Project Clean Environment for Healthy Kids

INTRODUCTION TO ENVIRONMENTAL HEALTH

A training curriculum for lay health educators

Farmworker Justice Fund, Inc.
1010 Vermont Ave., NW, #915
Washington, DC 20005
*(202)783-2628 * (202)783-2561 fax*
www.fwjustice.org

Activity	Methodology	Materials Needed	Time
Introduction *Welcome participants; ice-breaker activity; establish workshop norms; review the workshop objectives*	Group Activity	• Lotería game OR blank sheets of paper • Flip chart and markers • Handouts 1 & 2: Workshop Objectives	40 mins
Environment and Environmental Health *Discuss environmental hazards in the community*	Group Activity and Discussion	• Drawing of tree trunk; cut-out shapes of fruits • Flip chart and markers	40 mins
Basic Concepts in Environmental Health *Explain concepts such as risk assessment, dose-time relationship, the special vulnerability of children, and the risk of illness*	Group Discussion	• Flip chart and markers • Handout 3: Exposure to Chemicals • Handout 4: Describing Risk	1 hour
Community Health Promoters *Review the unique qualities of community health promoters; discuss the differences between popular and traditional education styles*	Group Discussion and demonstration	• Flip chart and markers • Photo or drawing of pollution	25 mins
Implementing the Environmental Health Project *Explain how the group will conduct their outreach activities*	Group Discussion	• Flip chart and markers	15 mins

INTRODUCTION TO ENVIRONMENTAL HEALTH

(Total time: about 3 hours)

Workshop Objectives

- Introduce the facilitators and the participants
- Review overall course objectives
- Discuss the definitions of environment and environmental health
- Review key concepts of environmental health
- Understand what it means to be a promotor de salud
- Discuss how the Healthy Kids Project will be implemented

I. Overview

The purpose of this opening session is to establish the basis for the workshop and set an appropriate tone for the following sessions. After the introductions and opening comments, the facilitator discusses with the participants the desired workshop norms in order to create a positive learning environment throughout the course. Next, the participants are given the opportunity to discuss expectations about the workshop during a group exercise. This exercise is intended to demonstrate that the facilitators value the opinions and expectations of the participants and support their active participation. The facilitators present the goals of the workshop while considering the expectations of the participants. The facilitators should clarify which of the participant expectations will be met throughout the sessions and which will not.

II. Introduction

Give a brief welcome to the participants and introduce yourself. Start the session off with an ice-breaker that will help you and the participants get to know each other. Listed below are two examples, but feel free to use any ice-breaker that will assist you in getting to know the group.

Lotería cards (Option 1)
Time: 30 minutes
Materials: Deck of Lotería cards, flip chart, markers

Get a set of playing cards from the Latin American game "*Lotería*" (similar to Bingo). Distribute a card to each participant and ask him/her to think about how each card relates to something in his/her life. On a flip chart, write down the information you want each person to share about him/herself. For example:

- Your name
- Where you were born
- Where you live now
- Any experience you've had as a farmworker (or family members)
- Why you are interested in participating in this project
- How you identify with the *Lotería* card

Trainers should go first to set the tone of the exercise.

Picture Presentations (Option 2)
Time: 30 minutes
Materials: Blank sheets of paper, markers, tape

Give each participant a blank sheet of paper and a magic marker. Ask the participants to describe themselves by drawing pictures. Ask them to refrain from using words. Tell them that they are free to describe any aspect of their life, such as where they are from, their families, their hobbies, their work etc. When they have completed their drawings, ask the participants to introduce themselves to the group by explaining their pictures. Hang each drawing on the wall after each introduction. Trainers should also participate in this exercise.

Workshop Norms (Optional)
Time: 5 minutes
Materials: Flip chart and makers

Explain that you would like to have a positive and comfortable learning environment for all of the workshops. For instance, the group should fell free to actively participate in the learning process. Explain that it is helpful if everyone agrees on what this environment should be. Ask the participants to brainstorm with you the norms or ground rules for the workshop. Write their response on a flipchart. Try to encourage some of the following responses:

- the responsibility of learning needs to be shared by everyone
- everyone should participate actively in all the activities of the sessions
- the sessions should begin and finish on time
- respect the views of others

- learn from each other's experiences
- no smoking
- maintain the confidentially of any personal information shared by the participants
- no cell phones

Remind the group that the only way the workshops will be successful is if they actively participate in the training. It is not the job of the facilitator to "teach" the participants. Instead everyone needs to share the responsibility of learning. Hang the flip chart on the wall after completing the exercise.

Workshop Objectives
Time: 5 minutes
Materials: Handouts 1 and 2

Distribute Handout 1: Introduction to Environmental Health Workshop Objectives and review them with the participants. Explain that you will be covering this information in the next few hours. Ask if they have any questions or concerns. Next, distribute Handout 2: Environmental Health Training Objectives and review them with the participants. Explain that you will be covering this information over 4 days of training. If you feel their expectations greatly differ from the objectives of the session or the course, be sure to address this with the group.

III. Defining Environment and Environmental Health

Group Discussion
Time: 10 minutes
Materials: Flip chart and markers

Ask the participants how they define "environment." Ask them what they think of when they hear the word environment. Write their responses on a flip chart.

Next, ask them how they define "pollution." Write their responses on a flip chart. To help the group better understand pollution, it may help to give them the following example.

Earth is very much like a fish bowl. Both are contained environments – what goes in stays in. So if we dump garbage or toxins into the rivers, soil, and air, it will not disappear.

Finally, ask them to define "health" and what it means to be "healthy." Write their responses on the flip chart.

Problem Tree Exercise
Time: 30 minutes
Materials: Flip chart, markers, colored paper cut-outs in the form of fruit, tape

On a flip chart, draw a picture of a tree, including its roots, a trunk, and several branches. On the trunk of the tree, write the words "Environmental Hazards" or "Peligros Ambientales." Ask the group to think about some of the health hazards that exist in the world around them, in their homes and workplaces and ask for one or two responses. Write these responses inside the roots of the tree.

Divide the group into two smaller groups and tell each group to draw its own tree and write inside the roots all the possible health hazards in the environment in their community that they can think of. (It may be easier to have them write their responses on strips of paper, which are then taped to the roots.) Give them five minutes to write down their ideas. Reassemble the groups into one and have a representative of each group review the hazards they discussed. Their responses might include the following:

- pesticide residues on crops
- bacteria in their water supply
- soot in air
- toxic chemical waste dump near their neighborhood

Next, ask the group to think of ways to reduce their exposure to these hazards. Ask for one or two responses and write these on the tree branches or inside the outline of a fruit (such as lemon, lime or orange). Have them divide into their small groups again and give each group a different set of pre-cut fruit shapes (about 10 each). Give each group about 5 minutes to write their ideas on the fruits and to tape them onto their trees. Reassemble the groups into one and have a representative of each group review the "solutions" they discussed.

Solutions might reflect a range of options from systemic changes, to regulatory and enforcement actions to individual behavior changes including the following:

- switch from conventional farming to organic farming
- tighter government regulations of air pollutants
- regulation requiring scrubbers on all smoke stacks
- better enforcement of laws against dumping industrial waste into waterways
- passing local or state laws against using pesticides in schools

- community education about environmental risks
- bringing garbage to city dump rather than burning it

IV. Basic Concepts in Environmental Health

Group Discussion
Time: 45 minutes
Materials: Flip chart and markers, Handouts 3 and 4

Explain to the group that before we can go forward with a discussion on environmental health hazards, we need to go over some basic concepts about toxins and human health.

Protect yourself from danger
Exposure to hazardous substances poses a real and serious danger to our health and our children's health and it is worth taking the time and effort to prevent such exposure. Explain to the group that this workshop is meant to show not only the dangers posed but also a variety of ways to reduce our risk of injury.

Take the example of automobile accidents. Tell the group that car accidents cause 40,000 deaths a year in the U.S. There are a wide variety of ways in which we can reduce the risk of injury or death from such accidents.

? What are some easy ways to reduce this risk?
- wearing seat belts
- air bags
- driving slower
- building a safer car

? What are some broader solutions to the problem?
- buying a new car with the latest safety features
- stop driving altogether

? What are the responsibilities of the car manufacturer to protect the driver?
- build a safer car
- make airbags mandatory

? What factors do you consider when you think about whether to adopt a safety measure?
- seriousness of the harm
- likelihood of the harm
- ease or difficulty in adopting the safety measure
- cost of the safety measure

Dose-Time Relationship
Explain to the group that additional factors come into play when evaluating risks from exposure to chemicals or other toxic substances For example, it is important to consider the quantity of the substance to which a person is exposed, whether the substance actually enters the body, the time period of exposure, and the possibility of repeated exposures over time when determining whether a person will be injured by a substance.

To help the group better understand these factors, ask them to consider the following questions:

- What would happen to an adult who went to a party and drank one beer in one hour?
- What would happen if the same person drank 12 beers in an hour? Which would have more of an effect: one beer in an hour or 12 in an hour?
- What would happen if an adult at that party drank no beer? Nothing, because the alcohol didn't get into her body at all.
- What would happen if the person drank 12 beers per day for his entire life?

Explain that the presence of the beer at a party is not hazardous to health at all if it is not consumed; drinking one beer in one hour is probably not harmful. Some people might feel some effect but many would feel no effect at all. Drinking 12 beers in an hour is a different story. Drinking 12 beers in an hour would cause someone to become extremely inebriated and probably sick. This would be an ACUTE effect (i.e., headache, nausea, dizziness from alcohol).

While the quantity consumed is important, its effect is also dependent on the time period in which it is consumed. Drinking 12 beers all day long may not cause someone to get inebriated or sick that day.

Adverse health effects may also be caused by repeated exposure to small amounts over a long period of time. Drinking 12 beers per day over many years would likely cause damage to the liver, such as cirrhosis of the liver or liver cancer. These effects would be chronic health effects. Chronic health effects can be caused by low level exposures which would not cause acute or immediate effect. Thus, the time period of exposure is often as significant as the quantity of exposure in determining whether a person is harmed.

The same factors which determine how harmful beer may be (e.g., quantity and time period) also play a role in determining how

harmful a pesticide or other toxin may be on the body (e.g., how much of it the person is exposed to and how long the exposure lasts). But unlike beer, which always has about the same alcohol content, pesticides differ from each other in chemical composition and therefore in the immediate and/or long term health effects that they may cause. To demonstrate this, ask participants to compare beer to rum or tequila, which has much more alcohol content, and so is more toxic per ounce.

Other Factors that Influence Toxicity or Harmfulness
Ask the group if they know what other factors might influence how harmful a substance will be to a particular person. Write their responses on a flipchart and try to elicit the following factors:

- Age
- Sex
- Pregnancy
- Status of health (chronic illness, weak immune system, etc.)
- Nutrition
- Other chemical interactions (medication or drugs/alcohol)
- Tolerance

Distribute Handout 3: Exposure to Chemicals (ATSDR Factsheet).

Vulnerability of Children

Remind the group that this project is called Clean Environment for Healthy KIDS. We focus on children for several reasons. First, we believe that parents will be more likely to change their harmful habits if they know that this will have a beneficial effect on the health of their children. More importantly, we focus on kids because their bodies are especially vulnerable to the harmful effects of environmental hazards.

Questions for discussion

? If both a 5-year old child and an adult had a cold, which one would need a larger amount of cold medicine to get better?

- An adult would take a larger amount .

? Why would the adult take more medicine?

- An adult is bigger. Children take a smaller amount of medicine (also known as a smaller DOSE) because they are smaller. The amount of medicine it takes to treat a person is calculated in relation to the person's weight. Similarly, it takes less of a poison to affect a child than an adult.

? Are there other reasons why children would be more affected by toxins than adults would be?

- Children are more affected by poisons than adults because their bodies are still developing. For a fetus developing in the mother's womb, the initial development of the limbs and organ systems occurs during the first three months. Therefore, a fetus is the most vulnerable if exposed to a poison during this time period. There are other crucial moments of development when exposure to a toxic substance could result in life long damage.

? At what life stage are people most susceptible to the harmful effects of chemicals?

- Generally, a fetus in the mother's womb is most susceptible.

? How could the developing fetus be exposed to poisons?

- If the mother is exposed to pesticides, lead or other harmful chemicals during pregnancy, the chemical can enter the mother's blood stream and cross over to the fetus through the placenta.

? Are a baby's organs fully developed at birth?

- No. There are organs that continue to develop after birth. This includes the brain (which continues to develop significantly until the child is approximately 8 years old) and the liver.

? Do you know what role the liver plays in the body?

- The liver plays an important role in detoxifying chemicals that enter the body. If a baby is exposed to poisons before the liver is fully mature, she will not be as able to detoxify the substance and avoid its harmful effects, as an adult would be.

? What is the immune system?

- The immune system helps the body fight off exposures to harmful substances (e.g., germs and toxic chemicals). When a baby is born, its immune system is also immature and doesn't help it fight off toxic exposures as effectively as would an adult's immune system.

? Are there ways in which children would be more exposed to harmful substances in the home than adults would be?

- Babies and toddlers have more exposure because they crawl on the floor or the ground. Babies also have more exposure because they put their hands in their mouths and ingest the dust and dirt from the floor that may contain lead dust, pesticides, or other chemicals.

Summarize the above points by explaining that infants and children are more susceptible to the harmful effects of exposure to toxins than are adults because: 1) they are smaller; 2) their brain and liver are still developing; 3) their immune system is not fully mature; and 4) they breathe more and eat more, pound for pound, than do adults.

Risk of Illness
To begin explaining the concept of risk of illness, ask the following questions:

? How many of you smoke? (Please raise your hands.)
? How many of you know someone who smokes?
? What serious health effects are associated with smoking?

- lung cancer (2nd leading cancer in adults in the US), heart disease, emphysema, ulcers, etc.

? Does everyone who smokes develop lung cancer?
- No.

? Is a smoker more likely to develop a health problem?
- Yes. About 1 in 4 long-term smokers develops lung cancer. This puts them at high risk for lung cancer.

? Who is more likely to get lung cancer: (1) someone who never smokes; (2) some one who smokes 1 cigarette a day for 20 years; (3) someone who smokes a half pack a day for 20 years' (4) someone who smokes a pack a day for 10 years?
- # 3 and 4, because they have consumed the same dose.

Ask the group to count off in sequence of 1, 2, 3, 4. Tell all of the number 1's to please stand. Ask the following question:

? If we imagined for a moment that everyone in this room is a long-term smoker, and 1 in 4 smokers get lung cancer, would the people standing all get lung cancer?

- No. When we say that one in four people get lung cancer that means that, on average, based on everyone who is a long-term smoker, in a defined group, that 25% or 1 in 4 get lung cancer (often the entire country). In a smaller group, the number of people who develop lung cancer may be greater or smaller.

Even when you are exposed to a substance that can cause cancer, it does not automatically mean that you will develop cancer.

Similarly, if you are exposed to a harmful substance, it doesn't automatically mean that you will become ill. It depends on a number of factors, including the quantity and duration of exposure, in addition to individual characteristics of the person exposed.

Distribute Handout 4: Describing Risk.

V. Community Health Promoters

Group Discussion
Time: 20 minutes
Materials: Flip chart and markers

Remind the group that when they first introduced themselves, most of them said they were interested in the project because they wanted to learn more about the environment and how it affects health so that they may help their peers address some of the health problems associated with the environment. If they listed "community education" as one of the solutions to environmental pollution in the Problem Tree Exercise, remind them that this is where they fit into the "larger picture." They are in the workshop because they want to work as "*promotores de salud*" in the community. Ask the group to brainstorm with you about the characteristics of a "*promotor de salud*" or what is meant by "*promotor de salud*". Write their responses on a flip chart. Try to elicit some of the following answers:

- Is from the community
- Understands or is able to identify problems in the community
- Motivated to learn
- Wants to improve the health of the community
- Is objective
- Shares his or her knowledge
- Respects the ideas/traditions of the people in the community
- "Practices what she/he teaches"
- Enjoys working in the community
- Helps to link people in need with resources in the community
- Communicates the needs of the community with local leaders and health care providers
- Does not express his/her judgment about the practices of the community member with whom he or she is speaking
- Teaches by asking questions rather than lecturing and "telling people how it is", showing people they have understanding and solutions.

- Believes that people are not powerless, and that both individual approaches and collective action can provide solutions

Ask the group what behaviors they think a *promotor de salud* should NOT exhibit. Try to elicit the following:

- Telling people what they do is wrong
- Acting like they know everything
- Telling people what they must do
- Forgetting to listen

? Does a *promotor de salud* need a formal education or high school diploma or a college degree?

- No!

? Will you be "experts" in environmental health when you finish this training?

- No! People will ask you many questions they you cannot answer, so don't be afraid to answer, "I don't know." But be willing to help the person find the answer by asking someone in the community who does know.

Finally, explain that the most important task of the community health educator is to encourage the process of sharing knowledge, abilities, experiences and ideas. Explain that during these next 2 days, we will attempt to make the training as interactive as possible. We want to encourage every person to participate and share their knowledge and ideas with the rest of the group.

In these workshops, we are trying to practice a form of education called popular education, which is active and draws on the experiences of the participants. We want this to be a model they can use when they conduct their own outreach in the community.

Demonstration of popular and traditional education styles
Time: 5 minutes
Materials: photograph or drawing of pollution

Before the workshop, prepare a 1-minute lecture on contaminated water (or some other environmental contaminant). Present the information in the style of a professional expert , say a professor, dressed in a white coat, who comes out and gives a formal "lecture." Next, use a prop, like a photo or drawing of water being contaminated, and take 1 minute to ask people what they see, if they have seen that in their neighborhood, why they think it is happening, what they can do to change it, and what would be the first steps to making their water safer. Ask the group to compare

the two styles of teaching and say which style the think would be more effective in their community.

VI. Implementing the Environmental Health Project

Group Discussion
Time: 15 minutes
Materials: Flip chart and markers

Explain to the group how they will conduct their outreach. Explain each of the following steps:

- Work in pairs or teams
- select the family/individual/group where you will discuss environmental health
- introduce yourself & purpose of visit/scope of project
- discuss the environmental health topic with the household/group
- distribute referral list, other educational materials
- after the visit, fill out a contact report

Review the "*Promotor de Salud Agreement*" with the group and ask them if they have any questions about the benefits or responsibilities of being a *promotor*.

VII. Sources

Agua Para Beber: A Training Manual for Community Volunteers in Hygiene Education and Water Purification Techniques, El Paso: Center for Environmental Resource Management, University of Texas at El Paso, 1995.

Environmental Health and Justice Training Manual: A Community Guide to Understanding the Environment, El Paso: Center for Environmental Resource Management, University of Texas at El Paso, 1999.

US-Mexico Border Health Association, Trainings in Non-Formal Education, (US-Mexico Border Health Association Training and Technical Assistance Project, no date).

David Werner and Bill Bower, Helping Health Workers Learn (Palo Alto, CA: The Hesparian Foundation, 1982).

David Werner, Where There Is Not Doctor ((Palo Alto, CA: The Hesparian Foundation, 1977).

INTRODUCCIÓN A LA SALUD AMBIENTAL
OBJETIVOS DEL TALLER

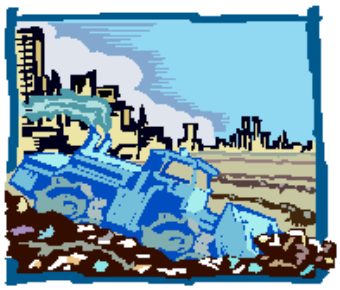
- Revisar los objetivos del curso
- Discutir las definiciones del medio ambiente y salud ambiental
- Revisar conceptos básicos de salud ambiental
- Entender lo que es un promotor de salud
- Discutir como el Proyecto de salud ambiental se va a implementar

OBJETIVOS DEL CURSO DE SALUD AMBIENTAL

- Entender mejor el significado de "medio ambiente" y "salud ambiental"
- Discutir el significado de un "promotor" o educador en salud
- Discutir las consecuencias inmediatas y a largo plazo a la salud de la exposición a pesticidas
- Reconocer los riesgos especiales de los niños a los pesticidas
- Discutir maneras de minimizar la exposición con pesticidas en el trabajo y en casa
- Revisar los derechos de trabajadores del campo y las leyes que protegen su salud en el trabajo
- Reconocer las consecuencias del envenenamiento por plomo
- Revisar maneras de minimizar la exposición al plomo, especialmente para los niños
- Entender la relación entre la contaminación y el ciclo de agua
- Entender la relación entre nuestra salud y el agua limpia y pura
- Entender el manejo de basura y la importancia de eliminar nuestra basura y los desechos humanos en una manera segura
- Revisar lo que es el asma y las cosas que provocan sus episodios
- Entender como tratar y controlar el asma y evitar las prácticas que nos provocan sus episodios

Exposición a Sustancias Químicas

Agencia para Sustancias Tóxicas y el Registro de Enfermedades (*ATSDR*, por sus siglas en inglés)



¿Qué es Exposición?

"Exposición" significa que usted ha entrado en contacto con un químico y éste ha penetrado en su cuerpo.

¿Cómo Puede Ocurrir una Exposición?

Para que ocurra la exposición a un químico, tiene que existir un sitio donde se origina el mismo. Este sitio es llamado la fuente. Una fuente puede ser un vertedero, una charca, un riachuelo, un incinerador, una cisterna, un bidón ("dron"), o una fábrica. Existen fuentes numerosas de químicos.

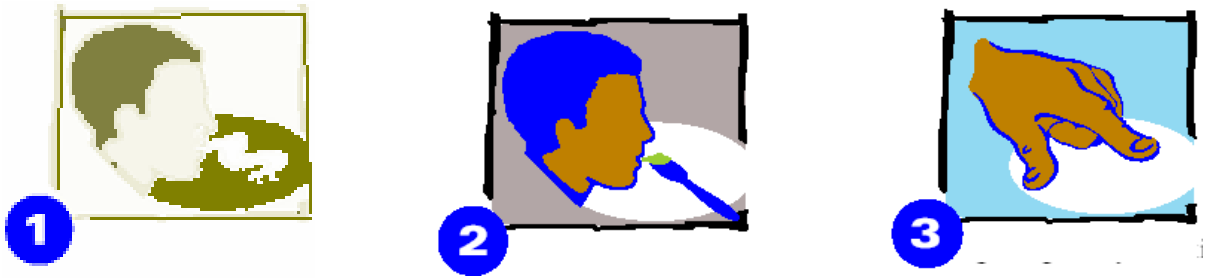
Usted puede entrar en contacto con un químico en su fuente o el químico puede moverse de la fuente a un lugar donde usted puede entrar en contacto con el mismo.

Los químicos se pueden mover a través del aire, agua y suelo. También se pueden encontrar en plantas y animales, y por ende en los alimentos que ingerimos. El químico tiene que penetrar dentro de su cuerpo para hacerlo enfermo o para tener un efecto sobre su salud.

Si usted no es **expuesto** a un químico, **éste no lo puede enfermar**.

¿Cómo penetra un químico dentro de su cuerpo?

Si usted está expuesto, existen tres modos para que un químico penetre en su cuerpo. Estos son: (1) respirando el aire que contiene al químico; (2) comiendo o bebiendo algo que contenga al químico; (3) tocando algo que tiene adherido al químico en la superficie o que lo contiene.



¿Si usted es expuesto a un químico, resultará enfermo?

Esto depende de los muchos factores de la exposición.

- Depende del modo por el cual el químico penetró a su cuerpo.
- También depende de la cantidad del químico que se acumuló en su cuerpo. Algunas veces, una cantidad pequeña del químico lo puede enfermar. Otras veces, usted no se enfermará como resultado de la exposición a una gran cantidad de un químico.

Los factores que determinan si usted se enfermará como resultado de la exposición a químicos incluyen:

- El tipo de químico;
- La cantidad (a cuánta de la sustancia fue expuesta la persona);
- La duración (por cuánto tiempo ocurrió la exposición); y
- La frecuencia (cuántas veces fue expuesta la persona).

Las personas también responden de diferentes maneras a los químicos. Algunas personas pueden ser expuestas a un químico, pero no resultarán enfermas. Otras pueden ser más sensitivas a químicos y enfermarse como resultado de la exposición. (Por ejemplo, los niños pueden ser más sensitivos a los químicos y pueden enfermarse más fácilmente que los adultos.) Otras enfermedades pueden ser causadas solamente si usted es expuesto a un químico por un periodo extendido de tiempo. Si usted no es expuesto a un químico, éste no lo puede enfermar.

Diferentes formas de explicar riesgos

A 1 de cada 7 personas que fuma se le desarrolla cáncer del pulmón.

156,900 personas en los EE.UU. murieron de cáncer del pulmón en el año 2000. 87% de las personas que murieron de cáncer del pulmón en el año 2000 fumaban. Es decir que 136,503 personas que murieron de cáncer del pulmón en el año 2000 fumaban.

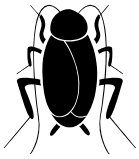
Hombres que fuman son 22 veces más susceptibles a desarrollar cáncer del pulmón que los hombres que no fuman. Mujeres que fuman son 12 veces más susceptibles a desarrollar cáncer del pulmón que las mujeres que no fuman.

Hombres que fuman pierden un promedio de 13.2 años de vida por fumar. Mujeres que fuman pierden un promedio de 14.5 años de vida por fumar.

Fuentes:
American Cancer Society 2003
American Lung Association
UC Davis Medical Center

OBJETIVOS DEL TALLER DE PESTICIDAS

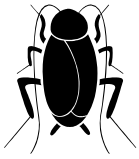
- Entender como los pesticidas afectan a los humanos
- Discutir que hacer en caso de envenenamiento por pesticidas en casa
- Aprender como proteger a los niños de los pesticidas
- Aprender como evitar el uso de pesticidas en el hogar
- Revisar como trabajadores agrícolas se pueden proteger de los pesticidas en el campo
- Discutir que hacer en caso de envenenamiento por los pesticidas que se usan en el campo
- Entender el derecho a tener un lugar de trabajo sano y seguro



CUCARACHAS

Puede controlar las cucarachas en su casa tomando pasos muy simples.

1. Encuéntrelas
2. Niégueles refugio, comida y agua
3. Mátelas



1. Encuéntrelas.

Busque rastros de cucarachas, como cucarachas vivas o muertas, sus huevos o excremento. Ponga trampas pegajosas en áreas donde sospecha que viven cucarachas, por ejemplo, debajo del lavamanos, detrás del refrigerador o estufa, o detrás de las alacenas de cocina. Puede comprar las trampas en cualquier lugar que vende plaguicidas contra cucarachas. Coloque las trampas contra las paredes porque las cucarachas se mantienen en las orillas de los pisos. Inspeccione las trampas la siguiente semana y métalas a la basura cuando estén llenas de cucarachas. Recuerde cuales áreas tienen las concentraciones más grandes de cucarachas.

