

- Tell the trainees that the example of applying pesticides during a windy day is a very important concern and one that you will focus on next. Continue to build on their knowledge of the topic by asking if anyone wants to share a story about a pesticide drift situation, such as when a pesticide drifted from an application

Activity 14: Pesticide Drift

site and contaminated the environment, other crops, homes, or people. Note: prepare a story that you can share just in case the trainees don't know of a particular drift situation.

- Explain that the next activity will demonstrate how pesticides can drift from an area if applied on a windy day.
- This activity should be performed outdoors in an area where there is no wind or one that is blocked from wind by a wall or barrier.
- Begin by asking the trainees to think about the areas where they will apply pesticides. What are their concerns in those areas? Are there water sources, wildlife, or beneficial insects they want to protect from pesticide spray drift?
- Explain that the activity is designed to help them understand some of the factors that cause pesticides to drift away from the target area, the effects of drift, and how it can be prevented.
- Take the group outside to the area where the demonstration will occur.
- Set up the activity area with an unused backpack sprayer filled with water, an electric fan plugged into an electrical outlet, and a plant.
- Ask for a volunteer to play the role of a negligent or improperly trained pesticide applicator. The volunteer will put the backpack sprayer on and will prepare to apply "pesticides" (water in the sprayer to simulate a pesticide) to the plant.
- Ask other trainees to form a half circle facing the pesticide applicator. Provide each person with a piece of water-sensitive paper and ask them to hold the yellow side out so it is facing the pesticide applicator. Explain to the class that the paper is currently yellow but will turn blue if it gets wet.

Activity 14: Pesticide Drift

- Ask the volunteer handler to spray the plant. After a few seconds, ask the other trainees to check to see if their water-sensitive paper has changed color. Ideally, without a wind present, the papers should still be yellow, indicating that the pesticide has not drifted from the target site (the plant).
- Now turn on the fan and tell the trainees that the handler did not pay attention to the weather patterns and decided to apply pesticides on a windy day. Ask the volunteer handler to spray the plant (the fan should be placed behind the participant so that it is blowing the pesticide toward the plant.)
- Ask the trainees to check their water sensitive paper to see if it has changed color. Because of the presence of wind created by the fan, some papers should now have blue spots, indicating that the pesticide has drifted off the target site and has contaminated other areas.
- Ask the trainees to list some ways to prevent pesticide drift.

Possible Answers:

- Use the correct nozzle size for the pesticide you are applying. For example, a very small nozzle would create tiny spray droplets that are lighter in weight and would easily be transported by air currents.
- Concentrate on the pressure of your sprayer and follow the manufacturer's instructions. An extremely high pressure could cause the spray droplets to drift from the target site.
- "Adjuvants" can be added to the tank. Some adjuvants help to prevent drift by making the spray droplets larger, weighing the pesticide down, or causing the pesticide to stick to the plant.
- Most importantly, pay attention to weather conditions when you are applying pesticides.

Activity 15: Anonymous Questions (The Snowball Fight)

Content Objective:

Trainees will have an opportunity to have their questions or concerns about pesticide exposure and safety heard and answered anonymously.

Training Technique:

Small group question and answer activity

Intended Audience:

Agricultural workers and pesticide handlers

Time:

15-20 minutes

**Materials and Props:**

Several pieces of blank paper
Pencils or pens

Activity 15: Anonymous Questions (The Snowball Fight)

Instructions

Workers and handlers often have questions they are hesitant to ask during training. They may feel everyone else will know the answer and they won't appear as smart as everyone else, or perhaps their mind had wandered when the information was covered. There are other instances that may include a workplace situation that needs to be discussed but people would like to remain anonymous when they ask about the situation.

- Divide the group into small groups of 3-4 people.
- Provide each group with a blank piece of paper and a pencil or pen.
- Ask each group to write down one question they have about pesticide safety. It can be something they didn't understand during the presentation or a unique situation that occurred at the worksite they want clarified.
- Instruct them to write one question only. They don't have to write the answer to the question.
- When everyone is ready, ask one person from each group to volunteer to the front with the piece of paper.
- Have the volunteers at the front of the room stand fairly far apart, but facing each other.
- Ask the entire group, "What happens in the mountains in the wintertime?"

Hopefully someone will eventually say, "It snows."

- Ask the group, "What do you like to do in the snow?"

Eventually someone will say, "Have a snowball fight", which is the answer you will need for this activity.

Activity 15: Anonymous Questions (The Snowball Fight)

- Instruct the volunteers to crumple up the paper to create a “snowball.”
- Give them 15 seconds to have snowball fight with their papers.
- When the 15 seconds is up, have each person pick up the snowball closest to them or in their hand, open it up and read the question aloud.
- The entire group can try to answer the question and if they need a little more clarification or correction, you can provide it.
- The benefit of this activity is the questions are anonymous. Everyone has a chance to participate in writing and answering a question (sharing their expertise) and each group gets their question answered.

CHAPTER 8