2. Niégueles refugio, comida y agua.

Refugio: Cucarachas viven en espacios estrechos y prefieren vivir en superficies porosas como madera, papel, cartón, aislamiento y tela. Cerca de las áreas donde las trampas atraparon grandes cantidades de cucarachas, organice las áreas de almacenaje y limpie todas las superficies. También,

- tape o rellene hendiduras, rendijas y grietas con sellador de silicón
- enreje o cubra con tela las ventilas y coladeras de la casa
- selle los espacios alrededor de esquinas y tubería

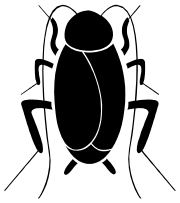
Comida

- mantenga la comida en recipientes a prueba de plagas
- no deje la comida o agua de las mascotas afuera durante la noche
- limpie y seque los platos sucios inmediatamente
- limpie y deseche las sobras de la comida
- mantenga bien tapado el basurero y evite que se acumule mucha basura dentro de la casa

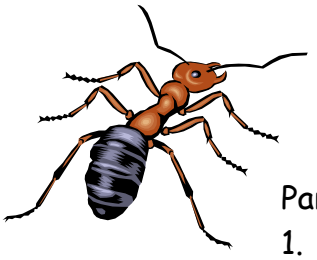
Agua

- evite la acumulación de agua en el lavamanos
- repare las llaves y tubería que gotean
- elimine el exceso de agua en macetas
- aísle la tubería de agua fría para evitar su condensación

3. Mátelas.



Si todavía encuentra cucarachas después de tomar estas medidas, trate de usar plaguicidas menos tóxicos como polvo de ácido bórico o cebos para matar las plagas que quedan. Espolvoree el ácido bórico en las hendiduras y rendijas en que viven las cucarachas. Coloque los cebos o espolvoree ácido bórico cerca del rodapié, debajo y detrás del refrigerador, la estufa, lavamanos, lavaplatos, lavadora y secadora. Las cucarachas comen el ácido bórico y el veneno en los cebos y también cargan a sus nidos el veneno en sus patas. El ácido bórico es tóxico para niños y animales, entonces trate de aplicarlo en áreas donde niños y mascotas no lo alcancen.



HORMIGAS

Para controlar las hormigas en su casa, trate de:

1. Buscar y sellar su punto de entrada.
2. Destruir su nido.

Busque y selle su punto de entrada a la casa.

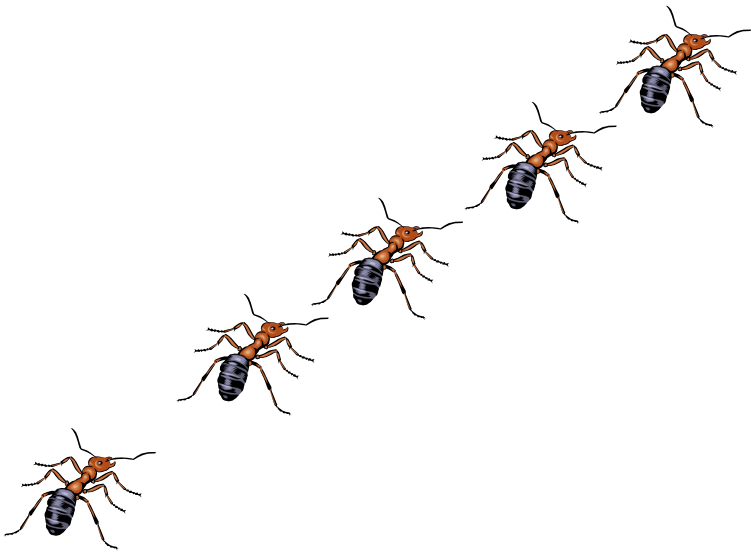
Siga la línea de hormigas hasta encontrar el lugar donde están entrando. Trate de prevenir su entrada con jugo y cáscara de limón fresco, gis, posos de café mojados, harina de huesos, polvo de carbón, o pimienta de cayena. Puede sellar el área temporalmente con vaselina, hasta sellarlo permanentemente con sellador de silicón.

En áreas donde hay muchas hormigas, limpie el área con agua y jabón o con una mezcla de mitad de agua y mitad de vinagre.

Destruya el nido.

Si no puede encontrar el nido, puede colocar cebos de ácido bórico cerca del punto de su entrada. Puede comprar los cebos en una ferretería o puede hacerlas usted mismo, mezclando 2 cucharaditas de polvo de ácido bórico, 4 onzas de agua y 1 cucharadita de azúcar. Coloque la mezcla en una tapadera o recipiente bajo. Las hormigas se tragaran el veneno y también lo cargaran a su nido, envenenando así el resto de ellas. El ácido bórico es tóxico para niños y animales, entonces trate de aplicarlo en áreas donde niños y mascotas no lo alcancen.

Si ha encontrado el nido, eche 1 - 2 galones de agua hirviendo directamente sobre el hormiguero. Tenga cuidado de no derramar el agua sobre plantas que no quiere destruir alrededor del hormiguero.



PULGAS

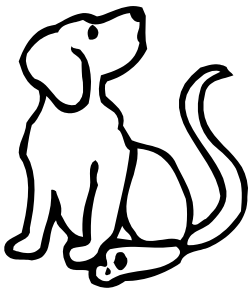
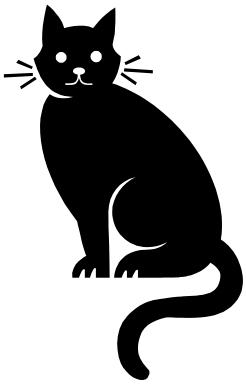
Si tiene una mascota con pulgas, trate de controlarlas con las siguientes medidas:

- Cepille su mascota con un peine de pulgas para inspeccionar y quitar las pulgas
- Pase la aspiradora frecuentemente y tire inmediatamente a la basura la bolsa de la aspiradora
- Use jabón y agua para limpiar el área de dormir de la mascota; si la mascota tiene cama, lave la ropa de cama en agua caliente una vez por semana
- Bañe la mascota a menudo con jabón y agua, o con champú sin pesticidas

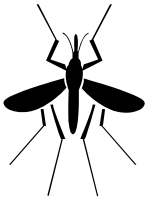


Si estas medidas no son suficientes, busque productos menos tóxicos:

- pastillas de feromonas (de veterinarios) para reducir la cantidad de pulgas
- productos designados en la etiqueta como "insect growth regulators" o "IGRs" ['reguladores del crecimiento de insectos' en español] para matar las crías de pulgas viviendo en su mascota. Tres productos que se encuentran en muchas tiendas de productos de mascotas son "Program", "Nylar," y "Biolar".
- trate de no usar cualquier producto que contiene los siguientes químicos dentro de sus "ingredientes activos": chlorpyrifos, dichlorvos, phosmet, naled, tetrachlorvinphos, diazinon, malathion, carbaryl and propoxur. Estos químicos son muy peligrosos para niños y adultos.

El Control del Mosquito



Reduzca el Riesgo

Las forma más efectiva para reducir la población local de mosquitos es destruir las fuentes o lugares donde estos insectos se crían, como ser llantas viejas, canales atascados, *los plantadores*, fuentes para pájaros, u hoyos de tocón. También debe vaciar las piscinas de niños cuando estas no están en uso. Otros pasos que deben considerarse incluyen:

- Mantener el césped corto y recortar los arbustos para aminorar los lugares donde pueden esconderse mosquitos adultos.
- Llevar sombrero y usar ropa suelta, en ambos caso de colores claros (evite usar ropa de color rojo.)
- Evitar el uso de jabones y champúes con fragancia, lociones, aceites, o perfumes, incluyendo productos bronceadores.
- Utilizar iluminación apropiada, las luces incandescentes atraen mosquitos, mientras que las luces fluorescentes no los atraen ni repelen.

Repelentes

La mayoría de los repelentes de insectos incluyen el DEET químico (N, N-diethyl-meta-toluamide). El DEET se absorbe por la piel y puede causar daño, especialmente a los niños. Otros repelentes incluyen ingredientes naturales tales como *citronella,* aceite de eucalipto, o soja, los mismos no son tóxicos y son más seguros para el uso en niños.

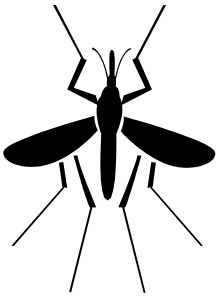
Si usted usa un repelente con DEET, este debe contener no más de 10 por ciento de la sustancia química. La concentración de DEET varía significativamente de producto a producto, así que lea la etiqueta de cualquier producto que usted compra. Repelentes con DEET no deben ser usados en niños menores de 2 años.

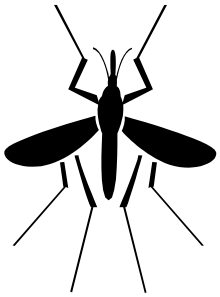
La agencia de Protección Ambiental Norteamericana (US EPA) recomienda las siguientes precauciones cuando se usan repelentes que contienen DEET:

- Aplique el producto sólo sobre la piel directamente expuesta. No lo use debajo de la ropa.

- Nunca use repelentes sobre piel afectada con cortes, heridas, o irritación.
- No aplique el producto en párpados, ojos o boca, y recuerde aplicarlo en menor cantidad en el área de las orejas. Cuando se usa el repelente en spray no debe rociarlo directamente en la cara; rocíelo en la mano primero y después en la cara.
- No permita que los niños manejen estos productos, y no lo aplique directamente en las manos de los niños. Cuando se usa en niños aplíquelo primero en sus manos y luego usted aplíqueselo al niño.
- No rocíe el repelente en áreas cerradas. Evite respirar un rocío del repelente, y no lo use cerca de alimentos.
- Use el repelente en pequeña cantidad apenas suficiente para cubrir la piel. La aplicación constante es generalmente innecesaria; si los insectos mordaces no responden a una película delgada de repelente, entonces aplique un poco más.
- Después de retornar a un ambiente cerrado lavé piel con jabón y agua o tómese un baño. Esto es particularmente importante cuándo el repelente se usa repetidamente en uno o más días consecutivos. También, lavé la ropa tratada antes de usarla otra vez.
- Sí usted sospecha que su niño tiene una reacción negativa a un repelente discontinúe su uso, lavé la piel tratada, y llamé a su centro local del control de envenenamiento e intoxicación, cuando vaya al doctor lleve el repelente con usted.

Fuentes: Academia Americana de Pediatría, Agencia de Protección Ambiental (US EPA), el Centro Tóxico de Acción y el Instituto de Medio Ambiente de Maine.





PRECAUCIONES SOBRE EL USO DOMÉSTICO DE PLAGUICIDAS

Plaguicidas químicos podrán eliminar insectos y otras plagas, pero este remedio puede ser peor que el problema. Plaguicidas usados adentro y acerca del hogar pueden envenenar a niños, adultos o mascotas. Estos también representan un riesgo potencial para el manto acuífero y el medio ambiente. Estos riesgos se incrementan cuando un plaguicida se usa de manera incorrecta o se almacena o desecha de manera indebida. Usted puede minimizar su exposición a plaguicidas tomando unas medidas muy simples:

- Evite que plagas entren en su casa
- Tome medidas no tóxicas para matar insectos que entran a la casa

Si es necesario usar plaguicidas químicos, mucho de los daños que pueden ocurrir durante su aplicación son evitables. Antes de cualquier aplicación siempre se debe:

- Leer la etiqueta del producto cuidadosamente y seguir todas las precauciones de seguridad
- Usar ropa de protección adecuada, como guantes de hule y camisas de manga larga.
- Lavar manos, ropa y equipo de aplicación después de usas las plaguicidas.
- Almacenar plaguicidas en los envases originales en áreas afuera del alcance de niños.
- Desechar los envases de plaguicidas vacíos apropiadamente.
- Nunca use plaguicidas agrícolas en el hogar

NUNCA USE PLAGUICIDAS AGRÍCOLAS EN EL HOGAR

El uso de plaguicidas agrícolas en el hogar es peligroso e ilegal. Estas sustancias no fueron producidas para usarse donde las personas están directamente expuestas. Los plaguicidas agrícolas usados apropiadamente en el exterior son disueltos por la luz solar, la lluvia y las bacterias. Al usarse en el interior, los plaguicidas agrícolas pueden permanecer por años. Usted, su familia y sus mascotas pueden sufrir daños a la salud si este tipo de plaguicidas se usa en el interior del hogar. Los plaguicidas

pueden entrar al cuerpo a través de la ingestión (tragados), respiración o por contacto a través de la piel.

Cuando se usan en el interior, los plaguicidas agrícolas pueden causar serios problemas a la salud, incluyendo:

- Mareos
- Visión borrosa
- Dolor de cabeza
- Dificultad al respirar
- Confusión y pérdida de memoria
- Debilidad y falta de coordinación
- Vómito y diarrea
- Muerte

Es ilegal hacer mal uso de los plaguicidas. Usted debe seguir las instrucciones de la etiqueta y nunca usar un plaguicida que no tenga instrucciones para su uso en la etiqueta.

Fuente: Junta de Control Estructural de Plagas de Texas

LA NORMA DE PROTECCION PARA EL TRABAJADOR

La Norma de Protección para el Trabajador (WPS) es una ley federal que trata de salvaguardar la salud de los trabajadores agrícolas y de los manejadores de pesticidas. Sus requisitos incluyen los siguientes:

Protección durante las Aplicaciones

Se prohiben las aplicaciones de pesticida en cierto modo que pueda exponer al trabajador a otras personas. Se excluyen a los trabajadores de entrar en las áreas mientras los pesticida están siendo aplicados.

Intervalo de Entrada Restringido (REI)

El intervalo de Entrada Restringido hay de ser especificado en toda etiqueta del producto del pesticida agrícola. Los trabajadores tienen que mantenerse fuera de las áreas tratadas con pesticidas durante los intervalos de entrada restringida, con sólo pequeñas excepciones.

Equipo de Protección Personal

Deben de proporcionarse el equipo de protección personal para la entrada a trabajar antes del tiempo especificado.

Notificación a los Trabajadores

Los trabajadores han de ser notificados sobre las áreas tratadas para que puedan evitar las exposiciones inadvertidas.

Suministros de Descontaminación

Los manejadores y trabajadores deben tener suficiente agua, jabón, y toallas para su rutina de limpieza y para descontaminación en caso de emergencia.

Asistencia de Emergencia

El transporte debe hacerse disponible a una facilidad de cuidado medico si el trabajador o manejador pueda haber sido envenenado o accidentado. Debe de proporcionarse la información sobre el pesticida que la persona pueda haber sido expuesta.

Entrenamiento de la Seguridad y los Carteles de Advertencia

Se requiere un entrenamiento para todo los trabajadores y los manejadores, y un cartel sobre seguridad con el pesticida tiene que ser desplegado en un lugar central.

Acceso a la Información de la Etiqueta e Información de los Lugares Específicos

Los manejadores y trabajadores tienen que estar informados de los requisitos de advertencia encontrados en la etiqueta del pesticida. Se requiere un cartel de anuncio central para todas las recientes aplicaciones de pesticida.

COMO DISMINUIR CONTACTO CON PESTICIDAS EN EL CAMPO

Trabajadores del campo pueden hacer varias cosas para reducir su contacto con pesticidas en el lugar de trabajo. Por ejemplo:

- Usar camisas de mangas largas, pantalones, sombrero, calcetines y zapatos o botas, y guantes (si es posible) todos los días.

- Darse un buen baño y ponerse ropa limpia inmediatamente después de llegar a casa.

- Durante el trabajo, lavarse bien las manos **antes** de comer, beber, fumar o ir al baño. Lavarse las manos **después** de ir al baño.

- No comer dentro del campo o en áreas donde se guardan pesticidas.

- No entrar a un campo agrícola que recién ha sido rociado con pesticidas o que tenga un rótulo avisando de la presencia de pesticidas. Si hay un rótulo, pregunte cuando es seguro entrar de nuevo al campo agrícola.

- Si le caen pesticidas en la piel, quitarse la ropa contaminada y lavar inmediatamente el área afectada con bastante agua y jabón. Tratar de averiguar el nombre del pesticida y conseguir atención médica.

COMO LOS TRABAJADORES DEL CAMPO PUEDEN PROTEGER A SUS FAMILIAS DE LOS PELIGROS DE PESTICIDAS

Trabajadores del campo pueden hacer varias cosas para reducir el contacto que sus familias tienen con pesticidas. Por ejemplo:

- Nunca lleve pesticidas del trabajo a la casa. Nunca cambie o mezcle los pesticidas a envases de otros productos que los niños puedan confundir con los de alimentos o bebidas (como botellas de refrescos).

- Lave su ropa de trabajo con detergente y agua caliente antes de volver a usarla. Lave la ropa de trabajo separada del resto de la ropa de la familia.

- Cubra el asiento de su carro con una lona cuando viaja con ropa contaminada con pesticidas.

- Lávese las manos (o darse un baño) y cambie su ropa de trabajo antes de tocar a sus hijos.

- Quítese los zapatos de trabajo antes de entrar a la casa.

- Dese un buen baño y póngase ropa limpia lo más rápido posible después de llegar a casa.

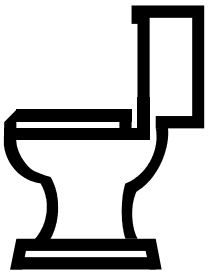
SANIDAD EN EL CAMPO

Requisitos de la Ley Federal

Patrones con 11 o más trabajadores en el campo son obligados a proveer:

Agua para tomar

- accesible a los trabajadores y dentro de una ¼ de donde están trabajando
- fría y en cantidades suficientes
- vasos de papel desechables
- en recipientes bien cubiertos, limpios y rellenados cuando sea necesario



Baños

- accesible a los trabajadores y dentro de una ¼ milla de donde están trabajando
- un baño para cada 20 trabajadores
- limpios y en buenas condiciones
- aguas negras se eliminan en una forma sana y segura
- ventilado y privado
- puertas que se sierran de adentro

Instalaciones para lavarse las manos

- accesible y cerca de los baños
- con suficiente provisión de agua potable,
  jabón y toallas desechables

Algunos estados tienen leyes con más protecciones.

Project Clean Environment for Healthy Kids

REDUCING THE FREQUENCY AND SEVERITY OF CHILDHOOD ASTHMA

A training curriculum for lay health educators

Farmworker Justice Fund, Inc.
1010 Vermont Ave., NW, #915
Washington, DC 20005
*(202)783-2628 * (202)783-2561 fax*
www.fwjustice.org

Activity	Methodology	Materials Needed	Time
Introduction *Complete pre-tests; review the workshop objectives*	Group Discussion	• Asthma Pre-test • Handout 1: Workshop Objectives	30 mins
What is Asthma? *Overview the respiratory system and explain what happens during an asthma attack*	Group Discussion and Demonstration	• Handout 2: Respiratory System • Poster of Respiratory System • Flip Chart and Markers • Handout 3: Lungs Before and During an Asthma Attack • Blank or scrap paper	30 mins
Symptoms of Asthma *Discuss the symptoms of asthma*	Group Discussion	• Flip Chart and Markers • Example of asthma action plan	15 mins
Triggers of Asthma *Describe the causes and triggers*	Group Activity and Brainstorm	• Flip Chart and Markers • Pictures of Common Asthma Triggers • Handout 4: Common Asthma Triggers	45 mins
Treatment and Management of Asthma *Understand general treatment and management practices for asthma; Explain steps to reduce the frequency of asthma episodes & minimize asthma triggers at home*	Group Activity, Brainstorm, Skit	• Pictures of Asthma Triggers • Flip Chart and Markers • Handout 5: Clear Your Home of Asthma Triggers • Handout 6: How to Take Care of Your Asthma • Handout 7: Special Care for Babies	90 mins
Who is Affected by Asthma *Overview who is at risk from asthma*	Group Discussion	• Flip Chart and Markers	30 mins
Review *Review topics discussed in the workshop*	Game Show	• Game pieces	45 mins
Promoting Asthma Education in the Community *Practice techniques to promote asthma awareness in the community*	Directed Role Play		45 mins
Conclusion and Evaluation *Complete the post-tests and evaluation forms*	Group Discussion	• Asthma Post-test • Workshop Evaluation Form	15 mins

Reducing the Frequency and Severity of Childhood Asthma

(Total time: about 6 1/2 hours)

Workshop Objectives

- Define asthma
- Review what happens during an asthma attack
- Recognize the symptoms of an asthma attack
- Describe the causes and triggers of asthma
- Understand general treatment and management practices for asthma
- Explain steps to reduce the frequency of asthma episodes and minimize asthma triggers in the home
- Review who is affected by asthma
- Practice techniques to promote asthma awareness in the community

I. Introduction

Pre-test
Time: 15 minutes
Materials: Asthma Pre-tests

Distribute the pre-test to the participants before starting the workshop. Explain that this is a questionnaire to help the facilitator make sure that she is presenting the information effectively and doing her job well. Ask participants to answer the questions without consulting with anyone else. If anyone has questions or needs help to answer the questions, ask the facilitator. When all have finished, collect the pre-tests and explain that you will go over the correct answers at the end of the workshop.

Icebreaker Activity: Stand Up, Sit Down
Time: 10 minutes

Ask the group a series of general questions and ask participants to stand when a question applies to them. Prepare a couple of questions that will give you a sense of the group's general level of knowledge about asthma. For example:

Who has experienced an asthma attack?
Who has seen an asthma attack?

Who has a child with asthma?
Who has asthma?
Who has a family member with asthma?
Who has carpeting in their home?
Who has pets?
Who is a smoker?
Who lives with a smoker?

Workshop Objectives
Time: 5 minutes
Materials: Handout 1 (Asthma Workshop Objectives)

Distribute Handout 1: Workshop Objectives. Review the objectives with the group. Ask them if there are any questions or objectives that they would like to cover that are not included on the handout. Tell the group that throughout the workshop they should feel free to ask questions whenever there is anything they don't understand, and that by the end of the day, you will try to answer all their questions as best you can.

II. What is Asthma?

Questions for discussion

- **?** What is asthma?

Explain to the group that asthma is a chronic lung disease that is characterized by difficulty in breathing. In the United States approximately 6 million children and 14 million adults have asthma. Asthma causes children to miss school, stay out of sports activities and visit the hospital more than any other chronic disease. More than 4,000 people die each year from asthma and it is the number 1 chronic disease among children.

Respiratory System
Time: 15 minutes
Materials: Handout 2, poster of respiratory system or flip chart & markers

Since asthma is a disease that affects breathing, it is important to understand our respiratory system or the parts of body that are involved with breathing. Distribute Handout 2: Respiratory System. Review the handout with the group. It may be helpful to enlarge the handout or buy a pre-made poster of the respiratory system. Or, you can draw a picture of 2 trees next to each other. Explain to the group that some people often refer to the respiratory system as a tree and its branches. Before you begin your explanation, turn the

drawing upside-down so that is more closely resembles the bronchi, bronchioles and alveoli. On either the drawing or the ready-made poster, refer to the various parts of the respiratory system as you explain what they do.

Explain that when we breathe, air is taken in through the nose or mouth and reaches the lungs by passing through the windpipe, which divides into two *bronchi,* one for each lung. Each bronchus further divides into many bronchioles, which eventually lead to tiny air sacs called the *alveoli,* in which oxygen from the air is transferred to the bloodstream, and carbon dioxide from the bloodstream is transferred back out to the air.

Asthma involves only the bronchi and bronchioles (airways), and not the alveoli. The airways are cleaned by trapping stray particles in a thick layer of mucus that covers the surface of the airways. Glands inside the lungs constantly produce new mucus, which is then either coughed or swept up to the windpipe by tiny hairs on the lining of the airways. Once the mucus reaches the throat, it is either coughed up to the mouth or swallowed.

Airways Demonstration
Time: 10 minutes
Materials: piece of paper, Handout 3

Distribute a blank piece of paper or scrap paper to each participant. Ask everyone to roll up the paper like a tube. Tell them to imagine this is an airway in their lungs.

Explain that when everything is working normally, the muscles that are wrapped around the airways are very thin and loose, and the airway is wide open. This makes it easy to move air in and out of the air sacs. Have the participants blow through the tube and put their hand at the end of the tube. When the airways are open like this tube, air can get in and out easily.

The asthmatic's airways are oversensitive to irritants. In response to stimuli, the airways may become obstructed by 1) constriction of the muscles around the airways, 2) inflammation or swelling of the lining inside the airways, or 3) increased mucus production. The airways become either narrowed or completely blocked so it is harder to move air in and out of the air sacs.

Now have the participants crumple their paper tube to make it really tight. Tell them to blow through the tube again. Ask them some questions before offering the following explanations.

- **?** Can you breathe in any fresh air?

? What kind of sound comes through the tube?
? What happens to the air that you try to blow out?

This is what it's like in the airways during an asthma attack. When the airways are clogged, carbon dioxide gets trapped in the air sacs, exhaling becomes difficult, and the chest cavity becomes enlarged. Because exhaling is difficult, too much stale air remains in the lungs after each breath and less fresh air is taken in. Less oxygen is available for the body and carbon dioxide builds up in the lungs and causes the blood supply to become acidic. If the asthma remains untreated, the acidity in the blood may rise to toxic levels.

Distribute Handout 3: Lungs Before and During an Asthma Attack.

III. Asthma Symptoms

Group Discussion
Time: 15 minutes
Materials: Flip chart and markers

Ask the group to remember the sound of air being forced through the crumpled tube.

? Describe other symptoms or sounds someone might make when having an asthma attack.

- Wheezing
- Coughing
- Shortness of breath
- Chest tightness
- Breathlessness
- Heavy breathing
- Gasping for air
- Tiredness (from lack of sleep, lack of oxygen, etc.)

Once the airways become clogged or blocked, it takes more effort to force air through them, so that breathing becomes labored. This forcing of air through narrowed or blocked airways can make a whistling or rattling sound, called wheezing. Irritation of the airways by excessive mucous may also lead to coughing.

? How do you think it feels to not be able to breathe? Would you be able to think clearly? How can you prepare yourself for your or your child's next asthma attack?

- Most doctors recommend that parents of asthmatic children prepare an "action plan" and give copies to the child’s

teacher or childcare provider so they know what to do and who to call if the child has an asthma attack.

Most action plans list the child's asthma triggers, the medicines the child should take in various situations and the people to contact in case of emergency.

Distribute examples of asthma action plans or develop one of your own. The Sesame Street "A is for Asthma" caregivers guide and the PBS Kids "Arthur's All About Asthma" curriculum guide both have blank forms in English and Spanish for parents to fill out.

IV. What Triggers Asthma?

Doctors don't know exactly what causes asthma but they know that individuals with asthma have airways that are very sensitive to certain irritants (or "triggers"). These irritants are small and often microscopic particles that we can breathe in. When an asthmatic breathes in these irritants, they can cause the airway muscles to tighten or the airway lining to swell.

Asthma Triggers
Time: 45 minutes
Materials: Pictures of common asthma triggers, drawing of a house, tape, flip chart & markers, Handout 4

Before the workshop, make a large poster-size drawing of a cross-section of a house. Place this drawing on a wall. Also prepare several (about 15-20) pictures of possible asthma triggers (see list below). These could be drawings, photographs, magazine cut-outs, or even small toys. This collection should also include items not likely to provoke an asthma attack (such as a fish, empty cup, cellular phone or television).

Divide the participants into small groups and give each group about 4 or 5 of the pictures of asthma triggers. Give them 5 minutes to discuss among their groups what in the picture could be an asthma trigger. For example, if there is a picture of a carpet, then they would explain that dust in the carpet could trigger an asthma attack in some people. Have each group prepare a 5-minute presentation to explain their conclusions to the rest of the participants. As they go through each trigger, make sure you correct any errors or cover any information they left out. Ask them to tape the picture onto the drawing of the house, in an area where it would likely be found.

After you have gone through all the items, ask the group to brainstorm other possible asthma triggers. Write their responses

on a flip chart. These are some common triggers, but each person will react to his or her own set of triggers:

Physical Conditions:

- Allergic reactions
- Colds/flu
- Exercise/physical activity
- Stress and excitement (including laughing and crying)
- Sleep (nocturnal asthma)

Indoor Exposures

- Strong smells (Perfume, paint, hair spray)
- House dust mites (On average, there are 2 million dust mites in a double-sized bed)
- Cockroaches
- Pesticides
- Molds
- Dander from the skin, hair, or feathers of all warm-blooded animals (e.g., cats, dogs, birds, or rodents)
- Tobacco smoke and wood smoke
- Aerosols
- Drugs (aspirin, ibuprofen, heart medications)
- Occupational dusts and vapors (plastics, grains, wood, metals)

Outdoor Exposures

- Pollens from grass and trees
- Molds
- Changes in weather
- Dust
- Air pollution (ozone, sulfur dioxide, soot/particulate matter, auto exhaust)
- Cold air

Distribute Handout 4: Common Asthma Triggers. Explain that some of the triggers of asthma are known. During the past 15 years, both doctors and the public have gained more awareness of the signs and symptoms of asthma, so there may be better reporting of the disease. But changes in exposures may also be causing more people to have asthma. Some causes or triggers of asthma remain a mystery. Remember: Not everyone with asthma reacts to the same triggers. **Each person will react to his or her own set of triggers.**

V. Asthma Management and Treatment

Reducing Exposures to Environmental Triggers
Time: 30 minutes
Materials: Pictures of common asthma triggers, drawing of a house, tape, flip chart & markers, Handout 5 (EPA Brochure "Clear Your Home of Asthma Triggers")

Have the participants reassemble into their small groups. They will discuss the same asthma triggers as before, but this time, they will discuss what simple steps they could take to reduce or eliminate their exposure to that irritant in their home or when they are outside.

Have them prepare a presentation to the rest of the participants. As each group finishes its discussion of an item, remove it from the house drawing. When you have gone through each item in the house, return to the list of triggers on the flip chart (generated in the previous activity). Discuss how to avoid or eliminate each of those items.

These are some suggestions:

Smoke
Do not allow people to smoke in your home. If adults must smoke, get them to smoke outside. Try to convince them to stop smoking.

Dust
Keep your home clean as dust free as possible and try to vacuum frequently. **If you have asthma**, try to get someone else to vacuum for you one to two times per week and do not stand in the room while it is being vacuumed. If you have to vacuum, wear a dust mask and make sure the vacuum bag has a microfilter.

Mold
Control moisture to control mold.

- Fix leaky faucets, pipes and other sources of water.
- Clean mold with water and bleach
- Open windows while cooking, washing dishes and clothes.
- Maintain low humidity (30 - 50% RH). If necessary, use a dehumidifier.

Pets
Keep away from sleeping area and keep sleeping area or bedroom door closed.

Dust mites

- Wash sheets, blankets and pillows weekly in hot water.
- Keep stuffed toys off bed or wash them weekly with hot water.
- Cover mattresses and pillows with special covers made of dense cotton or plastic. If possible, remove rugs from bedroom.

Cockroaches

Take preventive measures:

- Do not leave food out; store food in airtight containers.
- Caulk and seal cracks and crevices.
- Fix leaky pipes and faucets and wipe up spills.
- To kill roaches, try using boric acid (where toddlers or pets won't get it) or sticky traps. Keep garbage bags closed or tightly sealed and empty garbage daily.

Air Pollution

Stay indoors with doors and windows closed on days when air pollution is high (especially when there are high levels of ozone, sulfur dioxide or soot).

Pesticide Spray

Stay indoors with doors and windows closed when pesticides are sprayed near your home. Ask nearby growers to notify you when spraying will occur.

Explain that it is very important to try to reduce exposure to asthma triggers wherever the child may be. Indoors, it is important to reduce or eliminate exposure to tobacco smoke, house dust, dust mites, cockroaches, fleas, indoor molds, and cat dander. It is important to keep children inside with windows and doors closed during periods of high air pollution (from ozone, sulfur dioxide or particulate matter) and when pesticides are being sprayed.

Explain that avoiding these irritants can prove to be a challenge, since children can be in many different environments: at home, school, day care setting, or homes of friends and relatives, but many things are under their control.

Distribute Handout 5: Clear Your Home of Asthma Triggers (EPA Brochure)

Medical Treatment of Asthma

Group Discussion
Time: 30 minutes
Materials: Flip chart and markers, Handouts 6 and 7

? What kinds of treatments are used to control asthma?

There are two kinds of medications for asthma: preventive medicines and rescue medicines. The treatment of asthma depends on its severity. Treatment of mild asthma focuses on relieving occasional symptoms as they occur by use of short-acting, inhaled bronchodilators. Treatment of moderate or severe asthma, however, attempts to alleviate both the constriction and inflammation (swelling) of the airways, through the use of both bronchodilators and anti-inflammatories. To obtain the maximum benefit from these medications, it's important to learn how to use the inhalers correctly.

- *Rescue* medicine or bronchodilators help stop an asthma attack that has started. Bronchodilators relax muscles that have tightened around the airways. They relieve symptoms but they cannot reduce or prevent the swelling that causes the symptoms. These medicines can be taken at the first sign of a wheeze, cough, or tightness of the chest. However, they are not meant to be used to stop attacks every day over a long period of time. If symptoms are present once or twice a week, a bronchodilator may be all that is needed to control asthma symptoms.

- *Preventive* or anti-inflammatory medicines are medicines that reduce or reverse the swelling in the airways that cause the asthma symptoms. These medicines help to keep asthma attacks from starting. They work slowly over many weeks to stop the swelling in the airways. If you have symptoms more than once or twice a week, anti-inflammatory medicines are needed. Many people take their preventive medicine all year long for many years. You cannot become addicted or hooked on these asthma medicines even if you use them for many years. It's important to remember that these medicines help to reduce the number and severity of asthma attacks, but won't completely eliminate them.

Many people living near the Mexican border buy medications at lower prices in Mexico, where medications are available without prescription from most pharmacies. As a result, many parents and/or pharmacists often misdiagnose asthma as bronchitis or other upper respiratory infections. Antibiotics and other medications prescribed for such infectious diseases are not effective in treating asthma. Therefore, parents should consult with a medical professional for a proper diagnosis before purchasing medication in Mexico. Also, misuse of antibiotics should be strongly discouraged because such improper use can lead to the

creation of drug-resistant bacteria which are difficult to treat in the particular patient and the general population.

Inform participants that, for those who are eligible, asthma medications are covered by Medicaid.

The physical activity of children whose asthma is under control should *not* be restricted. Children should be encouraged to exercise and participate in sports to increase their pulmonary capacity, improve breathing and thereby help decrease the severity of asthma attacks.

Distribute Handout 6: How to Take Care of Your Asthma.

Important note: Since every asthma patient is different, parents need to consult a doctor to develop a personal management plan for their children with asthma.

Guest speaker
It may be helpful to invite a representative from the local chapter of the American Lung Association, a Certified Asthma Educator, or a nurse or nurse practitioner from a local health clinic to the workshop to demonstrate the proper use of asthma medication and equipment, such as inhalers and nebulizers. While the participants will not be administering medication or teaching others how to use equipment for the treatment of asthma, it is very helpful for them to be familiar with methods of asthma medication before speaking with others about asthma in general.

Special Care for Babies

Skit
Time: 20 minutes
Materials: Baby doll or blanket

Ask for 2 volunteers to help you. Arrange two chairs so that the 2 volunteers can sit next to each other, facing the rest of the group.

Comadre: Hello comadre (or compadre), how are you? How's your baby?

Mother: (*carries the baby in her arms*) Hello comadre. She's doing well. She's a beautiful baby isn't she? But lately she's been having a little trouble breathing. Look now, see how her nostrils are getting big? And she's making that strange grunting sound. She seems to be turning a little pale. What do you think it is?

Comadre: I'm not sure. I've never seen a baby react like that. Why don't you give her some chamomile tea or some warm milk? That usually calms my babies down.

Mother: OK. I'll try that. (*pretends to give her a drink from a cup*) She doesn't want to drink anything and now look how her chest is getting bigger. I'm getting scared. I think I should call 911.

Comadre: I think that's a good idea. This could be serious.

Mother: *Calls 911 and speaks to dispatcher (facilitator).* Hello? I'm calling because my baby is having trouble breathing.

911 dispatcher: Can you describe the symptoms to me?

Mother: *Describes symptoms.*

911 dispatcher: It sounds like she might be having an asthma attack. Has she been diagnosed with asthma? If so, you should give the baby her asthma medications.

Mother: No, she hasn't been diagnosed with asthma and I don't have any medicines for her.

911 dispatcher: In that case, I'll send an ambulance to your house right away.

Explain that special care is needed to care for infants with asthma. The lungs of an infant do not function as efficiently as the lungs of an older child. As a result, a severe episode of asthma can quickly result in lung failure. If an infant does have asthma symptoms, the parent or guardian needs to act quickly. One of the main reasons a child dies of asthma is because the physician or the parent does not appreciate the severity of asthma and the danger of any delay in getting appropriate medical care. Another reason is inadequate patient and family compliance with recommended regimens and treatments.

The infant needs to be watched closely for the following signs: breathing rate increases (over 40 breaths per minute while the baby is sleeping), suckling or feeding stops, skin between the infant's ribs pulled tight, chest enlargement, coloring changes (pale or red face), changes in quality of crying (becoming softer and shorter), nostrils opening wider, and grunting.

During an asthma episode it is important not to give the infant large volumes of liquids to drink. The infant should not breathe warm, moist air. The infant should not re-breathe into a bag held tightly over his or her nose and mouth, and the infant should not be given

over-the- counter antihistamines or cold remedies. Parents should also avoid using vaporizers since they are not effective and can contribute to mold growth.

Distribute Handout 7: Special Care for Babies.

VI. Who is Affected by Asthma?

Group Discussion
Time: 30 minutes
Materials: Flip chart and markers

Remind the group that when they first started talking about asthma almost everyone in the room said that they knew some one with asthma (or that several people said they knew someone with asthma etc.). Explain that asthma is very common and that approximately 6 million children (under 18 years old) and 14 million adults have asthma. National survey data indicate that the number of children with asthma in the United States has nearly tripled in the past 20 years. In 1980, 2.3 million American children had asthma. By 2002, the number of affected children had risen to 6.1 million.

? Why does asthma affect children more than adults?

- Children have narrower airways than do adults, so they become blocked or clogged more easily.
- Children breathe more (pound per pound) than adults and, thus, take in more pollutants and irritants in the air.
- Children play more on the floor where there is dust and outside where there is air pollution.

Asthma is the most common chronic illness in childhood. More children miss school and go to a hospital emergency room or are hospitalized due to asthma than for any other chronic illness. Uncontrolled asthma can cause children to do poorly in school. Having a child with uncontrolled asthma may cause parents economic or psychological distress from missed work, high medical bills and anxiety over their child's condition. Untreated asthma can also lead to permanent reductions in lung function, damage to lung tissue, severe breathing discomfort, and lower resistance to infection.

Asthma and farmworker children

Asthma rates are very high among Latino and African-American children in inner-city neighborhoods, due largely to poverty and poor living conditions. Children living in rural agricultural areas also

have high asthma rates. Farmworker children are exposed to many air pollutants, including pesticides and dust, which can trigger severe reactions among children with asthma. A recent study of children in Southern California found that infants exposed before the age of 1 to pesticides (especially herbicides), farm animals, farm crops or dust were more likely to develop early persistent asthma than other children.

VII. Review

Game Show
Time: 45 minutes
Materials: 25 pieces of paper, with game categories or dollar amounts written or printed on them, tape

Tape pieces of paper or cardboard on a bare wall, each with one of the following categories or dollar amounts printed on it, arranged in the following order:

Myths and Legends	Asthma Triggers	Clearing the Air	Healthy Hints
$100	$100	$100	$100
$200	$200	$200	$200
$300	$300	$300	$300
$400	$400	$400	$400

Explain to the group that they are going to play a game to review what they've learned. Ask for eight volunteers to step forward and divide them into two teams of four. Taking turns, each team chooses a category and the amount of money they want to play for. The facilitator takes the chosen amount from the wall and reads the corresponding question. Team members can confer with each other on their response. Each team gets (fake) money for each correct question (questions are worth $100, $200, $300, and $400). The team with the most money at the end of the game wins a small prize or applause.

Category 1: Myths and Legends

1. Asthma is a psychological problem. (false)

2. What type of dog do some people think will cure asthma? (Chihuahua)

3. What racial/ethnic group has the highest rate of asthma? (Latino)

4. Can children outgrow asthma? (no; asthma may diminish in time but it never disappears)

Category 2: Asthma Triggers

1. Tobacco smoke will always trigger an asthma attack for everyone who has asthma. (false)

2. Name 2 things in a child's bedroom that might provoke an asthma attack. (pillow, carpet, stuffed animals, dog)

3. Name 3 outdoor things that can provoke an asthma attack. (pollen, pollution, pesticides, cold air, mold, dust)

4. Name a medication that could cause an asthma attack. (e.g., aspirin, ibuprofen, heart medication)

Category 3: Clearing the Air

1. How can you reduce the amount of dust mites on your bed? (wash the sheets and pillowcases in hot water every week)

2. What should you do if your asthmatic child is playing outside when pesticides are being sprayed in a nearby field? (bring her in and close doors and windows).

3. What are 3 places in your home where dust can accumulate. (floors, carpets, stuffed animals, furniture)

4. What are 2 ways to eliminate mold from your house? (fix leaky plumbing, install vents or fans in the bathroom, use a dehumidifier, clean mold with water & bleach, open windows when cooking or washing)

Category 4: Healthy Hints

1. Children with asthma should never exercise. (false)

2. Name 2 signs that a baby is having an asthma attack (faster breathing rate, suckling or feeding stops, skin between the infant's ribs pulled tight, chest enlargement, coloring changes, changes in quality of crying (becoming softer and shorter), nostrils opening wider, grunting)

3. Name two things you should do if your child has an asthma attack. (Remain calm, get the child comfortable and seated, administer medication, call doctor, go to the emergency room if the medication isn't working)

4. What are 3 things you can do to control your asthma (see a doctor, take your medications as directed, avoid your asthma triggers)

VIII. Promoting Asthma Awareness in the Community

Directed Role Plays
Time: 45 minutes

Divide participants into groups of four. Give each group about 10 minutes to prepare one of the following role plays. Remind the participants that the most effective way to educate the community is to engage individuals in a dialogue. Encourage participants to ask many questions of the community member during their roles as *promotores* to facilitate this exchange of ideas. Note that simply lecturing to the community members is likely to turn them off. Tell them that they are welcome to use any of the materials and props that were used during the workshop. Visit each group as they are preparing to see if they have any questions. Have each group present their role play to the rest of the participants. After each group presents their role play, be sure to provide feed back. Ask the other participants to help you provide comments that are both positive and useful.

- *Promotores* visit a mother with a baby and discuss what asthma is, common symptoms, and how to care for a baby with asthma.
- *Promotores* visit parents of an asthmatic child and help them prepare an action plan for the next asthma attack.
- *Promotores* visit the home of a family that tells them their child sometimes wheezes and coughs. *Promotores* should advise them to see a doctor because the child might have asthma. They explain briefly what asthma is and why the child needs medical attention.
- *Promotores* give a presentation to the group about 5 common asthma triggers (dust/dust mites, tobacco smoke, pets, mold, and roaches) and practical ways to reduce or eliminate exposure to them.

IX. Conclusion and Evaluation

Time: 15 minutes
Materials: Asthma Post-tests, Evaluation forms

Ask the group if there are any questions or comments. Distribute any materials that they will be giving to members of the community, including referral information to nearby health clinics, governmental agencies, legal services organizations and community-based organizations.

Distribute the post-test and workshop evaluation forms. Review the correct answers for the pre- and post-tests.

X. Sources

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Project Clean Environment for Healthy Kids

REDUCING THE FREQUENCY AND SEVERITY OF CHILDHOOD ASTHMA

A training curriculum for lay health educators

Farmworker Justice Fund, Inc.
1010 Vermont Ave., NW, #915
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*(202)783-2628 * (202)783-2561 fax*
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Activity	Methodology	Materials Needed	Time
Introduction *Complete pre-tests; review the workshop objectives*	Group Discussion	• Asthma Pre-test • Handout 1: Workshop Objectives	30 mins
What is Asthma? *Overview the respiratory system and explain what happens during an asthma attack*	Group Discussion and Demonstration	• Handout 2: Respiratory System • Poster of Respiratory System • Flip Chart and Markers • Handout 3: Lungs Before and During an Asthma Attack • Blank or scrap paper	30 mins
Symptoms of Asthma *Discuss the symptoms of asthma*	Group Discussion	• Flip Chart and Markers • Example of asthma action plan	15 mins
Triggers of Asthma *Describe the causes and triggers*	Group Activity and Brainstorm	• Flip Chart and Markers • Pictures of Common Asthma Triggers • Handout 4: Common Asthma Triggers	45 mins
Treatment and Management of Asthma *Understand general treatment and management practices for asthma; Explain steps to reduce the frequency of asthma episodes & minimize asthma triggers at home*	Group Activity, Brainstorm, Skit	• Pictures of Asthma Triggers • Flip Chart and Markers • Handout 5: Clear Your Home of Asthma Triggers • Handout 6: How to Take Care of Your Asthma • Handout 7: Special Care for Babies	90 mins
Who is Affected by Asthma *Overview who is at risk from asthma*	Group Discussion	• Flip Chart and Markers	30 mins
Review *Review topics discussed in the workshop*	Game Show	• Game pieces	45 mins
Promoting Asthma Education in the Community *Practice techniques to promote asthma awareness in the community*	Directed Role Play		45 mins
Conclusion and Evaluation *Complete the post-tests and evaluation forms*	Group Discussion	• Asthma Post-test • Workshop Evaluation Form	15 mins

Reducing the Frequency and Severity of Childhood Asthma

(Total time: about 6 1/2 hours)

Workshop Objectives

- Define asthma
- Review what happens during an asthma attack
- Recognize the symptoms of an asthma attack
- Describe the causes and triggers of asthma
- Understand general treatment and management practices for asthma
- Explain steps to reduce the frequency of asthma episodes and minimize asthma triggers in the home
- Review who is affected by asthma
- Practice techniques to promote asthma awareness in the community

I. Introduction

Pre-test
Time: 15 minutes
Materials: Asthma Pre-tests

Distribute the pre-test to the participants before starting the workshop. Explain that this is a questionnaire to help the facilitator make sure that she is presenting the information effectively and doing her job well. Ask participants to answer the questions without consulting with anyone else. If anyone has questions or needs help to answer the questions, ask the facilitator. When all have finished, collect the pre-tests and explain that you will go over the correct answers at the end of the workshop.

Icebreaker Activity: Stand Up, Sit Down
Time: 10 minutes

Ask the group a series of general questions and ask participants to stand when a question applies to them. Prepare a couple of questions that will give you a sense of the group's general level of knowledge about asthma. For example:

Who has experienced an asthma attack?
Who has seen an asthma attack?

Who has a child with asthma?
Who has asthma?
Who has a family member with asthma?
Who has carpeting in their home?
Who has pets?
Who is a smoker?
Who lives with a smoker?

Workshop Objectives
Time: 5 minutes
Materials: Handout 1 (Asthma Workshop Objectives)

Distribute Handout 1: Workshop Objectives. Review the objectives with the group. Ask them if there are any questions or objectives that they would like to cover that are not included on the handout. Tell the group that throughout the workshop they should feel free to ask questions whenever there is anything they don't understand, and that by the end of the day, you will try to answer all their questions as best you can.

II. What is Asthma?

Questions for discussion

- **?** What is asthma?

Explain to the group that asthma is a chronic lung disease that is characterized by difficulty in breathing. In the United States approximately 6 million children and 14 million adults have asthma. Asthma causes children to miss school, stay out of sports activities and visit the hospital more than any other chronic disease. More than 4,000 people die each year from asthma and it is the number 1 chronic disease among children.

Respiratory System
Time: 15 minutes
Materials: Handout 2, poster of respiratory system or flip chart & markers

Since asthma is a disease that affects breathing, it is important to understand our respiratory system or the parts of body that are involved with breathing. Distribute Handout 2: Respiratory System. Review the handout with the group. It may be helpful to enlarge the handout or buy a pre-made poster of the respiratory system. Or, you can draw a picture of 2 trees next to each other. Explain to the group that some people often refer to the respiratory system as a tree and its branches. Before you begin your explanation, turn the

drawing upside-down so that is more closely resembles the bronchi, bronchioles and alveoli. On either the drawing or the ready-made poster, refer to the various parts of the respiratory system as you explain what they do.

Explain that when we breathe, air is taken in through the nose or mouth and reaches the lungs by passing through the windpipe, which divides into two *bronchi,* one for each lung. Each bronchus further divides into many bronchioles, which eventually lead to tiny air sacs called the *alveoli,* in which oxygen from the air is transferred to the bloodstream, and carbon dioxide from the bloodstream is transferred back out to the air.

Asthma involves only the bronchi and bronchioles (airways), and not the alveoli. The airways are cleaned by trapping stray particles in a thick layer of mucus that covers the surface of the airways. Glands inside the lungs constantly produce new mucus, which is then either coughed or swept up to the windpipe by tiny hairs on the lining of the airways. Once the mucus reaches the throat, it is either coughed up to the mouth or swallowed.

Airways Demonstration
Time: 10 minutes
Materials: piece of paper, Handout 3

Distribute a blank piece of paper or scrap paper to each participant. Ask everyone to roll up the paper like a tube. Tell them to imagine this is an airway in their lungs.

Explain that when everything is working normally, the muscles that are wrapped around the airways are very thin and loose, and the airway is wide open. This makes it easy to move air in and out of the air sacs. Have the participants blow through the tube and put their hand at the end of the tube. When the airways are open like this tube, air can get in and out easily.

The asthmatic's airways are oversensitive to irritants. In response to stimuli, the airways may become obstructed by 1) constriction of the muscles around the airways, 2) inflammation or swelling of the lining inside the airways, or 3) increased mucus production. The airways become either narrowed or completely blocked so it is harder to move air in and out of the air sacs.

Now have the participants crumple their paper tube to make it really tight. Tell them to blow through the tube again. Ask them some questions before offering the following explanations.

- **?** Can you breathe in any fresh air?

? What kind of sound comes through the tube?
? What happens to the air that you try to blow out?

This is what it's like in the airways during an asthma attack. When the airways are clogged, carbon dioxide gets trapped in the air sacs, exhaling becomes difficult, and the chest cavity becomes enlarged. Because exhaling is difficult, too much stale air remains in the lungs after each breath and less fresh air is taken in. Less oxygen is available for the body and carbon dioxide builds up in the lungs and causes the blood supply to become acidic. If the asthma remains untreated, the acidity in the blood may rise to toxic levels.

Distribute Handout 3: Lungs Before and During an Asthma Attack.

III. Asthma Symptoms

Group Discussion
Time: 15 minutes
Materials: Flip chart and markers

Ask the group to remember the sound of air being forced through the crumpled tube.

? Describe other symptoms or sounds someone might make when having an asthma attack.

- Wheezing
- Coughing
- Shortness of breath
- Chest tightness
- Breathlessness
- Heavy breathing
- Gasping for air
- Tiredness (from lack of sleep, lack of oxygen, etc.)

Once the airways become clogged or blocked, it takes more effort to force air through them, so that breathing becomes labored. This forcing of air through narrowed or blocked airways can make a whistling or rattling sound, called wheezing. Irritation of the airways by excessive mucous may also lead to coughing.

? How do you think it feels to not be able to breathe? Would you be able to think clearly? How can you prepare yourself for your or your child's next asthma attack?

- Most doctors recommend that parents of asthmatic children prepare an "action plan" and give copies to the child’s

teacher or childcare provider so they know what to do and who to call if the child has an asthma attack.

Most action plans list the child's asthma triggers, the medicines the child should take in various situations and the people to contact in case of emergency.

Distribute examples of asthma action plans or develop one of your own. The Sesame Street "A is for Asthma" caregivers guide and the PBS Kids "Arthur's All About Asthma" curriculum guide both have blank forms in English and Spanish for parents to fill out.

IV. What Triggers Asthma?

Doctors don't know exactly what causes asthma but they know that individuals with asthma have airways that are very sensitive to certain irritants (or "triggers"). These irritants are small and often microscopic particles that we can breathe in. When an asthmatic breathes in these irritants, they can cause the airway muscles to tighten or the airway lining to swell.

Asthma Triggers
Time: 45 minutes
Materials: Pictures of common asthma triggers, drawing of a house, tape, flip chart & markers, Handout 4

Before the workshop, make a large poster-size drawing of a cross-section of a house. Place this drawing on a wall. Also prepare several (about 15-20) pictures of possible asthma triggers (see list below). These could be drawings, photographs, magazine cut-outs, or even small toys. This collection should also include items not likely to provoke an asthma attack (such as a fish, empty cup, cellular phone or television).

Divide the participants into small groups and give each group about 4 or 5 of the pictures of asthma triggers. Give them 5 minutes to discuss among their groups what in the picture could be an asthma trigger. For example, if there is a picture of a carpet, then they would explain that dust in the carpet could trigger an asthma attack in some people. Have each group prepare a 5-minute presentation to explain their conclusions to the rest of the participants. As they go through each trigger, make sure you correct any errors or cover any information they left out. Ask them to tape the picture onto the drawing of the house, in an area where it would likely be found.

After you have gone through all the items, ask the group to brainstorm other possible asthma triggers. Write their responses

on a flip chart. These are some common triggers, but each person will react to his or her own set of triggers:

Physical Conditions:

- Allergic reactions
- Colds/flu
- Exercise/physical activity
- Stress and excitement (including laughing and crying)
- Sleep (nocturnal asthma)

Indoor Exposures

- Strong smells (Perfume, paint, hair spray)
- House dust mites (On average, there are 2 million dust mites in a double-sized bed)
- Cockroaches
- Pesticides
- Molds
- Dander from the skin, hair, or feathers of all warm-blooded animals (e.g., cats, dogs, birds, or rodents)
- Tobacco smoke and wood smoke
- Aerosols
- Drugs (aspirin, ibuprofen, heart medications)
- Occupational dusts and vapors (plastics, grains, wood, metals)

Outdoor Exposures

- Pollens from grass and trees
- Molds
- Changes in weather
- Dust
- Air pollution (ozone, sulfur dioxide, soot/particulate matter, auto exhaust)
- Cold air

Distribute Handout 4: Common Asthma Triggers. Explain that some of the triggers of asthma are known. During the past 15 years, both doctors and the public have gained more awareness of the signs and symptoms of asthma, so there may be better reporting of the disease. But changes in exposures may also be causing more people to have asthma. Some causes or triggers of asthma remain a mystery. Remember: Not everyone with asthma reacts to the same triggers. **Each person will react to his or her own set of triggers.**

V. Asthma Management and Treatment

Reducing Exposures to Environmental Triggers
Time: 30 minutes
Materials: Pictures of common asthma triggers, drawing of a house, tape, flip chart & markers, Handout 5 (EPA Brochure "Clear Your Home of Asthma Triggers")

Have the participants reassemble into their small groups. They will discuss the same asthma triggers as before, but this time, they will discuss what simple steps they could take to reduce or eliminate their exposure to that irritant in their home or when they are outside.

Have them prepare a presentation to the rest of the participants. As each group finishes its discussion of an item, remove it from the house drawing. When you have gone through each item in the house, return to the list of triggers on the flip chart (generated in the previous activity). Discuss how to avoid or eliminate each of those items.

These are some suggestions:

Smoke
Do not allow people to smoke in your home. If adults must smoke, get them to smoke outside. Try to convince them to stop smoking.

Dust
Keep your home clean as dust free as possible and try to vacuum frequently. **If you have asthma**, try to get someone else to vacuum for you one to two times per week and do not stand in the room while it is being vacuumed. If you have to vacuum, wear a dust mask and make sure the vacuum bag has a microfilter.

Mold
Control moisture to control mold.

- Fix leaky faucets, pipes and other sources of water.
- Clean mold with water and bleach
- Open windows while cooking, washing dishes and clothes.
- Maintain low humidity (30 - 50% RH). If necessary, use a dehumidifier.

Pets
Keep away from sleeping area and keep sleeping area or bedroom door closed.

Dust mites

- Wash sheets, blankets and pillows weekly in hot water.
- Keep stuffed toys off bed or wash them weekly with hot water.
- Cover mattresses and pillows with special covers made of dense cotton or plastic. If possible, remove rugs from bedroom.

Cockroaches

Take preventive measures:

- Do not leave food out; store food in airtight containers.
- Caulk and seal cracks and crevices.
- Fix leaky pipes and faucets and wipe up spills.
- To kill roaches, try using boric acid (where toddlers or pets won't get it) or sticky traps. Keep garbage bags closed or tightly sealed and empty garbage daily.

Air Pollution

Stay indoors with doors and windows closed on days when air pollution is high (especially when there are high levels of ozone, sulfur dioxide or soot).

Pesticide Spray

Stay indoors with doors and windows closed when pesticides are sprayed near your home. Ask nearby growers to notify you when spraying will occur.

Explain that it is very important to try to reduce exposure to asthma triggers wherever the child may be. Indoors, it is important to reduce or eliminate exposure to tobacco smoke, house dust, dust mites, cockroaches, fleas, indoor molds, and cat dander. It is important to keep children inside with windows and doors closed during periods of high air pollution (from ozone, sulfur dioxide or particulate matter) and when pesticides are being sprayed.

Explain that avoiding these irritants can prove to be a challenge, since children can be in many different environments: at home, school, day care setting, or homes of friends and relatives, but many things are under their control.

Distribute Handout 5: Clear Your Home of Asthma Triggers (EPA Brochure)

Medical Treatment of Asthma

Group Discussion
Time: 30 minutes
Materials: Flip chart and markers, Handouts 6 and 7

? What kinds of treatments are used to control asthma?

There are two kinds of medications for asthma: preventive medicines and rescue medicines. The treatment of asthma depends on its severity. Treatment of mild asthma focuses on relieving occasional symptoms as they occur by use of short-acting, inhaled bronchodilators. Treatment of moderate or severe asthma, however, attempts to alleviate both the constriction and inflammation (swelling) of the airways, through the use of both bronchodilators and anti-inflammatories. To obtain the maximum benefit from these medications, it's important to learn how to use the inhalers correctly.

- *Rescue* medicine or bronchodilators help stop an asthma attack that has started. Bronchodilators relax muscles that have tightened around the airways. They relieve symptoms but they cannot reduce or prevent the swelling that causes the symptoms. These medicines can be taken at the first sign of a wheeze, cough, or tightness of the chest. However, they are not meant to be used to stop attacks every day over a long period of time. If symptoms are present once or twice a week, a bronchodilator may be all that is needed to control asthma symptoms.

- *Preventive* or anti-inflammatory medicines are medicines that reduce or reverse the swelling in the airways that cause the asthma symptoms. These medicines help to keep asthma attacks from starting. They work slowly over many weeks to stop the swelling in the airways. If you have symptoms more than once or twice a week, anti-inflammatory medicines are needed. Many people take their preventive medicine all year long for many years. You cannot become addicted or hooked on these asthma medicines even if you use them for many years. It's important to remember that these medicines help to reduce the number and severity of asthma attacks, but won't completely eliminate them.

Many people living near the Mexican border buy medications at lower prices in Mexico, where medications are available without prescription from most pharmacies. As a result, many parents and/or pharmacists often misdiagnose asthma as bronchitis or other upper respiratory infections. Antibiotics and other medications prescribed for such infectious diseases are not effective in treating asthma. Therefore, parents should consult with a medical professional for a proper diagnosis before purchasing medication in Mexico. Also, misuse of antibiotics should be strongly discouraged because such improper use can lead to the

creation of drug-resistant bacteria which are difficult to treat in the particular patient and the general population.

Inform participants that, for those who are eligible, asthma medications are covered by Medicaid.

The physical activity of children whose asthma is under control should *not* be restricted. Children should be encouraged to exercise and participate in sports to increase their pulmonary capacity, improve breathing and thereby help decrease the severity of asthma attacks.

Distribute Handout 6: How to Take Care of Your Asthma.

Important note: Since every asthma patient is different, parents need to consult a doctor to develop a personal management plan for their children with asthma.

Guest speaker
It may be helpful to invite a representative from the local chapter of the American Lung Association, a Certified Asthma Educator, or a nurse or nurse practitioner from a local health clinic to the workshop to demonstrate the proper use of asthma medication and equipment, such as inhalers and nebulizers. While the participants will not be administering medication or teaching others how to use equipment for the treatment of asthma, it is very helpful for them to be familiar with methods of asthma medication before speaking with others about asthma in general.

Special Care for Babies

Skit
Time: 20 minutes
Materials: Baby doll or blanket

Ask for 2 volunteers to help you. Arrange two chairs so that the 2 volunteers can sit next to each other, facing the rest of the group.

Comadre: Hello comadre (or compadre), how are you? How's your baby?

Mother: (*carries the baby in her arms*) Hello comadre. She's doing well. She's a beautiful baby isn't she? But lately she's been having a little trouble breathing. Look now, see how her nostrils are getting big? And she's making that strange grunting sound. She seems to be turning a little pale. What do you think it is?

Comadre: I'm not sure. I've never seen a baby react like that. Why don't you give her some chamomile tea or some warm milk? That usually calms my babies down.

Mother: OK. I'll try that. (*pretends to give her a drink from a cup*) She doesn't want to drink anything and now look how her chest is getting bigger. I'm getting scared. I think I should call 911.

Comadre: I think that's a good idea. This could be serious.

Mother: *Calls 911 and speaks to dispatcher (facilitator).* Hello? I'm calling because my baby is having trouble breathing.

911 dispatcher: Can you describe the symptoms to me?

Mother: *Describes symptoms.*

911 dispatcher: It sounds like she might be having an asthma attack. Has she been diagnosed with asthma? If so, you should give the baby her asthma medications.

Mother: No, she hasn't been diagnosed with asthma and I don't have any medicines for her.

911 dispatcher: In that case, I'll send an ambulance to your house right away.

Explain that special care is needed to care for infants with asthma. The lungs of an infant do not function as efficiently as the lungs of an older child. As a result, a severe episode of asthma can quickly result in lung failure. If an infant does have asthma symptoms, the parent or guardian needs to act quickly. One of the main reasons a child dies of asthma is because the physician or the parent does not appreciate the severity of asthma and the danger of any delay in getting appropriate medical care. Another reason is inadequate patient and family compliance with recommended regimens and treatments.

The infant needs to be watched closely for the following signs: breathing rate increases (over 40 breaths per minute while the baby is sleeping), suckling or feeding stops, skin between the infant's ribs pulled tight, chest enlargement, coloring changes (pale or red face), changes in quality of crying (becoming softer and shorter), nostrils opening wider, and grunting.

During an asthma episode it is important not to give the infant large volumes of liquids to drink. The infant should not breathe warm, moist air. The infant should not re-breathe into a bag held tightly over his or her nose and mouth, and the infant should not be given

over-the- counter antihistamines or cold remedies. Parents should also avoid using vaporizers since they are not effective and can contribute to mold growth.

Distribute Handout 7: Special Care for Babies.

VI. Who is Affected by Asthma?

Group Discussion
Time: 30 minutes
Materials: Flip chart and markers

Remind the group that when they first started talking about asthma almost everyone in the room said that they knew some one with asthma (or that several people said they knew someone with asthma etc.). Explain that asthma is very common and that approximately 6 million children (under 18 years old) and 14 million adults have asthma. National survey data indicate that the number of children with asthma in the United States has nearly tripled in the past 20 years. In 1980, 2.3 million American children had asthma. By 2002, the number of affected children had risen to 6.1 million.

? Why does asthma affect children more than adults?

- Children have narrower airways than do adults, so they become blocked or clogged more easily.
- Children breathe more (pound per pound) than adults and, thus, take in more pollutants and irritants in the air.
- Children play more on the floor where there is dust and outside where there is air pollution.

Asthma is the most common chronic illness in childhood. More children miss school and go to a hospital emergency room or are hospitalized due to asthma than for any other chronic illness. Uncontrolled asthma can cause children to do poorly in school. Having a child with uncontrolled asthma may cause parents economic or psychological distress from missed work, high medical bills and anxiety over their child's condition. Untreated asthma can also lead to permanent reductions in lung function, damage to lung tissue, severe breathing discomfort, and lower resistance to infection.

Asthma and farmworker children

Asthma rates are very high among Latino and African-American children in inner-city neighborhoods, due largely to poverty and poor living conditions. Children living in rural agricultural areas also

have high asthma rates. Farmworker children are exposed to many air pollutants, including pesticides and dust, which can trigger severe reactions among children with asthma. A recent study of children in Southern California found that infants exposed before the age of 1 to pesticides (especially herbicides), farm animals, farm crops or dust were more likely to develop early persistent asthma than other children.

VII. Review

Game Show
Time: 45 minutes
Materials: 25 pieces of paper, with game categories or dollar amounts written or printed on them, tape

Tape pieces of paper or cardboard on a bare wall, each with one of the following categories or dollar amounts printed on it, arranged in the following order:

Myths and Legends	Asthma Triggers	Clearing the Air	Healthy Hints
$100	$100	$100	$100
$200	$200	$200	$200
$300	$300	$300	$300
$400	$400	$400	$400

Explain to the group that they are going to play a game to review what they've learned. Ask for eight volunteers to step forward and divide them into two teams of four. Taking turns, each team chooses a category and the amount of money they want to play for. The facilitator takes the chosen amount from the wall and reads the corresponding question. Team members can confer with each other on their response. Each team gets (fake) money for each correct question (questions are worth $100, $200, $300, and $400). The team with the most money at the end of the game wins a small prize or applause.

Category 1: Myths and Legends

1. Asthma is a psychological problem. (false)

2. What type of dog do some people think will cure asthma? (Chihuahua)

3. What racial/ethnic group has the highest rate of asthma? (Latino)

4. Can children outgrow asthma? (no; asthma may diminish in time but it never disappears)

Category 2: Asthma Triggers

1. Tobacco smoke will always trigger an asthma attack for everyone who has asthma. (false)

2. Name 2 things in a child's bedroom that might provoke an asthma attack. (pillow, carpet, stuffed animals, dog)

3. Name 3 outdoor things that can provoke an asthma attack. (pollen, pollution, pesticides, cold air, mold, dust)

4. Name a medication that could cause an asthma attack. (e.g., aspirin, ibuprofen, heart medication)

Category 3: Clearing the Air

1. How can you reduce the amount of dust mites on your bed? (wash the sheets and pillowcases in hot water every week)

2. What should you do if your asthmatic child is playing outside when pesticides are being sprayed in a nearby field? (bring her in and close doors and windows).

3. What are 3 places in your home where dust can accumulate. (floors, carpets, stuffed animals, furniture)

4. What are 2 ways to eliminate mold from your house? (fix leaky plumbing, install vents or fans in the bathroom, use a dehumidifier, clean mold with water & bleach, open windows when cooking or washing)

Category 4: Healthy Hints

1. Children with asthma should never exercise. (false)

2. Name 2 signs that a baby is having an asthma attack (faster breathing rate, suckling or feeding stops, skin between the infant's ribs pulled tight, chest enlargement, coloring changes, changes in quality of crying (becoming softer and shorter), nostrils opening wider, grunting)

3. Name two things you should do if your child has an asthma attack. (Remain calm, get the child comfortable and seated, administer medication, call doctor, go to the emergency room if the medication isn't working)

4. What are 3 things you can do to control your asthma (see a doctor, take your medications as directed, avoid your asthma triggers)

VIII. Promoting Asthma Awareness in the Community

Directed Role Plays
Time: 45 minutes

Divide participants into groups of four. Give each group about 10 minutes to prepare one of the following role plays. Remind the participants that the most effective way to educate the community is to engage individuals in a dialogue. Encourage participants to ask many questions of the community member during their roles as *promotores* to facilitate this exchange of ideas. Note that simply lecturing to the community members is likely to turn them off. Tell them that they are welcome to use any of the materials and props that were used during the workshop. Visit each group as they are preparing to see if they have any questions. Have each group present their role play to the rest of the participants. After each group presents their role play, be sure to provide feed back. Ask the other participants to help you provide comments that are both positive and useful.

- *Promotores* visit a mother with a baby and discuss what asthma is, common symptoms, and how to care for a baby with asthma.
- *Promotores* visit parents of an asthmatic child and help them prepare an action plan for the next asthma attack.
- *Promotores* visit the home of a family that tells them their child sometimes wheezes and coughs. *Promotores* should advise them to see a doctor because the child might have asthma. They explain briefly what asthma is and why the child needs medical attention.
- *Promotores* give a presentation to the group about 5 common asthma triggers (dust/dust mites, tobacco smoke, pets, mold, and roaches) and practical ways to reduce or eliminate exposure to them.

IX. Conclusion and Evaluation

Time: 15 minutes
Materials: Asthma Post-tests, Evaluation forms

Ask the group if there are any questions or comments. Distribute any materials that they will be giving to members of the community, including referral information to nearby health clinics, governmental agencies, legal services organizations and community-based organizations.

Distribute the post-test and workshop evaluation forms. Review the correct answers for the pre- and post-tests.

X. Sources

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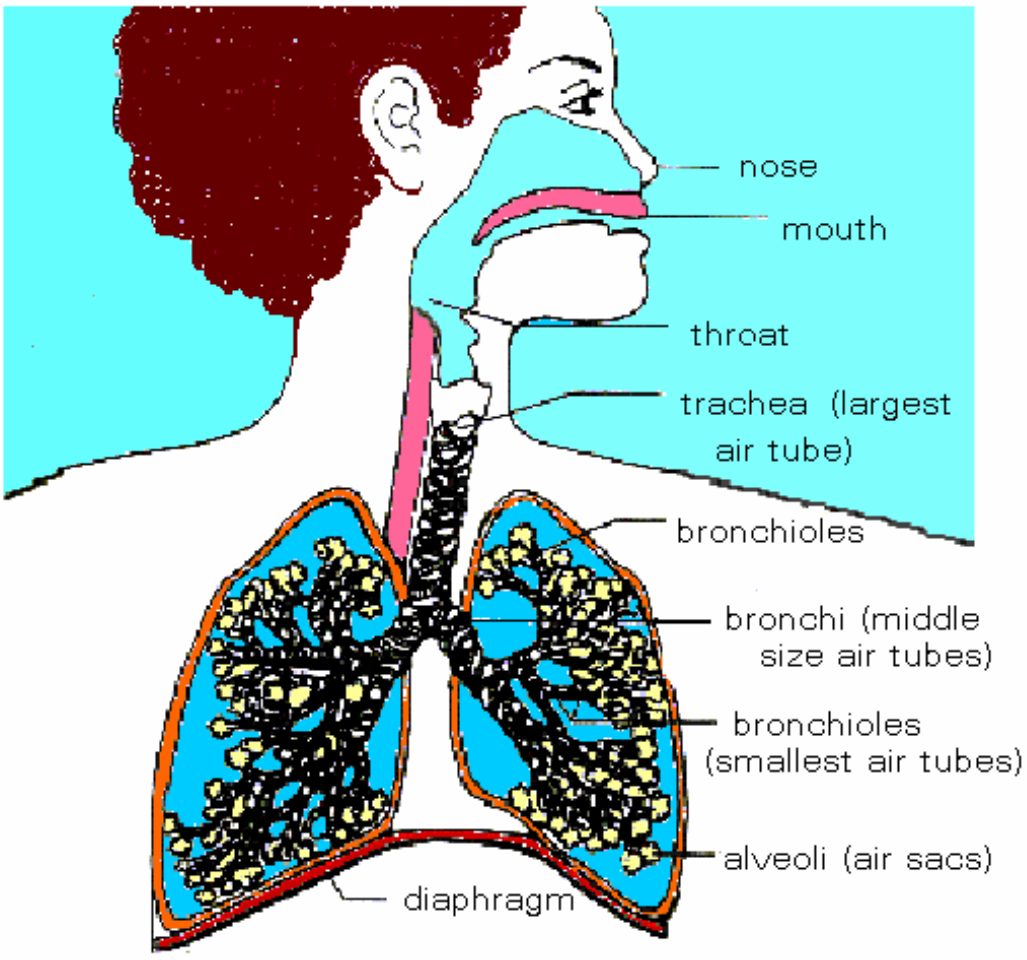
ASTHMA WORKSHOP OBJECTIVES

- Define asthma
- Review what happens during an asthma attack
- Recognize the symptoms of an asthma attack
- Describe the causes and triggers of asthma
- Understand general treatment and management practices for asthma
- Explain steps to reduce the frequency of asthma episodes and minimize asthma triggers in the home
- Review who is affected by asthma
- Practice techniques to promote asthma awareness in the community

RESPIRATORY SYSTEM

Asthma is a chronic lung disease, which leads to difficulty in breathing. Asthma is a disease of the respiratory system. Your respiratory system is made up of your nose and mouth, windpipe (also called trachea), lungs, and a bunch of air tubes (or airways) that connect your nose and mouth with your lungs.

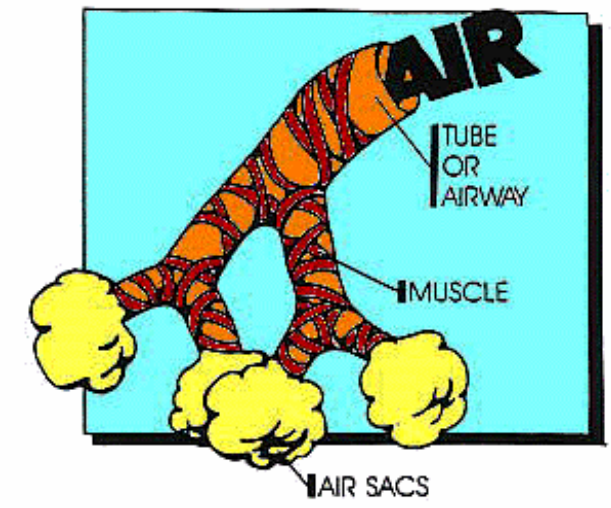


The primary function of the respiratory system is to bring oxygen into the interior of the lungs, transfer it to the blood and remove waste particles, in the form of carbon dioxide.

Source: Children's Medical Center of the University of Virginia

LUNGS BEFORE AND DURING AN ASTHMA ATTACK

The picture below shows what lungs look like when everything is working normally. The muscles that are wrapped around the airways are very thin and loose, and the airway is wide open. This makes it easy to move air in and out of the air sacs.



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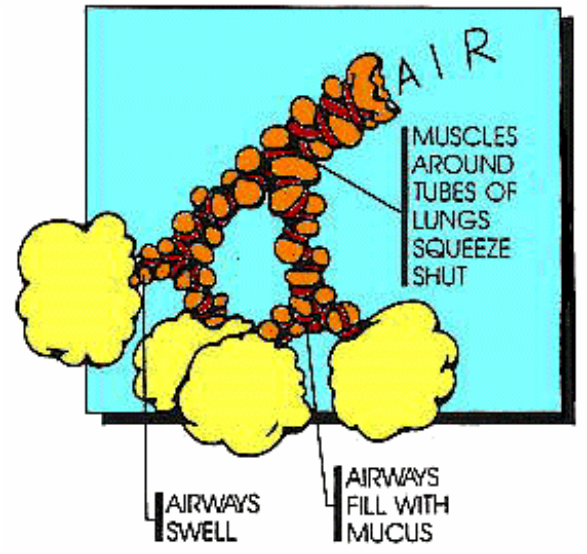
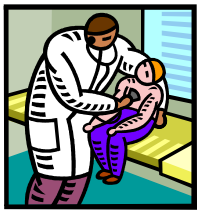
Look at the picture below. During an asthma attack, the muscles around the airways tighten, or "spasm." The lining inside the airways swell or thicken, and get clogged with lots of thick mucous. The airways are much narrower than usual under these conditions, making it difficult to breathe.



Source: Children's Medical Center of the University of Virginia

HOW TO TAKE CARE OF YOUR ASTHMA



See your doctor every 6 months.

Community health clinics and local health department offices offer low-cost or free medical services.

Take your asthma medicines exactly as your doctor tells you.

✓ There are 2 kinds of medicines for asthma
  ① those that help with the long-term control of asthma
  ② those that give short-term quick relief from asthma symptoms

✘ Never replace your asthma medication with home remedies
  For example, vaporizing ointments or herbal products like chamomile tea do not alleviate asthma symptoms and could delay appropriate medical attention.

Stay away from or control things that make your asthma worse.

Keep your house clean and free of asthma triggers, like tobacco smoke, mold, dust mites and cockroaches.

Enjoy a healthy diet, get plenty of rest and exercise regularly.

When their asthma is adequately controlled, asthmatic children can run and play with other children. Exercise and physical activities increase pulmonary strength, improve respiration and can decrease the severity of asthma attacks.

Watch for signs that your asthma is getting worse and act quickly.

- For example, if you feel your chest tighten or have difficulty breathing, and your quick-relief medicines have not helped, then call your doctor or go to the hospital IMMEDIATELY!
- If your child has an asthma attack, help him to relax and feel comfortable. Give him his asthma medicines. If the quick-relief medicines don't help or if he doesn't have asthma medicines prescribed by a doctor, seek medical attention IMMEDIATELY!

Special Care for Babies with Asthma

Babies with asthma need special care. A baby's lungs are not as strong as those of an older child. As a result, a sever asthma attack in an infant can quickly result in lung failure.

Symptoms in a baby

- Breathing rate increases (over 40 breaths/minute when asleep)
- Skin between ribs pulled tight
- Chest enlargement
- Coloring of face becomes pale or red
- Crying becomes softer and shorter than normal
- Nostrils open wider
- Makes grunting noises

During an asthma attack:

- ✓ Immediately administer asthma medication prescribed by doctor
- ✓ If he has no asthma medication, take the infant to the emergency room

During an asthma attack:

- × DON'T give infant large amounts of liquids to drink
- × DON'T make infant breathe warm, moist air
- × DON'T make infant breathe into a paper bag
- × DON'T give infant over-the-counter antihistamines or cold remedies

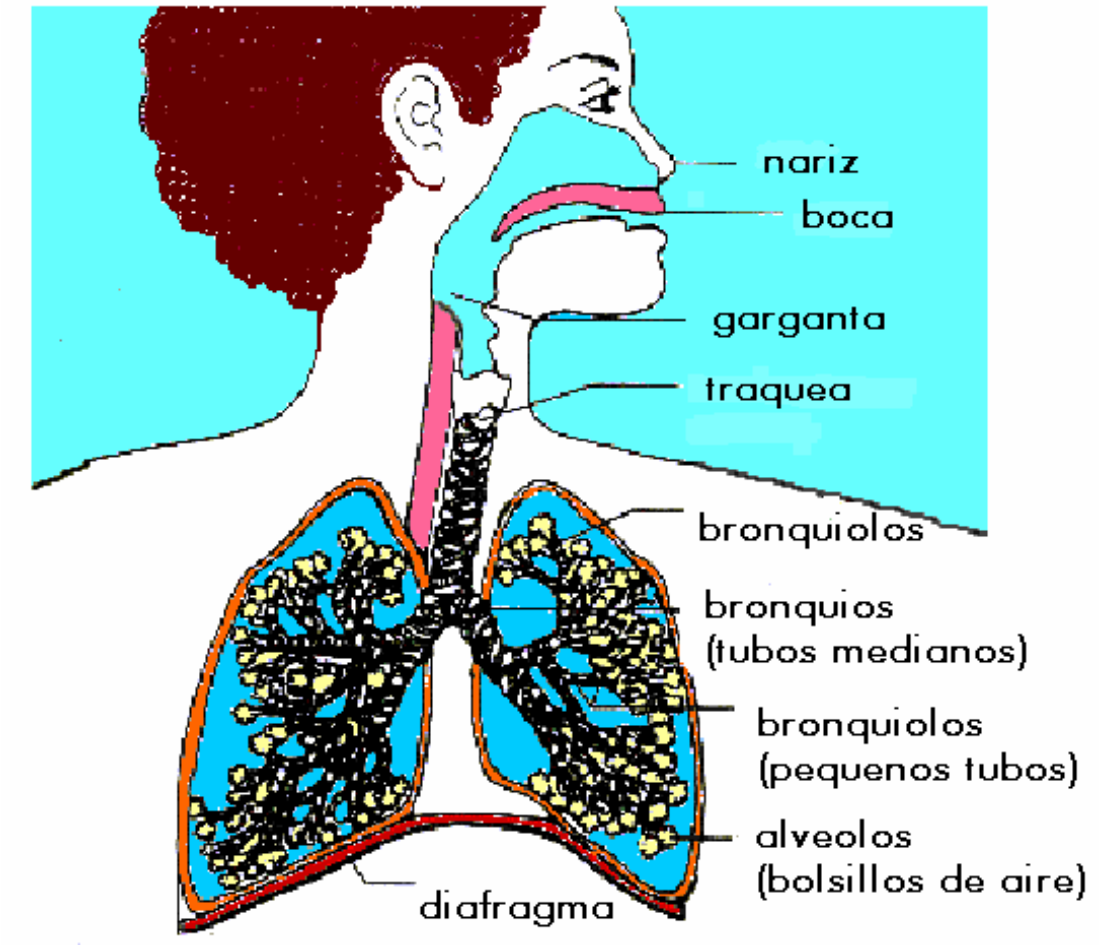
Source: National Council of La Raza Center for Health Promotion

OBJETIVOS DEL TALLER DE ASMA

- Definir el asma
- Revisar lo que pasa durante un episodio de asma
- Reconocer los síntomas de asma
- Describir las causas y cosas que provocan el asma
- Entender como tratar y controlar el asma
- Entender como reducir la frecuencia de los episodios de asma
- Revisar cuales comunidades son afectadas por el asma
- Repasar técnicas para concientizar a la comunidad sobre el asma

EL SISTEMA RESPIRATORIO

El asma es una enfermedad crónica de los pulmones que impide la respiración. Es una enfermedad del sistema respiratorio. El sistema respiratorio incluye la nariz, boca, tráquea, pulmones y varias vías que transportan aire de la nariz hacia pequeños bolsillos de aire.



La función principal del aparato respiratorio es conducir el oxígeno al interior de los pulmones, transferirlo a la sangre y expulsar las sustancias de desecho, en forma de dióxido de carbono.

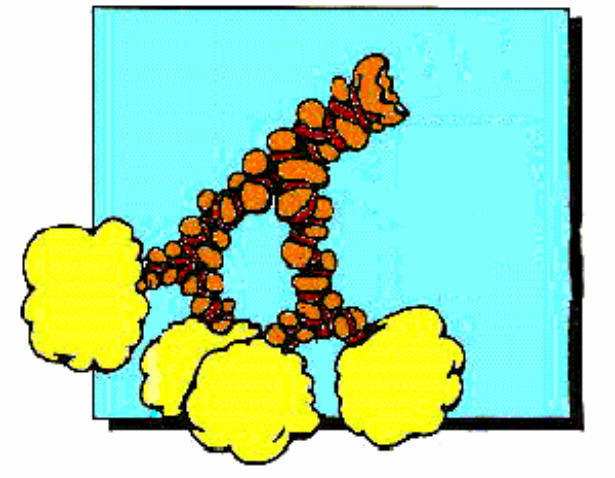
Fuente: Children's Medical Center of the University of Virginia

LOS PULMONES ANTES Y DURANTE UN EPISODIO DE ASMA

Este es un dibujo de los pulmones cuando están respirando normalmente. Los músculos alrededor de las vías respiratorias están relajadas. Las vías están abiertas y el aire pasa fácilmente entre las bolsas de aire.

* * * * * * *

Vea el dibujo de abajo. Durante un episodio de asma, los músculos alrededor de las vías respiratorias se aprietan. Las vías se vuelven más pequeñas y se llenan de mucosidad. Es muy difícil respirar bajo estas condiciones.



Fuente: Children's Medical Center of the University of Virginia

Material 3: Pulmones Antes y Durante un Episodio de Asma

COMO CUIDAR SU ASMA

Visite su médico cada 6 meses.

Clínicas comunitarias y oficinas locales del departamento de salud ofrecen servicios médicos de bajos costos o gratuitos.

Tome las medicinas para el asma exactamente como le indique el médico.

- ✓ Hay 2 clases de medicinas para el asma
  - ① las que ayudan con el control prolongado del asma
  - ② las que dan alivio rápido de los síntomas del asma por un corto período
- × Nunca reemplace sus medicinas por remedios caseros

  Por ejemplo, ungüentos vaporizadores o productos naturales como el té de manzanilla no alivian los síntomas de asma y pueden retardar una atención médica adecuada.

Manténgase alejado y en control de factores que pueden provocar un episodio de asma.

Mantenga su casa limpia y libre de cosas que empeoran la enfermedad, como humo de tabaco, mohos, ácaros del polvo y cucarachas.

Goze de una dieta nutritiva, suficiente descanso y ejercicios regulares.

Cuando el asma se controla de forma apropiada, los niños con la condición pueden correr y jugar con otros niños. Ejercicios y actividades deportivas aumentan la capacidad pulmonar, mejoran la respiración y pueden disminuir la severidad de los ataques asmáticos.

Observe si hay señales de que el asma está empeorando y actúe rápidamente.

- Por ejemplo, si siente apretón de pecho o dificultad al respirar y sus medicinas de alivio rápido no han ayudado, llame a su médico o vaya al hospital INMEDIATAMENTE!
- Si su niño tiene un episodio de asma, haga que el niño se sienta calmado y más cómodo. Déle sus medicinas de asma. Si las medicinas no le ayudan o si no tiene medicinas recetadas por un doctor, consiga ayuda médica INMEDIATAMENTE!

Cuidados Especiales Para Bebés con Asma

Cuidados especiales deben darse a los bebés con asma. Los pulmones de un bebé no son tan fuertes como los de un niño más grande. Por lo tanto un episodio de asma en un bebé puede volverse rápidamente en una tragedia.

Síntomas en un bebé

- Respiración rápida (más de 40/minuto)
- Piel estirada entre las costillas
- Pecho engrandecido
- Coloración de la cara se vuelve pálida o roja
- Llanto cambia a ser más suave y corto
- Fosas nasales engrandecidas
- Hace sonidos como gruñidos

Durante un episodio de asma:

- ✓ Inmediatamente administre medicina de asma recetada por su doctor
- ✓ Si no tiene medicina de asma, lleve el bebé a la sala de emergencias

Durante un episodio de asma:

- × NO le de muchos líquidos para beber
- × NO haga que respire aire cálido y húmedo
- × NO haga que respire en una bolsa de papel
- × NO le administre medicinas de gripe o antihistamínicos

Fuente: Consejo Nacional de La Raza
Centro de Promoción para la Salud

Project Clean Environment for Healthy Kids

PREVENTING CHILDHOOD LEAD POISONING

A training curriculum for lay health educators

Farmworker Justice Fund, Inc.
1010 Vermont Ave., NW, #915
Washington, DC 20005
*(202)783-2628 * (202)783-2561 fax*
www.fwjustice.org

Activity	Methodology	Materials Needed	Time
Introduction *Complete Initial Evaluation, Review the workshop objectives*	Group Discussion	• Lead Pre-test • Handout 1: Workshop Objectives	20 mins
What is Lead *Define lead and Review uses of lead throughout history*	Brain Storm and Group Discussion		10 mins
Common Sources of Lead Exposure *Review common sources of lead exposure*	Small Group Activity	• Pictures of lead sources • Pamphlet: How to Reduce Lead in Your Home • Pamphlet: Protect Your Family from Lead in Your Home	30 mins
Routes of Exposure *Discuss the common routes of entry into the body*	Brain Storm and Group Discussion	• Flip Chart and Markers	15 mins
People at Risk of Lead Poisoning *Discuss why children, pregnant women and other adults are at risk of lead poisoning*	Brain Storm and Group Discussion	• Flip Chart and Markers • Handout 2: Who is at High Risk for Lead Poisoning?	30 mins
Health Effects of Lead Poisoning *Discuss the common signs and symptoms of lead poisoning, Review the health effects of lead*	Brain Storm and Group Discussion	• Flip Chart and Markers	15 mins
Testing for Lead *Discuss when to test children for lead poisoning*	Brain Storm and Group Discussion	• Flip Chart and Markers	15 mins
Preventing Exposure to Lead *Review ways to prevent or minimize lead exposure*	Small Group Activity	• Pictures of lead sources • Handout 3: Good Nutrition	45 mins
Promoting Lead Education In the Community *Practice promoting lead education in the community*	Directed Role Play		45 mins
Conclusion and Evaluation *Complete the post-tests and evaluation forms*	Group Discussion	• List of Community Resources • Lead Post-test • Workshop Evaluation	15 mins

PREVENTING CHILDHOOD LEAD POISONING

(Total time: about 4 1/2 hours)

Workshop Objectives

- Define lead
- Review the common sources of lead exposure
- Discuss the routes of entry into the body
- Review the symptoms of lead poisoning
- Understand the short-term and long-term health effects of lead poisoning
- Discuss the effects of lead exposure on children, adults and pregnant women
- Review ways to prevent or minimize lead exposure

I. Introduction

Pre-test
Time: 15 minutes
Materials: Lead Pre-tests

Distribute the pre-test to the participants before starting the workshop. Explain that this is a questionnaire to help the facilitator make sure that she is presenting the information effectively and doing her job well. Ask participants to answer the questions without consulting with anyone else. If anyone has questions or needs help to answer the questions, ask the facilitator. When all have finished, collect the pre-tests and explain that you will go over the correct answers at the end of the workshop.

Workshop Objectives
Time: 5 minutes
Materials: Handout 1 (Lead Workshop Objectives)

Distribute Handout 1: Workshop Objectives. Review the objectives with the group. Ask them if there are any questions or objectives that they would like to cover that are not included on the handout. Tell the group that throughout the workshop they should feel free to ask questions whenever there is anything they don't understand, and that by the end of the day, you will try to answer all their questions as best you can.

II. What is Lead?

Questions for discussion

- **?** What is lead?
- **?** How has it been used?

Explain to the group that lead is a metal that has been used in paint, gasoline, water pipes, pottery, crystal and other places. But lead is a poison, especially to infants and young children. Because of the serious harm it can cause to people, it is not used as much anymore, but traces of lead can still be found in our air, water, soil, and many of our homes. The good news is that, over the past ten years, lead poisoning rates in children and adults have gone down. The bad news is that many children -- especially those living in poor neighborhoods, near factories, and close to major highways -- still end up with traces of lead in their brains, bones, muscles, and central nervous systems. In the United States, lead is one of the most serious environmental health hazards affecting children. That is why we are focusing on lead today.

III. Common Sources of Lead Exposure

Explain to the participants that in the United States, lead was used in paint and gasoline and continues to be used in a host of products such as batteries, construction materials, etc. Even though the use of lead in paint and gasoline in the U.S. has ended, some lead remains in our environment. For example, the interiors of many homes were painted with lead-based paint before such paint was banned in 1978. But lead is still in our environment because many people live in homes that were built before 1978. Let's discuss how we can still be exposed to lead from paint and other sources.

Sources of Lead

Identifying the Sources
Time: 30 minutes
Materials: Pictures of lead sources, EPA Booklet: Protect Your Family from Lead in Your Home or other similar resource

Before the workshop, prepare pictures of the following sources of lead. These could be drawings, photographs, magazine cut-outs, or even small toys.

Divide the participants into small groups and give each group about 4 or 5 of the pictures of common lead sources. Give them 5 minutes to discuss among their groups why the items might contain

lead. For example, if there is a picture of a car, then they would explain that most car batteries contain lead acid and that gasoline used to contain lead. Have each group prepare a 5-minute presentation to explain their conclusions to the rest of the participants. Make sure that every person in each group plays a part in the presentation.

Paint

The most common source of lead exposure in and around the home is lead-based paint. Lead was added to paint because it made paint easy to apply and scrub clean, but a federal law banned its use in paint in the U.S. in 1978. Today, over 80 percent of all homes built before 1978 in the U.S. still contain lead-based paint. The older the house, the more likely it is to have lead-based paint and to have a greater amount of lead in the paint. Wood surfaces with high-gloss paint, such as windows, baseboards, trim, doors, kitchen and bathroom walls, and outside porches, are the surfaces most likely to have been painted with lead-based paint. Outside surfaces are even more likely than inside surfaces to contain lead-based paint, since paint used outside often had a higher led content than did paint used inside. Lead paint may still be used on houses and toys in some developing countries.

Children are at high risk of lead poisoning from eating paint that has chipped, peeled or cracked. They may also absorb lead from paint by eating or breathing in household dust containing lead. Lead dust can be created even if the paint is not chipping or peeling. Lead dust is created by friction on surfaces painted with lead-based paint, such as windows, doors, floors and stairs. Children can swallow lead if they crawl or play on contaminated floors and soil and then put their fingers, clothes, or toys in their mouths, or if they eat without first washing their hands. Children can also absorb lead by chewing on surfaces painted with lead paint, such as window sills, molding, knobs and handles.

Automobiles

Gas: For many years, gasoline contained high amounts of lead. Lead has been removed from gasoline in the U.S. and Mexico, but years of contaminated exhaust fumes have created lead deposits in soil, especially near highways and busy roads.

Lead-acid batteries: Most cars used in the US use batteries that contain lead. An average battery contains about 11 kg of lead. When these batteries are not properly disposed, they can leak lead into the environment. Most states require that these batteries be recycled, but some lead is released into the environment in the recycling process.

Other parts: The vehicle coating, wheel balancing weights in tires, electronic components, and other parts of the car interior also contain lead.

Dust and Soil
Soil is easily contaminated by paint chips containing lead and airborne lead particles from car exhaust pipes and industrial plants. Soils of lands used as orchards in the 1940s may also be contaminated with lead from pesticides used during that time. Dust inside homes may contain lead particles from lead-based paint or from soil tracked into the house from outside. This dust eventually makes its way onto pets, toys, carpets and floors, furniture, bedding, etc.

Drinking Water
Drinking water can become contaminated with lead as it passes through lead pipes or pipes joined with lead solder. Lead-lined tanks or containers can also contaminate water stored in them. Lead is no longer used in drinking water pipes or solder, but these pipes still exist in many older homes.

Food containers
Food containers that may contain lead include ceramic pots or water jugs with a lead-based glaze, cans with lead-soldered seams, candy wrappers decorated with leaded paint, and leaded crystal. Foods, especially acidic foods like beans, tomatoes and fruits that are cooked, served or stored in these containers can soak up lead. Cans with lead solder have a silver-gray metallic smear of solder along their seam and small dents along the seam. Lead-free cans have a thin, blue-black paint line along the seam or no seam at all. Such cans are rare in the US, but have been found in cans from Mexico. Lead has been found in ink on the plastic wrapping of tamarind candy and lollipops from Mexico (especially the Dulmex “Bolirindo” brand). Other tamarind and tejocote fruit candy products are packaged in stoneware or terra cotta ceramic jars that contain lead-based glaze. Lead on these jars and wrappers may leach onto the candy, and children might also ingest lead when they put the jars or wrappers in their mouths. Water or other drinks served or stored in leaded crystal will also absorb lead.

Imported foods
In Mexico, spices and other foods are sometimes dried using motors that run on leaded gasoline. Some people have been exposed to high amounts of lead by eating dried chilies or other food items imported from Mexico or India. Candies and snacks imported from Mexico sometimes contain powdered dried chilies.

Home Remedies
Some home remedies from Mexico contain high levels of lead. Examples include *greta* and *azarcon*, which are orange and yellow powders given to babies for indigestion or *empacho*. Other common names for these products are *liga, Maria Luisa, alarcon, coral* and *rueda.* These products are very dangerous if swallowed and should never be used.

Costume jewelry
Lead has been found in cheap metal jewelry coated with enamel. Children can eat and breath the lead by chewing or sucking on this jewelry.

Televisions and computers
Glass from computer monitors and cathode ray televisions contain lead, as do some computer circuit boards. Televisions or computer monitors that are intact do not pose a danger of lead exposure, but if they are broken, children can ingest lead particles. If these items are improperly discarded the lead can contaminated soil and ground water.

Industrial Pollution
Communities near industrial plants and mining activities that release lead (or released lead in the past) may have high levels of lead in the soil. These industrial include lead smelting or refining plants, lead mining, auto repair, battery recycling or manufacturing, glass and plastic manufacturing, and shipbuilding.

Work exposures
Some jobs expose adults to large amounts of lead. Auto mechanics or others who work recycling automotive lead-acid batteries have a high rate of exposure to lead. Other high-risk jobs include lead removal workers, carpenters, painters, plumbers and pipe fitters, and demolition workers. Adults who are exposed to lead through the workplace may also contaminate their cars and homes with lead dust that is on their clothes, shoes, hair, or skin. These residues could poison their families. There is an even greater risk of lead exposure to children if these jobs are performed at home and precautions are not taken to prevent contamination to children and other family members. For example, a person may work as an auto mechanic out of his own home garage and have spent car batteries sitting around the garage, yard or house.

When the group has finished this exercise, hand out pamphlet “How to Reduce Lead in Your Home” (*Como Reducir el Plomo en su Casa*) and EPA booklet “Protect Your Family from Lead in Your Home” (*Proteja a Su Familia del Plomo en Su Casa*). Look over pages 5 (Where Lead Paint is Likely to be a Hazard), and 10 (Other

Sources of Lead Exposure) of the EPA booklet. Ask the participants if they have any questions.

Ask the participants if they know how they could find out whether there is lead in their homes. Tell the group that home test kits for lead are available at hardware and other stores, if they want to test for themselves. However, make sure they understand that such tests are not always accurate. There are also trained professionals who can check your home for lead hazards. Sometimes local health departments test homes for lead free of charge.

IV. Routes of Exposure?

Group Discussion
Time: 15 minutes
Materials: Flip chart and markers

? How can lead enter our bodies?

Swallowing lead
The main way that lead gets into the body is by swallowing it. Toddlers are one age group at great risk because they are always crawling on the floor and putting everything into their mouths as part their normal activities. Exposure may occur in the following ways:

- playing where lead-contaminated dust or soil is present, touching it, then putting their fingers in their mouths;
- chewing on toys contaminated with lead dust; and
- eating flaking paint chips from peeling lead-based paint.

Paint chips with lead actually taste sweet. People can also be exposed to lead by eating or drinking.

? How else can adults and children eat or drink substances containing lead?

- Taking folk remedies that contain lead. Examples: azarcon and greta, common remedies for colic, contain a very large amount of lead;
- Eating food or drinking water that has been stored in pottery containing lead glaze
- Swallowing dust from peeling or damaged lead-based paint
- Drinking water that has traveled through lead pipes

Breathing Lead

Lead also enters the body by breathing (breathing it in). When lead is in the air, people breathe tiny particles into their lungs. Lead dust particles are easily breathed in. The lead particles travel quickly from the lungs and are absorbed into the bloodstream.

V. Who is at Risk for Lead Poisoning?

Group Discussion
Time: 30 minutes
Materials: Flip chart, markers, Handout 2

? Who can get lead poisoning?

- People of any age, race, geographic region, or income level can get lead poisoning. Anyone who is exposed to lead and who eats or breathes it in may develop an elevated blood-lead level. But lead is an especially big problem for children. Poor children, urban children and children living in older houses with peeling lead-based paint are at the highest risk.

Children

? Why might children be more vulnerable to lead than adults?

- Children are at a greater risk from exposure to lead than adults for several reasons, including:
  - Their bodies and nervous systems are still developing
  - Frequent hand-to-mouth activity brings them into greater contact with lead in the environment, especially in lead dust and soil
  - They absorb up to 50% of the lead they take in, and retain a larger proportion of the lead that enters their bodies.

In the United States about 4% of children under the age of six – about one million children -- have high blood-lead levels. Blood lead levels are highest among one to two-year olds and among Mexican-American and African-American children. While blood lead levels remain high, the incidence of lead poisoning has actually gone down in recent years. The de-leading of gasoline and food containers in the United States was successful in reducing average blood-lead levels by 70 percent between 1970 and 1990.

? Who else might be at a greater risk from exposure to lead?

- Pregnant women and adults who work around lead

Pregnant Women

When a woman is pregnant, her body takes nutrients both for herself and the new baby. If she is exposed to lead, her body will absorb lead very quickly. A pregnant woman, like children, absorbs 50% of the lead that she takes in, while a non-pregnant woman absorbs only 10%. This can affect the unborn fetus as well as the mother-to-be.

Exposures During Work and Play

As mentioned earlier, some adults are exposed to large amounts of lead because of where they work or what they do for pleasure. In lead-related industries, workers may inhale lead dust and fumes, and may also eat, drink, and smoke in or near contaminated areas. If showers and changes of clothing are not provided, they can bring lead dust home on their skin, shoes, and clothing, and expose their families to the same hazards.

? Who might be exposed to lead at work?

- Auto mechanics
- Lead removal workers
- Steel welders and cutters
- Carpenters
- Painters
- Plumbers and pipe fitters
- Demolition workers
- Cable splicers
- Ceramic glaze manufacturers
- Potters

? What hobbies might expose us to lead?

- Home remodeling
- Glazed pottery making
- Target shooting at firing ranges
- Refinishing furniture
- Painting (some art paints have lead pigments)
- Making lead fishing sinkers or lures
- Stained-glass window making

Distribute Handout 2: Who is at High Risk for Lead Poisoning?

VI. Health Effects of Lead Poisoning

Group Discussion
Time: 15 minutes
Materials: Flip chart and markers

Signs and Symptoms of Lead Poisoning

? Have you ever known anyone suffering from lead poisoning? How did they act?

- In most cases, there are no visible symptoms of lead poisoning. Even children who seem healthy can have high levels of lead in their blood. Exposure to a small amount of lead, day after day, can make you sick over a long period of time.

The health effects of lead poisoning are often difficult to recognize. A child with lead poisoning may seem healthy while damage is being done in their bodies. Signs and symptoms don't develop until the condition is serious and sometimes the signs of lead poisoning come and go. The signs and symptoms for lead poisoning can easily be mistaken for a cold or the flu.

? What are some of these symptoms?

- Tiredness
- Sleep problems
- Dizziness
- Irritability
- Nervousness
- Hyperactivity (children)
- Headaches
- Difficulty concentrating
- Depression
- Weakness
- Wrist or foot drop
- Joint or muscle pain
- Vomiting
- Loss of appetite
- Constipation
- Metal taste in the mouth
- Problems having children

Long-term Health Effects

? What are the health effects of lead poisoning in children?

- If not detected early, children with high levels of lead in their bodies can suffer from

    - Damage to the brain and nervous system
    - Behavior problems (such as hyperactivity)
    - Learning difficulties
    - Slowed growth
    - Hearing problems
    - Headaches

Lead poisoning in children has effects that can last a lifetime. It can cause children to be less smart than they could have been. Studies have shown that lead-poisoned children have higher school drop out rates and more behavioral problems than non-poisoned children.

? What are the health effects of lead poisoning in adults?

- Difficulties during pregnancy and premature births
- Infertility and still-births
- High blood pressure
- Problems with digestion
- Nerve disorders
- Memory and concentration problems
- Muscle and joint pain

Pregnant Women and Fetuses

Very small amounts of lead can hurt the fetus. The fetus is developing rapidly. Lead can cause brain damage and even death to the fetus. It can cause miscarriages and premature births. The woman is also at risk for lead poisoning since she absorbs 50% of the lead that enters her body. And since the fetus makes demands upon the calcium in the mother's bone structure, pregnancy can have the effect of discharging lead that was stored in her bones from prior environmental exposures.

Lead poisoning is also very dangerous to the female reproductive system. It can make women less fertile. It causes abnormal menstrual cycles and affects menopause.

VII. Testing for Lead

Group Discussion
Time: 15 minutes
Materials: Flip chart and markers

? How can we know if a child has a high level of lead in her body?

- The easiest way to know if a child is being exposed to too much lead is to get a blood test.

? How can you know if there is a high level of lead in your home?

- The best way to find out if there are high levels of lead in your home is to test your home for lead.

A blood test is one of the only ways to find out how much lead is in a child's blood. Blood can easily be tested at the child's next medical check-up. The amount of lead in the body is called the blood lead level. The blood test measures the amount of lead in a person's blood. It shows how much lead the person has been exposed to in the last 6 to 8 weeks. Blood lead levels are measured in micrograms per deciliter of blood (ug/dl). A microgram is a measure of weight. Imagine half of a penny broken up into 1 million pieces - each one of the pieces is a microgram. The current acceptable lead level in the blood is 10 ug/dl. However, recent studies have shown that even lower levels of lead in the blood may cause problems.

Because the test shows the exposure in the previous two months, it will miss a large one-time exposure that occurred more than 2 months earlier. For instance, exposure to lead from an herbal remedy such as *azarcon* or *greta* (which may be used for colic in a 3-month old) would not show-up if the child were tested at one year of age.

All one- and two-year olds should be tested for lead. The Federal government requires testing at the ages of 12 and 24 months for all children enrolled in Medicaid, or for any child between 3 and 6 years who has no record of prior screening. The need for testing and how often to repeat it depends on previous blood-lead test results and whether the child is at high or low risk for exposure to lead.

Generally, the most important treatment for lead poisoning is to stop the exposure. If your child has elevated blood lead levels the best approach is to minimize exposure to lead by removing the lead from the environment. This will help to ensure a decline in blood lead levels.

When blood lead levels are very high, doctors may prescribe medications to lower blood lead levels in a treatment known as

chelation therapy. Chelation therapy is a treatment for lead poisoning, not a cure. The longer a person is exposed to lead, the greater the likelihood that damage to health will result. Some effects of lead poisoning are permanent and some are not. Therefore, it is extremely important to take steps to prevent any exposure to lead and to test a child's blood to determine if any poisoning has already occurred.

VIII. Preventing Exposure to Lead

Group Discussion
Time: 30 minutes
Materials: Pictures of lead sources

Have the participants reassemble into their small groups. They will discuss the same lead sources as before, but this time, they will discuss what simple steps they could take to prevent exposure to lead from those sources. Have them prepare a presentation to the rest of the participants. Here are some ideas of prevention techniques.

Paint and dust

- If you rent, notify your landlord of peeling or chipping paint.
- Clean up paint chips immediately. Painting over the lead-based paint with non-lead-based paint does not eliminate the danger and removing old lead paint by sanding, scraping or burning can actually increase the hazard to your family by spreading poisonous lead dust around the house. To permanently remove a lead hazard, it must be treated by a professional trained in lead removal.
- Keep children from chewing on window sills or other painted surfaces.

Soil and dust

- Wash children's hands often, especially before they eat and before nap time and bed time.
- Keep play areas clean. Wash bottles, pacifiers, toys, and stuffed animals regularly.
- Clean floors, window frames, window sills, and other surfaces weekly. Use a mop or sponge with warm water and a detergent (like Spic N Span, dish or dishwasher detergent, or laundry soap). Anti-bacterial (like Lysol, Pinesol, bleach or ammonia) are not detergents. Use paper towels or set aside a sponge used only for lead cleaning.
- Clean or remove shoes before entering your home to avoid tracking in lead from soil.

- Do not let children play in bare soil. Cover bare soil with grass, plants, or gravel.

Automobiles

- Lead emitted from car tailpipes before the 1980s is still present in soil, especially in areas of heavy traffic. Do not let children play in bare soil near busy roads.
- Do not plant vegetable gardens in soil that could be contaminated.
- Don't leave old car batteries lying around the house or yard. Take old batteries to a car parts store or car garage, where they will be disposed of appropriately. Or ask your local government recycling or waste disposal department how to dispose of them.

Drinking water

- Use only cold water for drinking, cooking, and making baby formula. Boiling will not remove lead from water.
- If water has been sitting in pipes overnight or for several hours, let the water run for about a minute to flush lead out of the pipes. The water has run long enough when it changes temperature – usually gets colder.

Food containers

- Do not cook serve, or store food in ceramics containing lead.
- Do not eat food in cans with lead-soldered seams. Lead-soldered seams are wide and folded, and have dents or solder smears. If there is a thin blue or black line on the seam, it has no lead and is safe to use. (Bring in a lead-free can to show.)
- Do not buy tamarind candy from Mexico or candy in brightly colored ceramic pots.

Home remedies

- Do not use *greta* or *azarcon*. Do not use any home remedy unless you are sure what is in it.

Costume jewelry

- Do not buy metal jewelry for small children.
- Do not allow children to suck or chew on metal jewelry.

Televisions and computers

- Donate these items to organizations that will reuse or recycle them
- Do not discard them in the trash. Ask your local government recycling or waste disposal department how to dispose of them.

Work Exposures

- Wear protective equipment and clothing on the job. If you must take work clothes or shoes home, tie them up in a plastic bag.
- Try to bathe and change clothes before touching your children. If you can't shower at work, wash your hands, arms, face and neck completely before leaving.
- Change or remove shoes before entering your home to avoid tracking in lead.
- Clean washable work clothes separately from other clothing. Run the rinse cycle once before using the washer again.
- Don't leave dangerous items, like car batteries, around the house. Ask your local government recycling or waste disposal department how to dispose of them.

Look at EPA booklet pages 7 (What You Can Do Now to Protect Your Family) and 8 (How to Significantly Reduce Lead Hazards).

IX. Diet and Nutrition

Group Discussion
Time: 15 minutes
Materials: Flip chart, markers, Handout 3

- **?** What foods should children eat to reduce their absorption of lead?
- What a child eats can't make the lead leave his or her body any faster, but a healthy diet will help prevent any more lead from being absorbed by his or her body. Make sure a child eats regularly and has healthy meals with plenty of iron and calcium.

Eating regular, healthy meals with plenty of iron and calcium can help protect a child against lead poisoning because (1) more lead is absorbed into the body on an empty stomach and (2) more lead is absorbed when iron and calcium are lacking from the diet. Foods rich in Vitamin C can help the body to best use the calcium and iron it takes in. Cut back on high fat foods, such as fried foods and butter. Fat can increase lead absorption.

- **?** What foods are high in calcium?
- Milk – low-fat or nonfat milk and foods made with milk (such as soups, milk-based ice cream, and puddings)
- Yogurt – low-fat yogurt
- Cheese – pizza, macaroni and cheese
- Fish/seafood – sardines, trout, cod, mackerel, tuna, salmon, crab, lobster

- Vegetables – turnip tops, cabbage, collards, kale, broccoli, spinach, beets
- Tofu

? What foods are high in iron?

- Fruits – oranges, pineapples, raisins, prunes, dates and other dried fruits
- Beans and nuts – baked beans, almonds, and other nuts
- Meat – lean beef, pork, and chicken
- Cereal – iron fortified, either hot or cold
- Fish/seafood – clams, mussels, oysters, tuna, trout, cod,
- Eggs, liver, and wheat germ
- Vegetables -- leafy greens

Distribute Handout 3: Good Nutrition.

X. Promoting Lead Education in the Community

Role plays
Time: 45 minutes

Divide participants into groups of four. Give each group about 10 minutes to prepare one of the following role plays. Remind the participants that the most effective way to educate the community is to engage individuals in a dialogue. Encourage participants to ask many questions of the community member during their roles as *promotores* to facilitate this exchange of ideas. Note that simply lecturing to the community members is likely to turn them off. Tell them that they are welcome to use any of the materials and props that were used during the workshop. Visit each group as they are preparing to see if they have any questions. Have each group present their role play to the rest of the participants. After each group presents their role play, be sure to provide feed back. Ask the other participants to help you point out what was done well and what can be improved.

- *Promotores de salud* visit the home of a woman who is pregnant and also the mother of a toddler and explain to her some of the ways her children might be exposed to lead at home.

- *Promotores de salud* visit a farmworker couple and explain how good nutrition is important to prevent lead poisoning for their children.

- *Promotores de salud* visit a family living in a rural area in a house with paint peeling off the interior walls. They discuss the

possible existence of lead in the paint because the house was built in the early 1970s.

- *Promotores de salud* visit the family of a car mechanic who often works on cars in front of his house. How can he protect himself and his family from lead poisoning?

XI. Conclusion and Evaluation

Time: 15 minutes
Materials: Lead Post-tests, Evaluation forms

Ask the group if there are any questions or comments. Distribute any materials that they will be giving to members of the community, including referral information to nearby health clinics, governmental agencies, legal services organizations and community-based organizations.

Distribute the post-test and workshop evaluation forms. Review the correct answers for the pre- and post-tests.

XII. Sources

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Healthy Children Organizing Project, “How To Reduce Lead in Your Home,” December 1994

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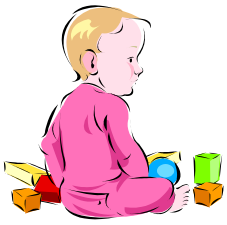
LEAD WORKSHOP OBJECTIVES

- Define lead and discuss the common uses of lead
- Review the common sources of lead exposure
- Discuss the routes of entry into the body
- Examine the differences in lead exposure for children, adults and pregnant women
- Develop an understanding of the health effects of lead poisoning
- Review the symptoms of lead poisoning
- Review ways to prevent or minimize exposure
- Practice techniques to promote awareness in the community about the health effects of lead poisoning and preventing exposure to lead

Who Is at High Risk for Lead Poisoning?

Small children *(younger than 6 years old)*

Young children are at high risk for lead poisoning because their bodies and nervous systems are still developing. Risks are increased because they put everything in their mouths and they have a lot of contact with floors, dust and dirt that can contain lead particles. In addition, children absorb 50% of the lead that enters their bodies.



How does lead affect children's health?

- behavioral and learning problems
- slower growth and development
- speech and hearing problems
- learning disabilities
- high level exposures can result in death

Pregnant women

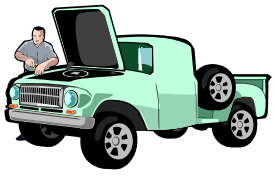
A pregnant woman absorbs 50% of the lead that enters her body, compared to other adults who absorb 10%. In addition, the lead stored in her body since before the pregnancy can be easily passed on to the fetus. Lead can also cause problems during the pregnancy and affect the development of the fetus.

How can lead affect a pregnancy?

- premature birth
- low birth weight
- miscarriage or stillbirth
- brain damage to the fetus

Adults exposed to lead at work or through their hobbies

Some occupations (like mechanics, carpenters, painters and plumbers) and hobbies (like leaded pottery, furniture refinishing or home remodeling) can expose adults to high levels of lead. Adults engaged in these activities should take precautions to limit their exposure to lead, especially pregnant women. They should also bathe and change clothes before touching other members of their families.



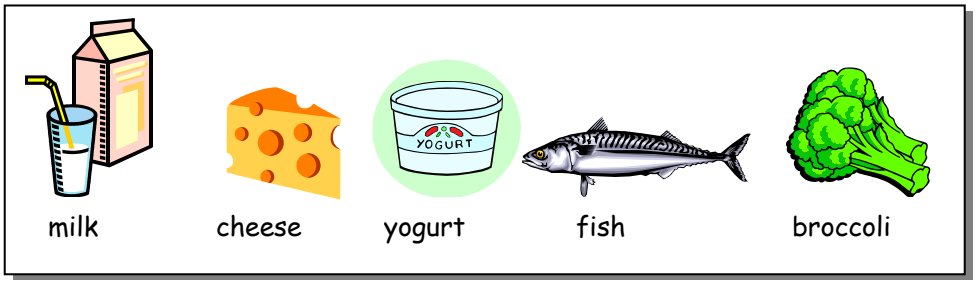
How does lead affect an adult's health?

- danger to the reproductive system
- high blood pressure
- digestive problems
- nervous disorders
- difficulties with memory and concentration

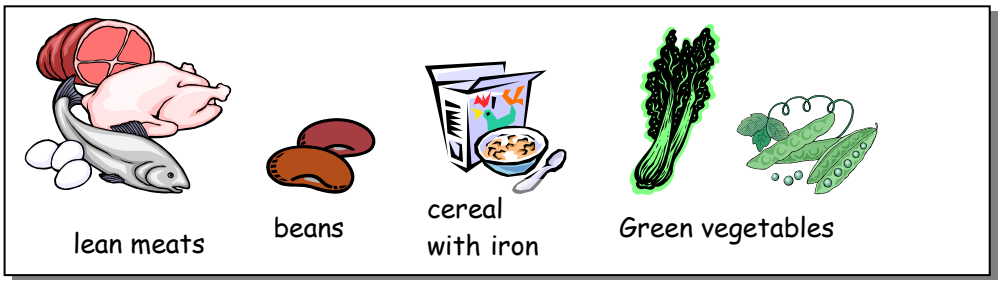
Good Nutrition Can Protect your Child from Lead Poisoning

If your child eats foods rich in calcium and iron, it is more difficult for lead to enter the bloodstream. Greasy foods can increase the amount of lead absorbed by the body.

Foods rich in calcium:

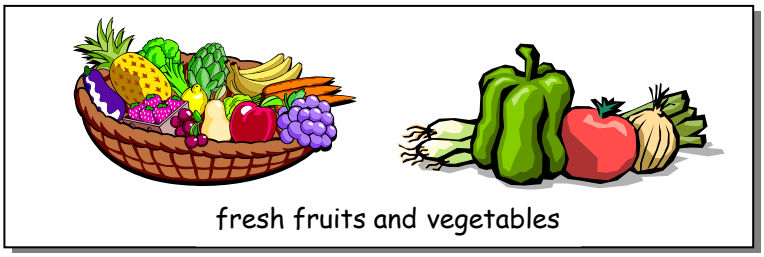


Foods rich in iron:

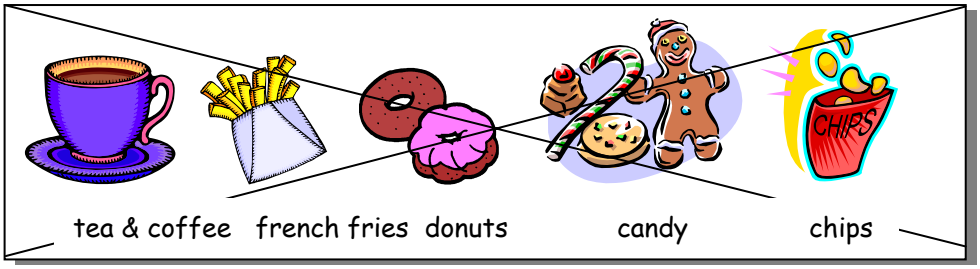


Foods rich in Vitamin C

Help your body to use the calcium and iron



Limit your intake of caffeine and greasy foods

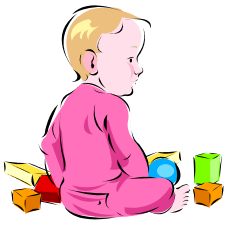


OBJETIVOS

- Definir el plomo y discutir los usos comunes de plomo
- Repasar las fuentes comunes de exposición al plomo
- Discutir como el plomo entra al cuerpo
- Examinar los riesgos de envenenamiento con plomo para niños, adultos y mujeres embarazadas
- Entender los daños a la salud por envenenamiento con plomo
- Revisar los síntomas del envenenamiento con plomo
- Revisar maneras de evitar o reducir su exposición al plomo
- Repasar técnicas para concientizar a la comunidad del peligro del plomo y como evitar el envenenamiento

¿Quién Corre Mayor Riesgo del Envenenamiento por Plomo?

Niños pequeños *(menores de 6 años de edad)*
Niños pequeños corren mayores riesgos de envenenarse por plomo porque sus cuerpos y sistemas nerviosos todavía se están desarrollando. El riesgo es más alto porque se llevan todo a la boca y tienen mucho contacto con pisos y tierra que puede contener polvo de plomo. Además, niños absorben 50% del plomo que entra a sus cuerpos.

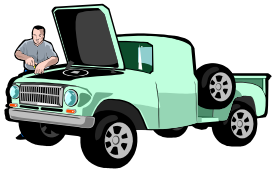


¿Cuáles son los efectos en los niños?
- problemas de comportamiento y aprendizaje
- lentitud en el desarrollo
- problemas para oír y hablar
- bajar el índice intelectual
- en niveles elevados, puede causar la muerte

Mujeres embarazadas
Una mujer embarazada absorbe 50% del plomo que entra a su cuerpo, comparado con otros adultos que absorben el 10%. Además de este plomo, el plomo almacenado en su cuerpo desde antes del embarazo fácilmente se transmite al feto. El plomo puede causar problemas durante el embarazo y afectar el desarrollo del feto.

¿Cómo afecta el plomo al embarazo?
- nacimiento prematuro
- tamaño pequeño y bajo peso al nacer
- aborto o alumbramiento de un niño muerto
- puede causar daño cerebral al feto

Adultos expuestos al plomo en sus trabajos o pasatiempos
Algunos trabajos (tales como la mecánica, carpintería, pintura y plomería) y pasatiempos (tales como hacer cerámica emplomada, retocar muebles o remodelar casas) pueden exponer adultos a altas cantidades de plomo. Estas personas deben tomar medidas de seguridad para limitar su exposición, especialmente mujeres embarazadas. También deben bañarse y cambiar su ropa antes de tener contacto con otros miembros de su familia.

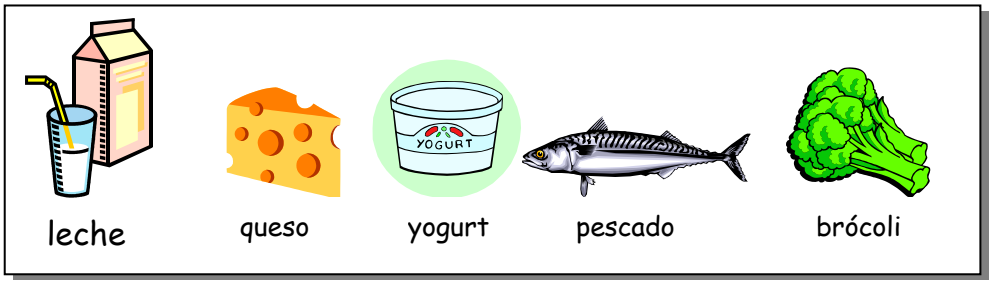


¿Cuáles son los efectos en los adultos?
- daños al sistema reproductivo
- alta presión
- problemas digestivos
- enfermedades nerviosas
- dificultades en la memoria y concentración

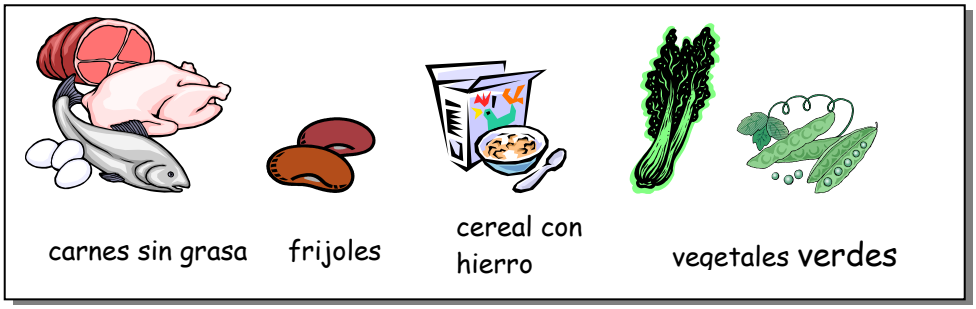
Una Buena Dieta Puede Ayudar a Proteger su Niño Contra el Envenenamiento por Plomo

Si su niño come alimentos altos en calcio y hierro, es más difícil que el plomo entre en la sangre. Comidas grasosas pueden aumentar la cantidad de plomo que absorbe su cuerpo.

Comidas ricas en calcio:

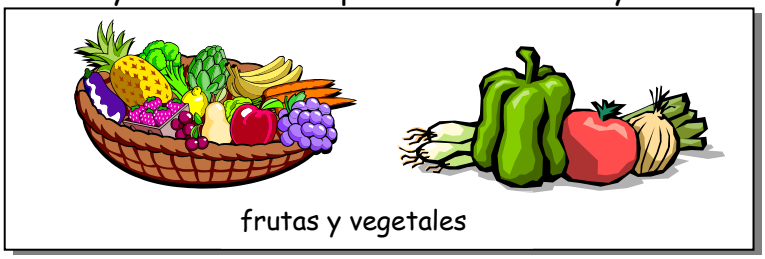


Comidas ricas en hierro:

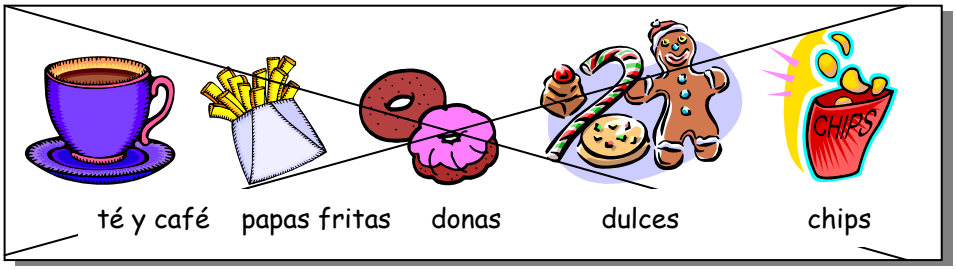


Comidas ricas en Vitamina C

Ayudan a su cuerpo a usar el calcio y hiero



Limite la cafeína y comidas grasosas



Project Clean Environment for Healthy Kids

PROTECTING FAMILIES AND FARMWORKERS FROM PESTICIDES

A training curriculum for lay health educators

Farmworker Justice Fund, Inc.
1010 Vermont Ave., NW, #915
Washington, DC 20005
*(202)783-2628 * (202)783-2561 fax*
www.fwjustice.org

Activity	Methodology	Materials Needed	Time
Introduction *Complete pre-tests; review the workshop objectives*	Problem Tree Activity and Group discussion	• Pesticide Pre-test • Drawing of tree trunk; cut-out fruit shapes • Handout 1: Workshop Objectives • Flip chart and markers	1 hour
How Pesticides Affect Humans *Share experiences of pesticide poisoning, Learn to recognize acute and chronic health effects of pesticide poisoning*	Group Discussion and Brain Storm	• Handout 2: Acute Symptoms • Handout 3: Serious Symptoms • Handout 4: Chronic Health Problems • Flip chart and markers	30 mins
How Harmful Are Pesticides? *Discuss routes of exposure; Review the importance of pesticide labels*	Skit and Group Discussion	• Flip chart and markers • Spray bottle filled with water • small table set with paper plates, napkins, fruit • Paper cut-outs or plastic bugs • Stuffed animal or other toy • 2 bottles of water, pesticide label or can	30 mins
Pesticide Poisoning in the Home *Discuss what to do in case a pesticide exposure at home; discuss what to tell the doctor*	Role Play and Group Discussion	• Flip chart and markers • Spray can or bottle	20 mins
Avoiding the Use of Toxic Pesticides at Home *Learn how to reduce or eliminate the use of toxic pesticides at home*	Group Activity and Discussion	• Handout 5: Cockroaches • Handout 6: Ants and Fleas • Handout 7: Mosquito Control • Handout 8: Warnings about Home Use of Pesticides	50 mins
Reducing Pesticide Exposure in the Fields *Discuss how to reduce pesticide exposure on the job and the dangers of pesticide residues, Identify protections required by Worker Protection Standard*	Role Play and Group Discussion	• 1 yard each of red & yellow ribbon • Blank sheets of colored paper • Handout 9: Important Protections in the Worker Protection Standard • Handout 10: Reducing Pesticide Exposure on the Job • Handout 11: Work Clothes • Handout 12: How Farmworkers Can Protect their Families	75 mins
What To Do in Case of Pesticide Exposure in the Fields *Discuss what to do in case of a pesticide incident in the fields; discuss what to tell the doctor*	Skit and Group Discussion	• Flip Chart and Markers • baseball caps, XL t-shirts, cut-out fruit shapes, body powder	30 mins
Understanding your Rights at Work *Discuss how farmworkers can enforce their rights under the WPS; discuss workers' compensation*	Group Discussion	• Flip Chart and Markers	30 mins
Farmworkers and Field Sanitation *Discuss field sanitation standards; review ways to prevent heat stress*	Brain Storm and Group Discussion	• Handout 13: Field Sanitation • Handout 14: "Controlling Heat Stress" Cards	30 mins
Reviewing Important Pesticide Information *Review concepts discussed in the training*	Game Show	• Game pieces	30-45 mins
Promoting Pesticide Safety in the Community *Practice educating community members about pesticides*	Directed Role Play	• Pesticide Safety Booklet • Pesticide Safety Comic Book	45 mins
Conclusion and Evaluation *Complete the post-tests and evaluation forms*		• Pesticides Post-test • Workshop Evaluation Form	15 mins

PROTECTING FAMILIES AND FARMWORKERS FROM PESTICIDES

(Total time: about 8 hours)

Workshop Objectives

- Understand how pesticides affect humans
- Learn how you can protect children from pesticide exposure
- Discuss what to do in case of a pesticide exposure at home
- Learn about alternatives to the use of chemical pesticides at home
- Learn how farmworkers can protect themselves from pesticide exposure in the fields
- Know what to do in case of pesticide exposure on a farm
- Understand your rights to a safe workplace

PART ONE: PROTECTING CHILDREN AND FAMILIES

I. Introduction

Pre-test
Time: 15 minutes
Materials: Pesticide Pre-tests

Distribute the pre-test to the participants before starting the workshop. Explain that this is a questionnaire to help the facilitator make sure that she is presenting the information effectively and doing her job well. Ask participants to answer the questions without consulting with anyone else. If anyone has questions or needs help to answer the questions, ask the facilitator. When all have finished, collect the pre-tests and explain that you will go over the correct answers at the end of the workshop.

Workshop Objectives
Time: 5 minutes
Materials: Handout 1 (Pesticide Workshop Objectives)

Explain to the group that the main goals of today's workshop are: 1) to learn about pesticides and the health risks they pose; and 2) to

learn ways to reduce or minimize exposure at home or at an agricultural work place. Distribute Handout 1: Workshop Objectives. Read the objectives out loud to the group. Ask them if there are any questions or objectives that they would like to cover that are not included on the handout. Tell the group that throughout the workshop they should feel free to ask questions whenever there is anything they don't understand, and that by the end of the day, you will try to answer all their questions as best you can.

Problem Tree Exercise (optional)
Time: 30 minutes
Materials: Flip chart, markers, colored paper cut-outs in the form of fruit, tape

On a flip chart, draw a picture of a tree, including its roots, a trunk, and several branches. On the trunk of the tree, write the words "Pesticide exposure to farmworkers and their families." Ask the group to think about all the possible causes of the problem and ask for one or two responses. Write these responses inside the roots of the tree.

Divide the group into two smaller groups and give each group a flipchart page with a picture of a tree, strips of paper for roots and colored paper cut-out for fruit. Ask each group to write on the strips all the possible causes of high pesticide exposure rates in their community that they can think of. When they are done, ask the group members to tape their strip of paper onto a root of the tree. Give them five minutes to write down their ideas. Bring the groups back together and have a representative of each group review the "root causes" they discussed. Their responses might include the following:

- high volume of pesticide use at agricultural worksites
- high risk activities such as mixing, loading or applying pesticides
- drift
- exposure to pesticide residues on soil, leaves and crop in the field and to unwashed fruit eaten in the field
- use of pesticides inside the home, on the lawn or in the garden
- home use of pesticide containers from the fields
- washing pesticide-contaminated work clothes and family clothing together

Next, ask the group to think of things they can do, as individuals or as a community, to try to bring down these high levels of pesticide exposures. Ask for one or two responses and write these on the paper cut-out of a fruit such as lemon, lime or orange (or inside the

outline of a fruit on your tree). Have the participants return to their small groups again and give each group a different set of pre-cut fruit shapes (about 10 each). Give the groups 5 minutes to write their ideas on the fruits and tape them onto their trees. Reassemble all the participants and have a representative of each group review the "solutions" they discussed. Later, during a break, combine the "roots" and the "fruits" from both groups onto one tree.

Some of the solutions might include:

- stop using toxic pesticides inside the home
- shower every day as soon as possible after returning from work in pesticide-treated areas
- work for state or local laws that require notification of farmworkers or the community concerning pesticide applications

Who Wants to Be A Millionaire (optional)
Time: 5 minutes

Ask for one volunteer to be a game show contestant and the facilitator will play the role of the game show host. For $1 million, the contestant must correctly answer a question, using at most one lifeline. The lifelines are: 1) asking the group or 2) asking a friend (other than the facilitators). The $1 million question is:

A person can find out how poisonous a pesticide is from:
A. Its smell
B. Its color
C. Its taste
D. The pesticide label
E. All pesticides are equally harmful

The correct answer is D. Give the participant a prize (candy, etc.) if he/she answers correctly.

II. How Pesticides Affect the Human Body

The Environmental Protection Agency estimates that 10,000-20,0000 farmworkers are injured by exposure to pesticides on the job each year. The Bureau of Labor Statistics of the U.S. Department of Labor reports that farmworkers have the highest rate of chemical-related illness of any occupational group. But the exact number of worker poisonings is unknown. Nationally poison control centers received an average of 24,000 calls per year about pesticide exposure; 2/3 (16,000) of them involved children under age 6. Children are exposed to pesticides at home, at school, in day care centers and in outside spaces like fields, lawns, parks, and gardens.

Symptoms Activity
Time: 30 minutes
Materials: flip chart paper, markers, tape, Handouts 2, 3 and 4

Divide the group in half and give each half a flip chart and a marker. Direct each group to choose a person to record the group's answers on the flip chart. Ask one group to write as many immediate symptoms of pesticide exposure as they can. Ask the other group to make a list of long-term or chronic health effects of pesticides. Give each group five minutes to complete its task. When they have finished, ask each group to tape its list to the wall and select a representative to read the list aloud.

Acute Poisoning
Explain to the group that pesticide exposure can cause symptoms immediately or soon after exposure. These are called ACUTE symptoms and include the following:

- Nausea and vomiting
- Headache
- Dizziness
- Blurred vision or irritated eyes
- Skin rashes
- Sleeplessness
- Fatigue
- Stomach cramps
- Excessive sweating
- Weakness

Distribute Pesticide Handout 2: Acute Symptoms, which shows many of the common acute effects. Tell the group that these symptoms are common to a lot of illnesses, like a cold or flu. They or their health professional may be uncertain as to whether the symptoms are effects of pesticide exposure or other ailments. When these symptoms are caused by pesticide exposure they will normally begin 2-3 hours (and within 12 hours) after the exposure. Generally, a pesticide exposure will cause two or more of the symptoms. Explain to them that if they or a family member begin(s) to experience several of these symptoms within 12 hours of using or being around pesticides, this may be an incident of pesticide poisoning.

Serious Acute Symptoms
In their list of immediate symptoms, the group may have identified some of the more serious symptoms that could be caused by exposure to pesticides, including the following:

- Shortness of breath
- Loss of consciousness
- Drooling from the mouth and nose

Distribute Pesticide Handout 3: Serious Symptoms. Handout 3 lists some of the most serious acute symptoms. If a person has any of these symptoms and doesn't receive immediate medical attention, she or he could die. Tell the group that if anyone is experiencing any of these symptoms, emergency medical help must be obtained immediately either by calling 911 or by taking the person to a hospital.

Chronic Health Effects

Explain to the group that chronic health effects are health problems that may develop over a longer period of time from even low levels of exposure to pesticides. Some health effects begin weeks, months or even years after the exposure occurred. The following chronic effects should be included in the participants' list:

- Cancer
- Infertility
- Miscarriage
- Birth defects
- Nervousness or memory loss
- Weakness in the arms or legs

Distribute Pesticide Handout 4: Chronic Health Problems.

III. How Harmful Is this Pesticide? Will it Injure Me or My Family?

Routes of Exposure

Skit
Time: 15 minutes
Materials: 2 paper plates & cups, plastic utensils, fruit, small stuffed animal, plastic bugs or paper cut-outs of bugs, spray bottle filled with water

Begin this section by performing a skit with volunteers from the group. Ask for three volunteers. Ask one to play the mother and the others to play young children. Put in the center of the room a table set for lunch. Add a few plastic or paper cut-out bugs on the table and the floor. Have one of the children carry a stuffed animal. Fill a plastic spray bottle with water.

Explain the following scenario to the volunteers and perform the skit:

Mother: Children, it's time for lunch.

Child I: Look Mommy, there's a bug on the floor.

Mother: Oh no, I better get the bug spray. [Goes and sprays the bug on the floor]

ChildI I:(Drops her teddy bear on the floor where the mother had just sprayed. Child gets down and crawls on the wet floor, dragging teddy bear over the wet floor.) Hey mommy, my teddy bear fell down. [Touches toy and puts hand or toy in mouth.] Now my teddy bear is all better (child pats teddy bear).

When the role play is over, thank the volunteers and ask the group the following questions:

? Did the pesticide spray get into the children's bodies? If so, how?

- The younger child touched the pesticide and it entered her body through the skin. The younger child also touched the pesticides and then put her hand in her mouth and the pesticides got in her body through her mouth.
- The younger child touched the pesticide contaminated toy and then put her hand in her mouth; as such the pesticide entered through the skin on her hand and her mouth.

? How else can pesticides enter your body?

- When pesticides are applied as a gas (like a fogger), you can breathe them in.

? What is the most common way that pesticides get in the body?

- The most common route of entry is through the skin.

** Myth **

Some people think that our skin is an impermeable or water-tight barrier blocking pesticide entry. Explain that the skin is our body's largest organ and that it is very absorbent. Demonstrate by applying hand lotion – see how quickly it's absorbed.

Some of the most serious injuries for children occur when kids directly swallow pesticides. Summarize for the group that the three most common routes by which pesticides enter the body are: through the skin, through the mouth, and by breathing them in.

Pesticide Labels and the Product's Harmfulness (Toxicity)

Group Discussion
Time: 15 minutes
Materials: 2 bottles filled with water, an enlarged sample pesticide label or can of pesticide spray, flip chart and markers

Hold up two bottles of liquid that are the same color (e.g., water). Ask the group, if both bottles contain pesticides, how could you tell which one is more harmful than the other? Can we tell by the color? Or Smell?

** Myth **

Some people think that the most harmful pesticides have a bad smell. Explain that you can't tell how dangerous a pesticide is by its color or smell. Some products, like insect repellent, have a piney smell even though they may contain dangerous chemical ingredients.

Questions for discussion

? What kinds of information would you like to know to determine which pesticide is more dangerous?

- You would want to know which one was more poisonous (which could cause harm quickly). You would also want to know which one causes chronic or long-term health effects, such as cancer, birth defects, or infertility.

When a chemical causes harmful health effects, it is described as "toxic" or a poison. Most chemical pesticides are toxic or poisonous. For that reason it is better to solve pest problems without using them. Later on we will talk about alternative approaches to pest problems such as prevention (i.e., through cleaning or caulking) and low risk alternatives (i.e., boric acid or traps).

? When you buy a commercial pesticide how can you find out how hazardous it is to your health?

- There is some information about the acute or immediate effects of the pesticide's active ingredient on the pesticide label.
  - If the pesticide contains an active ingredient which is very poisonous, there will be a skull and cross bones on the pesticide label and the word "**Danger**."
  - On moderately poisonous products, the pesticide label will say "**Warning**."

- For less immediately harmful products, the label will say "**Caution**."
- For products that are less immediately harmful, the label will say "Caution."

Pesticide labels rarely provide information about the long-term effects that may occur from exposure to the product. In fact, many pesticides that cause severe long-term health effects like cancer, are the least immediately harmful. As such, the absence of a skull and cross bones does *not* mean that the product is safe. In addition, the likelihood of injury from a product also depends on how much of the product is comprised of the active ingredient, the amount of the pesticide that is absorbed by the body and the length of time a person is exposed to the pesticide.

Pesticide labels contain other very important information. For example, the label states the appropriate uses for the product, how much to use, use directions and what protective equipment to use. All of these label directions should be carefully followed. Failure to follow the label directions can lead to injury. In the mid-1990's, for example, hundreds of people used a very poisonous agricultural chemical (methyl parathion) to kill pests in homes, even though the product was designed for outdoor use only. The result was that some people were injured and hundreds of homes became unfit to live in due to chemical contamination. The harm occurred because the product breaks down (and becomes less toxic) in the presence of sun and rain, which can't take place indoors. This product is still available in Mexico and is often sold to people as a household pesticide known as "*polvo de avion.*"

To review, summarize the key information that is available on the pesticide label. You may want to bring in a can of pesticide spray to show the group.

IV. What To Do in Case of Pesticide Poisoning at Home

Reducing exposure

Group Discussion
Time: 5 minutes

Recall the skit from the previous section.

? What should the mother have done after spraying to reduce pesticide exposure to herself and her children?

- Bathe the children with water, soap & shampoo right away
- Put clean clothing on the children

- Wash the children's contaminated clothes and contaminated stuffed animal in hot water and detergent separate from other clothing
- Wash table, floor, plates, and utensils which may have been contaminated with hot water and detergent

? What's the purpose of washing and changing clothing?

- By washing and changing clothing, you limit your exposure to the pesticide. The sooner you eliminate exposure, the better. It is also important to wash contaminated clothing separately from the rest of the family's clothing to avoid spreading the pesticide contamination to the other clothing. Wash pesticide contaminated clothing in hot water with detergent. When washing contaminated clothing by hand, wear rubber gloves. If your clothing gets wet, while hand washing contaminated clothes, change immediately.

? What should you do if you get pesticides in your eyes?

- You should rinse them with water for at least 15 minutes.

Emergency Situations

Role play
Time: 15 minutes
Materials: 2 volunteers, spray can or spray bottle

Ask for two volunteers. Ask one to play the mother and the other to play her child. Ask the group to recall the skit from the previous section and to suppose that one of the children sprayed with household pesticides began to feel sick.

Explain the following scenario to the volunteers and perform the role play:

Child: Mommy, I feel really sick in my tummy. [Pretends to throw up.]

Mother then has to decide what to do. If she decides to call poison control, the Trainer should play the role of the poison control operator. Ask the mother for the following information:

- The child's age, weight & symptoms
- Name of the product used
- Time of poisoning and when symptoms began
- Amount ingested
- Was anyone else exposed and experiencing similar symptoms?

If the mother decides to take her child to an emergency room, the Trainer should play the role of the admitting nurse. Ask the mother the same questions as above, and ask if she has brought with her the product that the child was poisoned with.

The mother may decide to try to medicate the child herself.

After the role play, ask the group if they think the mother did the right thing. What should she have done differently? What else could or should she have done? What did she do correctly?

* Review *
Explain to the group that it is important to seek medical attention when is someone is poisoned by pesticides. They should explain to the health care provider that they suspect pesticide exposure and the how the exposure occurred. It is important to emphasize that when someone is experiencing one of the serious health effects discussed earlier (e.g., loss of consciousness, foaming at the mouth or nose) he or she should always get medical assistance immediately.

V. Avoiding the Use of Toxic Pesticides at Home

Exposure to Toxic Pesticides – Brain Storming Activity
Time: 20 minutes
Materials: flip chart, markers, tape

Divide the group into two teams. Give each team two sheets of flip chart paper and a marker. Remind the group that this story and the earlier skit (with the mother and her children) demonstrated one common way in which children are exposed to pesticides. Give both groups five minutes to list ways in which children could be exposed to pesticides. When they have finished, ask each group to tape the list onto a wall and to select a representative to read the list aloud. Add to their lists any of the following responses they might have missed:

- Spraying for bugs in the home (even if done by a commercial exterminator)
- Use of pesticides on lawns or in gardens
- Use of flea collars, flea shampoos or pesticides products on pets
- Accidental ingestion of pesticides improperly used or stored
- Playing in treated fields
- Playing outdoors while pesticides are applied nearby

- Drift onto outdoor play areas
- Swimming in irrigation ditches or canals that contain runoff from pesticide-treated fields
- Use of pesticides in schools or day care centers
- Use of pesticides in parks
- Lice shampoos
- Insect repellants
- Unwashed fruits and vegetables
- Pesticides on their parents' clothing, skin or hair

Next, give the groups three minutes to list things what a parent can do to reduce or eliminate these exposures. Try to draw out the following responses:

- Avoid using chemical pesticides in the home, or on the lawn or garden
- Store pesticide products away from children
- Don't use pesticides in areas where children are likely to be present or on surfaces which children are likely to touch
- Wash children's hands frequently after they play outside or play on the floor
- Keep children inside with doors and windows closed when pesticides are being sprayed nearby
- Use non-toxic products for lice (e.g., combs, Lice-B-gone)
- Use alternatives to toxic chemicals for flea protection
- Use alternatives to toxic chemicals for insect repellants
- Wash fruits and vegetables before serving them to children
- Wash pesticide-contaminated clothing separately from family clothing
- Ask to be notified if pesticides are used in your child's school or day care center
- Never take pesticides home from work and never transfer pesticides out of their original containers
- Never use empty pesticide containers around the home

Less toxic alternatives

Many people use chemical pesticides to get rid of insects, rodents or weeds in their home or garden. The EPA estimates that 75 percent of U.S. households use at least one pesticide product indoors each year. Products used most often are insecticides and disinfectants. Measurable levels of up to a dozen pesticides can be found in the air inside most U.S. homes. Pest problems can be avoided and eliminated without using toxic chemicals.

Group Discussion
Time: 30 minutes
Materials: flip chart, markers, tape, Handouts 5, 6, 7 & 8

Ask the group what they consider to be the most common insect, rodent or weed problems they experience at home. Divide the group into four. Give each team a sheet of flip chart paper and a marker. Assign a different pest (from the ones they just listed) to each group and ask them to discuss the following questions and write their responses on the flip chart paper:

1. What do you usually do about this pest?
2. How could you handle this problem without using toxic chemical pesticides?

Give the groups 5 minutes to discuss their "pest" and allow a spokesperson from each group 2 minutes to repeat the group's suggestions for non-toxic ways to handle the problem. Their ideas might include the following.

<u>Cockroaches</u>
You can control cockroaches by taking some simple steps.

1. Find them. Look for evidence of cockroaches, such as living or dead roaches, their egg cases, or their feces. Place sticky traps in areas where you suspect the cockroaches are living.
2. Deny them shelter, food and water. Focus your efforts on areas where you find the largest number of roaches. Prevent them from entering your home by repairing and sealing cracks and crevices and holes around pipes, telephone wires, TV cables, and vents. Remove any sources of food and water.
3. Kill them. If you still see roaches after taking the steps above, try using less toxic products like boric acid powder, sticky traps and bait to kill the remaining pests. Boric acid is toxic especially to children and pets and it is better to use in places where children and pets can't get at it. Sticky traps are best for areas where there are a lot of roaches.

By combining prevention with less toxic pesticides and sticky traps, most roaches will be removed within a month. Common household products designed to kill roaches (such as Black Flag or Raid contain chemicals that are harmful to the nervous system. The EPA has recently banned a chemical (e.g., diazinon and chlorpyrifos, also known as dursban or lorsban) that were used in Raid, Black Flag and other household products. If you have these products, you should get rid of them.

Distribute Handout 5: Cockroaches.

Ants

To get rid of ants in your home, you can do several things.

1. Find their point of entry and seal it. Follow their trail and temporarily seal the points of entry with petroleum jelly (Vaseline) until you can permanently seal them with silicone. In the areas where there are a lot of ants, spray or wipe the area with soap and water or with a fifty-fifty solution of vinegar and water.
2. Destroy the nest. If you know where the ant nest is, pour 1-2 gallons of boiling water onto individual ant hills. If you cannot find the nest, you can set boric acid baits near their point of entry.

Fleas

A home with a pet that spends time outdoors is a home with fleas and it is very hard to completely get rid of fleas in a safe way. Flea control is a matter of reducing their number so that it is tolerable to you, your family, and your pet. To completely get rid of fleas usually means using a lot of toxic chemicals, and that is something to avoid.

To find out where there are a lot of fleas in your house or if your house has fleas, put a white piece of paper on the floor. Because fleas are attracted to anything white, the fleas will jump onto the paper.

Here are some tips to control fleas:

- Groom your pet using a flea comb to inspect for and remove fleas
- Vacuum often and immediately dispose of the vacuum cleaner bag
- Wash pet bedding in hot water once a week
- Use soap and water to clean your pet's sleeping areas
- Shampoo your pet regularly with plain soap & water or grooming shampoo (without pesticides)
- Ask your veterinarian for pills to give your pet that will prevent fleas from laying eggs (called "pheromones")

Distribute Handout 6: Ants and Fleas.

Mosquitoes

Common insect repellants like OFF contain the chemical DEET, which can be harmful to infants and children. It can affect the child's nervous system. Instead of applying chemically-based insect repellents, one can use products which contain citronella

(this is a grass, so it shouldn't be used on children who are allergic to grasses), eucalyptus oil or other natural products.

The most effective way to reduce a local mosquito population is to remove their breeding areas in sources of standing water, such as old car tires, clogged gutters, planters, bird baths, or tree stump holes. Empty children's swimming pools when not in use. Other easy steps to consider include:

- Keep grass cut short and trim shrubs to minimize hiding places for adult mosquitoes
- Wear a hat and light-colored, loose-fitting clothing (avoid wearing bright colors or flowery prints)
- Avoid using scented soaps and shampoos, lotions, oils or perfumes, including tanning products
- Incandescent lights attract mosquitoes so use florescent lights instead since they neither attract nor repel them
- Burn citronella candles (outdoors only)

Distribute Handout 7: Mosquito Control.

<u>Lice</u>
Many common lice shampoos contain harmful pesticides like lindane (which may cause cancer or damage the nervous system). This is true of products made in the U.S. or Mexico (e.g., HERKLIN shampoo.) One alternative is to use combs or products that are not insecticides, but rather interfere with the surface of the lice, like Lice BGONE.

* Review*
Household insecticides may contain dangerous chemicals. It is always important to read the label to find out the ingredients. Sometimes products made in Mexico contain more harmful ingredients than similar products made in the United States.

Questions for discussion

? If you MUST use toxic pesticides in the home, how can you best protect yourself and your family?

- Store all pesticides in their original containers in areas where children and pets cannot get at them.
- Read the label and follow directions.
- Try to minimize your exposure to the pesticide.
- Wear protective clothing such as long-sleeved shirts and rubber gloves when necessary.

- Wash application equipment, hands, and clothing after using pesticides.
- Do not use pesticides designed for crops in the home.

Distribute Handout 8: Warnings about Home Use of Pesticides.

PART TWO: PESTICIDE SAFETY ON THE FARM

I. Reducing Pesticide Exposures in the Fields

Drawings and Discussion
Time: 1 hour
Materials: Red and yellow ribbon, tape, blank sheets of pink and yellow colored paper, markers, flip chart, Handouts 9, 10, 11 & 12

On one wall of the room, tape a yard of red ribbon horizontally, as high up as you can reach. To the right of this ribbon and continuing the same line, tape a yard of yellow ribbon. Explain to the group that these ribbons represent a timeline of pesticide exposure in the fields.

The RED ZONE represents the period of time during and immediately after application of pesticides to the field. This is when the pesticide is most harmful and poses the highest risks to workers and applicators. The YELLOW ZONE represents the period following a pesticide application when the Restricted Entry Interval (REI) has ended and work has resumed in the area. (*Definition*: the REI is the time period set by EPA, when no hand labor can be performed in an area which was recently treated with pesticides). During the Yellow Zone time period, the pesticide has had some time to degrade through exposure to the sun, wind, dew and rain, but it may still be hazardous to workers. Even though the pesticide is not visible, its residue is still present in the soil and on the plants.

Distribute blank sheets of pink colored paper and markers to half of the group. Distribute blank sheets of yellow colored paper and markers to the other half. Ask those with pink paper to think of a situation of high risk to workers that would come within the RED ZONE. Ask them to draw a picture of one such a high-risk situation. Ask those with yellow paper to think about how workers or their families can be exposed to pesticides during the YELLOW ZONE, i.e., after the REI has expired, and to draw a scene that shows such exposure. Explain that they don't have to be skilled

artists to do this exercise – stick figures will be fine! They will also have a chance to explain what they have drawn.

Give them about five minutes to draw. One at a time, ask those who drew on pink paper to briefly explain his or her picture. Tape the drawings to the wall underneath the red ribbon. Some of the situations they draw might include direct spraying of workers or exposure through drift, entering the field when it is posted with a warning sign and before the REI has expired, applying a pesticide without required protective equipment, etc.

Next, ask those who drew on yellow paper to briefly explain his or her picture. Tape the drawings underneath the yellow ribbon. Their drawings might represent one of the following situations: a worker not washing hands before eating or using the bathroom, a worker who isn't wearing adequate clothing to work, a worker who embraces her children after work, without first washing her hands or changing clothes, a worker who brings home an empty pesticide container, etc.

Next, ask the group to think of the protections growers are required to provide to pesticide handlers or field workers against the harmful effects of pesticides during the RED ZONE period. Write their answers on the flip chart. Their responses might include protections such as REIs, warning signs, gloves or other personal protective equipment (PPE), wash water, transportation to a clinic, etc.

? What could employers do to protect workers from the harmful situations that occurred during the yellow zone?

- Provide safety training
- Provide decontamination water
- Post a list of pesticides used in the previous 30 days
- Provide transportation to workers who believe they have become ill due to pesticide exposure

Employers' Responsibilities

Questions for discussion

? Are employers required to protect the farmworkers from pesticide exposures in any way?

- Yes. The Worker Protection Standard (WPS) is a federal law that has important protections that are designed to reduce farmworker exposure to pesticides.

Distribute Handout 9: Important Protections in the Worker Protection Standard. Explain the following key points of the WPS.

For field workers, the key provisions of the WPS are:

- Training: Right of all workers to receive basic pesticide safety training once every 5 years. Training must occur before the sixth day of work in an area that had been treated with pesticides (or covered by an REI) within the last 30 days. Training must be provided in a language, which the worker understands.
- Prohibition against direct spray or drift: Pesticides cannot be applied when unprotected people are in the field or would be exposed through drift.
- Restricted Entry Intervals: Workers have a right to be kept out of fields until the pesticide is not immediately harmful. This is called the Restricted Entry Interval (REI). Some exceptions apply (e.g., workers who would have minimum or no contact with treated surfaces, or they would work in the treated area for 1 hour or less). REIs are based on how immediately harmful the product is (also known as the ACUTE TOXICITY). The longer the REI, the more immediately harmful is the pesticide. Generally, for very poisonous pesticides, the REI is two days in the US east of Kansas (and three days West of Kansas). If the pesticide is moderately harmful, the REI is 24 hours, if the pesticide is not very immediately harmful, the REI will be 12 hours. For pesticides that are of low risk, the REI is 4 hours. Unprotected workers must always be kept out of a treated field for at least the first 4 hours after the pesticide was applied.
- Early Entry Worker Protections: When a worker is asked to work in a treated area before the REI has ended, a worker must be given the personal protective equipment (PPE) required for that pesticide which is stated on the pesticide label. The worker must also be allowed to read the pesticide label or be informed of the label information. Generally, early entry work cannot begin during the first 4 hours after the pesticide application (or until inhalation requirements specified on the pesticide label have been satisfied.)
- Warnings: Workers must be given oral or written warnings of when it is safe to reenter a field.
- Posting of Fields: When certain highly poisonous pesticides are applied, fields must be posted with Keep out/Danger/Pesticides signs. These signs must be posted no more than 24 hours before the application and taken down within 2 days after the expiration of the REI. The signs must be in English and Spanish

(or another language spoken by the majority of non-English speaking workers).

- Posting of a Pesticide List: In a central location accessible to workers, a grower must post a list of the pesticides, which were applied (or covered by an REI) during the last 30 days. The location of the treated fields, the time and date of the application, and the REI must also be stated.
- Posting of a Pesticide Safety Poster: Growers must post in a central location a pesticide safety poster which states basic safety tips and the name and address of a nearby medical facility where workers could seek treatment in case of exposure.
- Decontamination: Soap, water, and single-use towels must be readily available for washing or eye flushing within a quarter mile of where workers are working.
- Emergency Assistance: If a worker reasonably believes that he or she has become ill due to pesticide exposure on the job, the grower must transport the worker from the worksite or labor camp to a nearby health care facility. Upon request, the grower must provide the worker or a health care professional with the name of the pesticide, the pesticide label information and how the exposure occurred.
- Anti-retaliation Protection: Workers cannot be fired or punished for exercising their rights under the WPS.

For pesticide handlers (mixers, loaders and applicators):

- Pesticide handlers must be given training that includes information about how to read the pesticide label.
- Handlers must have an opportunity to read the label or have the label information explained to them in a manner they understand.
- Handlers must be informed of how to safely use pesticide equipment.
- Handlers must be given all the personal protective equipment (PPE) required for their tasks that are specified on the pesticide label. Equipment must be clean and fit properly. The employer is responsible for cleaning contaminated PPE after it is used.
- Soap, water, and single-use towels must be readily available for washing or eye flushing.
- Posting of a Pesticide Safety Poster: Growers must post in a central location a pesticide safety poster that states basic safety tips and the name and address of a nearby medical facility.
- Emergency Assistance: If a worker reasonably believes that he or she was exposed to pesticides on the job, the grower must transport the handler from the job site or labor camp to a nearby health care facility. Upon request, the grower must provide the

handler or a health care professional with the name of the pesticide, the pesticide label information, and the circumstances of the exposure.

- Anti-retaliation Protection: Workers cannot be fired or denied privileges of employment for exercising their rights under the WPS.

Worker's Responsibilities

Demonstration
Time: 5 minutes
Materials: fruit or vegetable, body powder, slice of dark bread

Take a piece of fruit or vegetable commonly harvested in the area (e.g., apple or tomato) and cover it with powder; also place a slice of dark bread on a table nearby. Ask a volunteer to "pick" the fruit or vegetable from your hand. Have the volunteer show the group the powder that has gotten onto his/her hands. Then, ask the volunteer to pick up the "sandwich." Have the volunteer show the group that the powder has gotten onto the sandwich as well.

Explain to the group that the talcum powder represents a pesticide which has been applied to the crop. After a pesticide is sprayed on a crop it leaves residues. You may not be able to see the residues, but they can be harmful. While picking, farmworkers get pesticide residues on their hands. When the farmworker's hands are contaminated, the worker often spreads the residues to other parts of the body when he wipes his face, eats, smokes or goes to the bathroom, without first washing his hands. Pesticide residues can enter the body through the skin. Pesticide residues on cigarette or sandwiches can enter the body by breathing the contaminated smoke or eating the contaminated food.

Next, ask the group to think about some ways that workers can protect themselves from exposure to pesticide residues. Write their answers on a flip chart. Responses might include: a worker showering and changing clothes immediately after work, a worker taking off her shoes before entering her home after work, a worker wearing long sleeved shirts and long pants to work, a worker sorting work clothes from family clothes to wash them separately, a worker reporting violations to a state agency, etc.

Review: Reducing Worker Exposure in the Fields

Distribute Handout 10: Reducing Pesticide Exposure on the Job. Review the ways in which workers can minimize their exposure to pesticides in the fields.

- Wear clean long sleeved shirts, long pants, socks, shoes, a hat, and gloves (if possible) to work each day.
- Change clothes and bathe as soon as you return home from work.
- While at work, wash hands before you eat, drink, or smoke. Wash hands before and after going to the bathroom.
- Eat lunch outside of the treated field.
- Keep out of recently treated fields. When you see posted warning signs, ask when the Restricted Entry Interval will end.
- If you are sprayed with pesticides directly or through drift or are exposed to pesticide residues on crops (before the REI has expired), wash the entire body (i.e. shower) as soon as possible. Leave the field quickly. Change clothes as soon as you can. If possible, find out the name of the pesticide. Seek medical attention.

** Myth **

Some people think that washing your hands with cold water while your body is hot will give you arthritis. This is not true. Washing with soap and water is the best way to remove pesticide residues from your skin.

Distribute Handout 11: Work Clothes.

Review the appropriate types of work clothes. Explain that even appropriate clothes cannot totally prevent exposure, but that clean clothes that cover the skin reduce exposure. Explain that cotton clothing is the most comfortable to wear because it allows sweat to evaporate and keeps the skin cooler.

Review: Protecting Farmworker Families

Distribute Handout 12: How Farmworkers Can Protect their Families from Pesticide Exposure. Review the ways in which farmworkers can expose their families to pesticide residues and what they can do to minimize these exposures.

- Never take pesticides home from work. Never transfer pesticides out of their original container. Never re-use empty pesticide containers.
- Wash work clothes separately from family clothes.
- Put a tarp or other covering over car seat when returning home from work in pesticide-contaminated clothes.
- Try to wash hands or bathe before touching children.

- Take off work shoes before entering the home.
- Bathe with water, soap and shampoo and change clothes as soon as you return home from work.

II. What To Do in Case of Pesticide Exposure in the Fields

Skit and Discussion
Time: 30 min.
Materials: Two baseball caps (one labeled APPLICATOR, the other labeled CREW LEADER), two oversized t-shirts, fruit (or fruit-shaped paper cut-outs), and body powder

Skit (Option 1)

Ask for four volunteers and ask them to act out the following scenario. Scene: Set up a mock field with fruit. Ask one of the volunteers to put on a baseball cap with the word APPLICATOR on the rim. As the pesticide applicator, the first volunteer will go in and apply a generous amount of powder to the fruit. After the application is completed, the three other volunteers will enter the field. One is wearing a baseball cap with the word CREW LEADER. The other two are field workers. The crew leader will constantly remind the workers to keep working as quickly as possible. The workers will pick up the fruit and get powder on their hands, clothing and bodies, after a while one of the workers will start complaining of feeling sick. What should the worker do?

(Option 2)

Ask the group to recall the skit from the previous section where a child got sick after she ingested some pesticide her mother sprayed. Ask the group to think about a similar situation in the field where a farmworker gets sick because of the pesticide residues on the crop.

Questions for discussion

? What should farmworkers do as soon as they begin to feel sick from pesticide exposure?
- While still in the field, wash the skin with soap and water.
- Leave the contaminated area as soon as possible
- Change clothes as soon as possible
- Bathe or shower with soap, water and shampoo

? What should a farmworker do if she gets pesticides in her eyes?
- She should rinse them with water for at least 15 minutes.

? Should the sick farmworker get medical attention?

- Yes. A farmworker should see a health professional whenever he or she has been exposed to pesticides on the job, whether he or she has immediate symptoms or not. By going to the doctor and documenting the exposure, he or she may be able to get workers compensation benefits if health problems related to pesticides later develop (for example, miscarriage, infertility, nervousness, memory loss).

? What information should a farmworker provide to the doctor or nurse?

- You suspect pesticide exposure and the circumstances in which the exposure occurred (e.g., direct spray, drift, pesticide residue on crop)
- The symptoms which occurred
- How soon after the exposure the symptoms began
- Whether anyone else on the crew was exposed and is experiencing similar symptoms
- The name of the pesticide (if you can find it out)

? When is it ALWAYS necessary to get medical assistance IMMEDIATELY?

- When someone is experiencing one of the serious health effects discussed earlier (e.g., loss of consciousness, foaming at the mouth or nose), he or she must always get immediate medical assistance.

III. Understanding Your Rights at Work

Group Discussion
Time: 30 min.
Materials: Flip chart and markers
Remind the group that we have just reviewed the most important protections available to farmworkers and pesticide handlers to protect them from pesticides.

Questions for discussion

? What can a worker do if his or her rights are violated?

? Where can she or he file a complaint for a violation of the WPS?

- Explain that complaints are filed with the state department of agriculture. (Provide specific referral information to participants). Complaints can be filed anonymously.

? Which agencies are available to help a worker if she believes that she was denied one or more of the protections available under the WPS?

- Workers can consult the nearest legal services agency, a union, a health care facility, a private attorney, other farmworker service providers, or the state department of agriculture.

Generally, workers who fear retaliation should seek assistance in filing a complaint. If a complaint is filed, the state agency will conduct an investigation. Generally, the investigator will speak to the grower, the complainant and other workers, the health care provider (if any), and other available witnesses. The worker and his witnesses can request an opportunity to speak to the investigator off the farm. When possible, it is important for the worker (or the worker's representative) to find out the name of the pesticide that was sprayed, the date of the application, and details about the violation. If a violation is found, the grower or applicator may be penalized. This could be a warning, a monetary fine, or in rare instances a criminal penalty.

? We have just discussed the protections available to workers under the WPS and how to enforce them. Do you think that these protections are enough?
? What other protections would you like to have?
? What's missing?
? How can you have input about the protections that are available under existing law?
? What other protections are needed?

Taking Collective Action

Ask the group why some workers are reluctant to complain to outside agencies when workers do not receive the protections to which they are entitled under the law. Try to elicit some the following responses: they don't know their rights; they are afraid of losing their jobs; they don't know how to file complaints; they don't trust the government agencies to keep their identities confidential; they don't trust the government agency to fairly investigate their complaints.

Ask the group what steps can be taken to address these concerns. Try to elicit some of the following responses:

- Educating workers about their right to file a confidential complaint
- Educating workers about how and where to file complaints

- Linking workers to unions, legal aid offices and farmworker groups which can help them file complaints and assist them if they suffer retaliation
- Workers forming or joining unions or farmworker groups to work together

Ask the participants what steps a farmworker group could take to help improve conditions at work. Try to elicit some of the following responses: the group could negotiate an agreement with the employer to reduce the use of harmful pesticides or improve safety practices; the group could ask government agencies to prohibit the use of extremely hazardous substances, etc.

Ask the group to identify some groups or agencies in their area that farmworkers could turn to for assistance in filing complaints or seeking to improve workplace safety conditions.

***Workers Compensation**:*

? How can workers file a workers compensation insurance claim to pay for medical treatment or recover lost wages when they are injured by pesticides on the job or suffer other pesticide related injury?

- In some states, farmworkers are covered by workers compensation. In others, a worker could get monetary reward through a lawsuit. It is important for the worker to consult legal services or a private attorney if she would like to receive compensation following a pesticide exposure.

Workers compensation coverage varies from state to state. (Consult FJF's Workers Compensation Manual for information about each state.) Generally, 13 states provide full coverage for farmworkers, 25 states provide partial coverage and 12 states provide no mandatory coverage. When available, workers compensation benefits will cover medical treatment and provide partial reimbursement for lost wages. Each state has its own process for recovering workers compensation benefits. At a minimum, a worker (or his representative) must notify the employer of the injury soon after it occurs. The worker (or treating physician) must file a claim for benefits within a specified time after the injury (usually 6 months to 2 years). The state law will also specify whether the worker or the employer chooses the treating physician and the extent to which monetary benefits are available.

IV. Farmworkers and Field Sanitation

Group Discussion
Time: 30 min.
Materials: Flip chart and markers, Handouts 13 and 14

We have seen the importance of having drinking water and hand washing facilities in the field in the event of a pesticide contamination incident. That is one reason why there is a federal regulation called the Field Sanitation Standard that establishes the minimum water and hygiene facilities that an employer must provide his/her workers. Some states have regulations as well, but the federal rule establishes the minimum standards for all states.

Questions for discussion

For those of you who are or have been farmworkers:

- **?** Were toilets available to you when you worked in the field?
- **?** How far away were the toilets from where you worked?
- **?** Were the toilets clean?
- **?** Were handwashing facilities, soap and towels available next to the toilets?
- **?** Were cool drinking water and individual cups available?

For everyone:

? What are the minimum requirements for water and sanitation in the field?

- At farms that employ 11 or more workers, employers must provide
  - a toilet and toilet paper within ¼ mile of their work area
  - handwashing facilities and disposable paper towels within ¼ mile of their work area
  - plenty of cool, clean drinking water and single use cups

- Some states have laws that are more protective. For example:
  - Arizona -- toilets, handwashing facilities, and drinking water must be provided by any employer with five or more workers
  - California – employers of even one worker must provide toilets, handwashing facilities, and drinking water

Distribute Handout 13: Field Sanitation.

Heat Stroke
Drinking lots of water is very important when working in the fields. It helps prevent very common and dangerous health effects called heat stress or heat stroke. Even young and healthy farmworkers can get heat stress when doing hard work in conditions of high heat and humidity. Almost every year, farmworkers die of heat stress. Symptoms of heat stress include:

- Headache
- Confusion
- Extreme thirst
- Nausea
- Heavy sweating
- General fatigue
- Stomach or leg cramps

When workers are exhibiting symptoms of heat stress it is essential to get them to a hospital immediately.

? What are other ways to prevent heat stroke?
- Drink plenty of water
- Take frequent rest breaks in the shade.
- Wear cotton clothing.
- Avoid sun exposure (when possible) at peak hours
- Wear a hat

Distribute Handout 14: “Controlling Heat Stress” Cards.

V. Reviewing Some Important Information About Pesticides

Pesticide Bingo (Option 1)
Time: 30 minutes
Materials: EPA Pesticide Safety Bingo, bingo markers (for example, beads, dried beans, cut-out dots, etc.)

Game Show (Option 2)
Time: 45 minutes
Materials: 20 pieces of paper, with game categories or dollar amounts written or printed on them, tape

Tape pieces of paper or cardboard on a bare wall, each with one of the following categories or dollar amounts printed on it, arranged in the following order:

Myths and Legends	Toys and Tools	Risky Business	Healthy Hints
$100	$100	$100	$100
$200	$200	$200	$200
$300	$300	$300	$300
$400	$400	$400	$400

Explain to the group that they are going to play a game to review what they've learned. Ask for eight volunteers to step forward and divide them into two teams of four. Taking turns, each team chooses a category and the amount of money they want to play for. The facilitator takes the chosen amount from the wall and reads the corresponding question. Team members can confer with each other on their response. Each team gets (fake) money for each correct question (questions are worth $100, $200, $300 and $400). The team with the most money at the end of the game wins a small prize. You can use the paper with the dollar amount written on it as the fake money.

Category 1: Myths and Legends

Q1. True or False: Pesticides are like medicine and are not harmful to people. (False)

Q2. True or False: Washing your hands with cold water while working in the fields will cause rheumatism. (False)

Q3. Is it okay to put DEET insect repellent on children under 6? What else could you do to keep mosquitoes from biting a baby? (False. Dress him in a hat and light-colored, loose-fitting clothing.)

Q4. True or false: A pesticide's smell will not tell you how dangerous the chemical is. (True. How can you know how toxic a chemical is? Look at the label for information on toxicity.)

Category 2: Toys and Tools

Q1. What does a posted warning sign tell you? (To stay out of a field.)

Q2. Name three types of information that are on a pesticide label? (The name of the pesticide. How poisonous or dangerous it is. How to apply it correctly. What kind of protective clothing or equipment you should use around it.)

Q3. Name 4 occasions when you should wash your hands in the field to minimize pesticide exposure. (BEFORE AND AFTER using the toilet, before eating, before drinking, before smoking.)

Q4. Name 4 things a farmworker can do to prevent his/her family from coming in contact with pesticides from the fields. (Wash work clothes separately from family laundry. Take off shoes before entering the home. Bathe before touching anyone in the family. Wash hands and change out of work clothes before touching anyone in the family. Don't bring home agricultural pesticides. Don't bring home empty pesticide containers.)

Category 3: Risky Business

Q1. What kinds of people are most at risk of harm from pesticide exposure? (Babies, young children and pregnant women.)

Q2. Name 2 products that can put your family at risk of pesticide exposure if used at home. (Agricultural pesticides, used pesticide containers or illegal pesticides.)

Q3. What is a restricted entry interval? (The time period when one should not go into a field that has been sprayed with pesticides.)

Q4. What are three ways to prevent heat stroke? (drink plenty of water; take rest breaks in the shade; wear cotton clothing; avoid sun exposure at peak hours; wear a hat)

Category 4: Healthy Hints

Q1. Name three immediate symptoms of pesticide exposure. (Nausea, vomiting, headache, dizziness, irritation in eyes, inability to sleep, skin rashes, blurred vision, drooling, and unconsciousness.)

Q2. Name three long-term effects of pesticide exposure. (Cancer, birth defects, miscarriage, and sterility.)

Q3. Name 2 products that will kill ants without putting people at great risk. (Water and vinegar, sticky traps, or boric acid.)

Q4. Name 5 types of clothing that will reduce pesticide exposure to farmworkers who work in the field. (Long pants, long-sleeved shirts, hat, gloves, shoes, and socks.)

VI. Promoting Pesticide Safety in the Community

Role Plays
Time: 45 minutes

Divide participants into groups of four. Give each group about 10 minutes to prepare one of the following role plays. Remind the participants that the most effective way to educate the community is to engage individuals in a dialogue. Encourage participants to ask many questions of the community member during their roles as *promotores* to facilitate this exchange of ideas. Note that simply lecturing to the community members is likely to turn them off. Tell them that they are welcome to use any of the materials and props that were used during the workshop. Visit each group as they are preparing to see if they have any questions. Have each group present their role play to the rest of the participants. After each group presents their role play, be sure to provide feed back. Ask the other participants to help you provide comments that are both positive and useful.

- *Promotores de salud* visit a farmworker couple and explain some of the health effects of exposure to pesticides. The male farmworker tells the *promotores* that he has worked in the fields for 15 years and has never gotten sick from pesticides.

- *Promotores de salud* visit farmworker parents and explain how they can protect their children from pesticides, including protecting them from dangers they might bring home from the fields.

- *Promotores de salud* visit a woman at home (or in the fields) and explain the importance of washing hands to avoid pesticide exposure. The woman tells the *promotores* that she avoids washing her hands when her body is "hot" to avoid developing rheumatism or arthritis.

- *Promotores de salud* visit a neighbor's home and explain some of the dangers of using pesticides inside the home. The neighbor tells them she has a cockroach problem and wants advice on how to get rid of the roaches without using harmful pesticides.

Distribute the EPA pesticide safety booklet “Protect Yourself from Pesticides.” Explain to the group that they should distribute these booklets when discussing pesticide information in the community. Tell them that there is not enough time to go over all of the contents

in the booklet during this workshop, but that it reviews many of the points made today.

Distribute the “Aunque Cerca….Sano” comic book about pesticide safety at home for farmworkers. Explain to the group that they should distribute these booklets when discussing pesticide safety with farmworkers.

VII. Conclusion and Evaluation

Time: 15 minutes
Materials: Pesticide Post-tests, Evaluation forms

Ask the group if there are any questions or comments. Distribute any materials that they will be giving to members of the community, including referral information to nearby health clinics, governmental agencies, legal services organizations and community-based organizations.

Distribute the post-test and workshop evaluation forms. Review the correct answers for the pre- and post-tests.

VIII. Sources

The Farmworker Health and Safety Institute, *Danger: We Work With Poisons,* 1994

Marion Moses, MD, *Harvest of Sorrow,* 1988

Marion Moses, MD, *Designer Poisons,* 1995

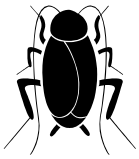
Migrant Clinicians Network and Farm Safety for Just Kids, *Aunque Cerca….Sano*, 2002

US Environmental Protection Agency, *Protect Yourself from Pesticides: Guide for Agricultural Workers*, Office of Prevention, Pesticides and Toxic Substances, Publication No. 735-B-93-002, July 1993

Worker Protection Standard, 40 C.F.R. Parts 156 and 170III

PESTICIDE WORKSHOP OBJECTIVES

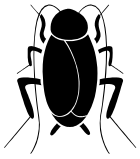
- Understand how pesticides affect humans
- Discuss what to do in case of a pesticide exposure at home
- Learn how you can protect children from pesticide exposure
- Learn about alternatives to the use of chemical pesticides at home
- Learn how farmworkers can protect themselves from pesticide exposure in the fields
- Know what to do in case of pesticide exposure on a farm
- Understand your rights to a safe workplace



COCKROACHES

You can control cockroaches by taking some simple steps.

1. Find them
2. Deny them shelter, food and water
3. Kill them



1. Find them.

Look for evidence of cockroaches, such as living or dead roaches, their egg cases, or their feces (small dark brown pellets). Place sticky traps in areas where you suspect the cockroaches are living, like under a sink, behind the refrigerator or stove, or in the back of a kitchen cabinet. You can buy sticky traps wherever insecticides are sold. Place the traps against the wall because roaches like to stay along the edges of floors. Check on the traps during the next week or two and dispose of them when they have collected a large amount of roaches. Remember which areas have the greatest concentration of roaches.

2. Deny them shelter, food and water.

Shelter: Cockroaches live in small tight places and prefer to live on porous surfaces like wood, paper, cardboard, insulation and cloth. Focus your efforts on areas where you caught the largest number of roaches in the sticky traps. Deny them shelter by organizing storage areas and cleaning all surfaces (removing clutter). Also,

- seal all cracks and crevices with silicone caulk
- put screens over vents and pipes that open to the outside
- seal spaces around corners and pipes

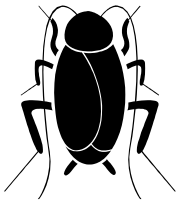
Food

- seal up boxes and bags of food
- don't leave bowls of pet food or water out over night
- pick up dirty dishes and clean and dry them right away
- wipe up spills and crumbs
- keep a tight lid on trash and remove frequently

Water

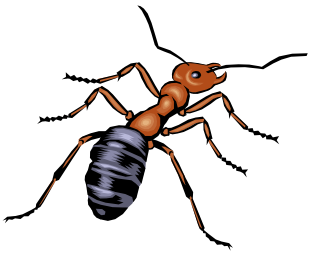
- drain dishwater from the sink
- fix leaky faucets and plumbing
- empty excess water in flower pots and plant stands
- insulate cold water pipes to prevent condensation

3. Kill them.



If you still see roaches after taking the steps above, try using less toxic products like boric acid powder and bait stations to kill the remaining pests. Sprinkle the boric acid powder into cracks and crevices where roaches live. Set bait stations or sprinkle boric acid around baseboards, under and behind refrigerator, stove, sink, dishwasher, washing machine and dryer. Roaches will eat the boric acid and the poison in the stations and will also carry the poison back to their nests on their legs. Boric acid is toxic to small children and animals, so do not apply it in areas where children or pets can reach it.

ANTS



To get rid of ants in your home, you can do several things:

1. Find their point of entry and seal it.
2. Destroy the nest.

Find their point of entry.

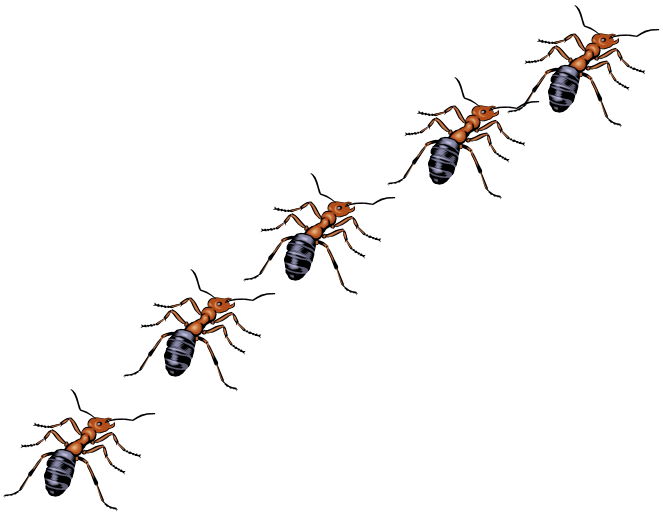
Follow the trail of ants until you find where they are entering your home. Try to prevent their entry with fresh lemon juice and lemon peel, chalk, damp coffee grounds, bone meal, charcoal dust or cayenne pepper. You can also temporarily seal the area with Vaseline, until you can permanently seal it with silicone caulk.

In the areas where there are a lot of ants spray or wipe the area with soap and water or with a fifty-fifty solution of vinegar and water.

Destroy the nest.

If you cannot find the nest, you can set boric acid baits near their point of entry. You can buy boric acid baits at a hardware store or you can make your own trap by mixing 2 teaspoons of boric acid powder, 4 ounces of water and a teaspoon of sugar and placing the mixture into a lid or shallow container. The ants will ingest the mixture and carry it back to their nest to poison the others. Place the baits out of the reach of children and pets since boric acid is toxic if ingested.

If you know where the ant nest is, pour 1-2 gallons of boiling water onto individual ant hills. Be careful not to spill water on any neighboring vegetation that you want to keep.



FLEAS

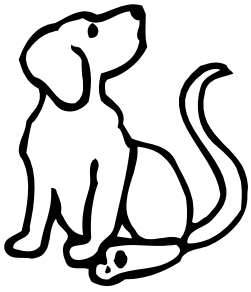
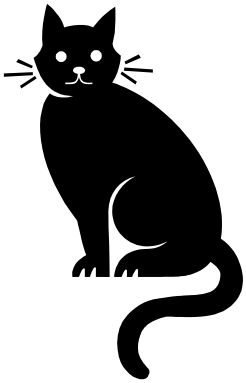
If you have a pet with fleas, try the following measures to control the fleas:

- Groom your pet using a flea comb to inspect for and remove fleas
- Vacuum often and immediately dispose of the vacuum cleaner bag
- Wash pet bedding in hot water once a week
- Use soap and water to clean your pet's sleeping areas
- Shampoo your pet regularly with plain soap & water or grooming shampoo (without pesticides)



If these steps are not enough, you may need to buy a less-toxic product:

- pheromone pills (from veterinarian) to reduce the flea population
- products labeled "insect growth regulators" or "IGRs" to kill the offspring of any fleas currently on your pet. Three common IGRs available at most pet stores are named "Program", "Nylar," and "Biolar"
- Avoid using any product listing the following chemicals as the active ingredient: chlorpyrifos, dichlorvos, phosmet, naled, tetrachlorvinphos, diazinon, malathion, carbaryl and propoxur. These chemicals are dangerous to adults and children.

Mosquito Control

Reduce the Risk

The most effective way to reduce a local mosquito population is to remove their breeding areas in sources of standing water, such as old discarded tires, clogged gutters, planters, bird baths, or tree stump holes. Empty children's swimming pools when not in use. Other easy steps to consider include:

- Keep grass cut short and trim shrubs to minimize hiding places for adult mosquitoes
- Wear a hat and light-colored, loose-fitting clothing (avoid wearing bright colors or flowery prints)
- Avoid using scented soaps and shampoos, lotions, oils or perfumes, including tanning products
- Consider appropriate lighting, incandescent lights attract mosquitoes, while florescent lights neither attract nor repel them

Repellents

Most insect repellents include the chemical DEET (N,N-diethyl-meta-toluamide). DEET is absorbed through the skin and can cause harm, especially to children. Other repellents include natural ingredients such as citronella, eucalyptus oil, or soybean, which are non-toxic and safer for use on children.

If you use a repellent with DEET, it should contain no more than 10 percent of the chemical. The concentration of DEET varies significantly from product to product, so read the label of any product you purchase. Repellents with DEET should be used sparingly on children 2 through 6 years of age and not at all on infants under the age of 2.

The US EPA recommends the following precautions when using insect repellents containing DEET:

- Apply only to exposed skin and/or clothing. Do not use under clothing.
- Never use repellents over cuts, wounds, or irritated skin.

- Do not apply to eyes and mouth, and apply sparingly around ears. When using sprays do not spray directly onto face; spray on hands first and then apply to face.
- Do not allow children to handle the products, and do not apply to children's hands. When using on children, apply to your own hands and then put it on the child.
- Do not spray in enclosed areas. Avoid breathing a repellent spray, and do not use it near food.
- Use just enough repellent to cover exposed skin and/or clothing. Heavy application and saturation is generally unnecessary for effectiveness; if biting insects do not respond to a thin film of repellent, then apply a bit more.
- After returning indoors, wash treated skin with soap and water or bathe. This is particularly important when repellents are used repeatedly in a day or on consecutive days. Also, wash treated clothing before wearing it again.
- If you suspect that you or your child are reacting to an insect repellent, discontinue use, wash treated skin, and then call your local poison control center. If/when you go to a doctor, take the repellent with you.


Sources: American Academy of Pediatrics, US EPA, Centers for Disease Control and Prevention

American Academy of Pediatrics, *Caring for Your Baby and Young Child: Birth to Age 5*, 2002; (see http://www.aap.org/pubserv/prev0-5.htm)

Centers for Disease Control and Prevention. Health Information for the International Traveler 2001-2002. Atlanta: US Department of Health and Human Services, Public Health Service, 2001.

WARNINGS ABOUT THE HOME USE OF PESTICIDES

Conventional pesticides may get rid of insects and other pests, but the cure can be worse than the problem. Pesticides used in and around the home can accidentally poison children, adults or pets. They also pollute the air and water. You can minimize pesticide exposure by taking some simple measures.

- Try to prevent bugs from entering your home in the first place,
- Use non-chemical methods of killing insects who do enter the home.

If you must use a chemical pesticide, many of the injuries that can occur during its application are preventable. Before any use, you should always:

- Read the label and follow directions.
- Try to minimize your exposure to the pesticide.
- Wear protective clothing such as long-sleeved shirts and rubber gloves when necessary.
- Wash application equipment, hands and clothing after using pesticides.
- Store all pesticides in their original containers in areas where children and pets cannot get at them.
- Dispose of used containers properly.
- Never use farm pesticides in the home.

NEVER USE AGRICULTURAL PESTICIDES AT HOME

Using farm pesticides in the home is dangerous and illegal. These chemicals are not designed to be used where people will be directly exposed. Farm pesticides properly used outdoors are broken down by sunlight, rain, and bacteria. Indoors, farm pesticides may last for years. You, your family, and pets may be harmed by pesticides misused indoors by swallowing them, breathing them in, or touching them with your skin.

When used indoors, farm pesticides can cause serious health problems including:

- Dizziness
- Blurred vision

- Headaches
- Difficulty breathing
- Confusion and memory loss
- Weakness and poor coordination
- Vomiting and diarrhea
- Death

It is also against the law to misuse pesticides. You must follow the label directions and never use a pesticide that does not have label directions.

Source: Texas Structural Pest Control Board

The Worker Protection Standard

The Worker Protection Standard (WPS) is a federal law designed to protect the health of farmworkers and pesticide handlers. Its requirements include:

Protection during applications

Applicators are prohibited from applying a pesticide in a way that will expose workers or other persons. Workers are excluded from areas while pesticides are being applied.

Restricted-entry intervals

Restricted-entry intervals must be specified on all agricultural plant pesticide product labels. Workers are excluded from entering a pesticide treated area during the restricted entry interval, with only narrow exceptions.

Personal protective equipment

Personal protective equipment must be provided and maintained for handlers and early-entry workers.

Notification of workers

Workers must be notified about treated areas so they may avoid inadvertent exposures.

Decontamination supplies

Handlers and workers must have an ample supply of water, soap, and towels for routine washing and emergency decontamination.

Emergency assistance

Transportation must be made available to a medical care facility if a worker or handler may have been poisoned or injured. Information must be provided about the pesticide to which the person may have been exposed.

Pesticide safety training and safety posters

Training is required for all workers and handlers, and a pesticide safety poster must be displayed.

Access to labeling and site specific information

Handlers and workers must be informed of pesticide label requirements. Central posting of recent pesticide applications is required.

REDUCING PESTICIDE EXPOSURE ON THE JOB

Farmworkers can take a number of steps to reduce their risk of pesticide exposure on the job. They include:

- Wear a long-sleeved shirt, long pants, socks, shoes, hat, and gloves (if possible) to work each day.

- Change clothes and bathe as soon as possible after returning home from work.

- While at work, wash hands **before** you eat, drink, smoke or go to the bathroom. Wash hands **after** going to the bathroom.

- Try to eat lunch outside of the treated field or areas where pesticides are stored.

- Do not enter a field that was recently treated with pesticides or that displays a poster warning that pesticides have been sprayed. When you see a posted field, ask when the Restricted Entry Interval ended.

- If you are sprayed with pesticides directly or through drift or otherwise believe that pesticides are on your body, wash as soon as possible with the water available in the field. If possible, find out the name of the pesticide and seek medical attention.

HOW FARMWORKERS CAN PROTECT THEIR FAMILIES FROM PESTICIDE EXPOSURE

Farmworkers can take a number of steps to protect their families from pesticide exposure. They include:

- Never take home pesticides from work. Never transfer pesticides from their original container to another that children could mistake for drink or food containers (e.g., coke bottle).

- Wash work clothes with detergent and hot water before wearing them again. Wash work clothes separately from the family's clothes.

- Put a tarp or other covering over car seat when returning home from work in pesticide-contaminated clothes.

- Try to wash hands or bathe and change out of work clothes before touching children.

- Take off work shoes before entering the home.

- Shower (or bathe) with water, soap and shampoo and change clothes as soon as possible after returning home from work.

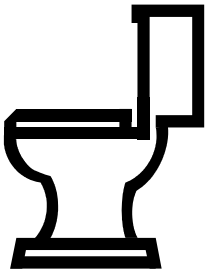
FIELD SANITATION

Federal Requirements

Employers with 11 or more workers in the field are required to provide:

Drinking Water

- adequate amounts of cool, potable water
- kept in clean, covered containers, refilled as necessary
- single use cups accessible to workers and within a $\frac{1}{4}$ mile from their work area



Toilets

- accessible to workers and within a $\frac{1}{4}$ mile from their work area
- one toilet for each 20 workers
- clean and in good condition
- safe and sanitary disposal of wastes
- private and ventilated
- doors that can be closed and latched from inside

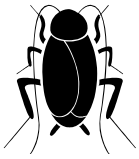
Hand Washing Facilities

- accessible and close to the toilets
- adequate supply of potable water, soap and single use towels

Some states have more protective laws.

OBJETIVOS DEL TALLER DE PESTICIDAS

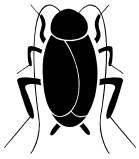
- Entender como los pesticidas afectan a los humanos
- Discutir que hacer en caso de envenenamiento por pesticidas en casa
- Aprender como proteger a los niños de los pesticidas
- Aprender como evitar el uso de pesticidas en el hogar
- Revisar como trabajadores agrícolas se pueden proteger de los pesticidas en el campo
- Discutir que hacer en caso de envenenamiento por los pesticidas que se usan en el campo
- Entender el derecho a tener un lugar de trabajo sano y seguro



CUCARACHAS

Puede controlar las cucarachas en su casa tomando pasos muy simples.

1. Encuéntrelas
2. Niégueles refugio, comida y agua
3. Mátelas



1. Encuéntrelas.

Busque rastros de cucarachas, como cucarachas vivas o muertas, sus huevos o excremento. Ponga trampas pegajosas en áreas donde sospecha que viven cucarachas, por ejemplo, debajo del lavamanos, detrás del refrigerador o estufa, o detrás de las alacenas de cocina. Puede comprar las trampas en cualquier lugar que vende plaguicidas contra cucarachas. Coloque las trampas contra las paredes porque las cucarachas se mantienen en las orillas de los pisos. Inspeccione las trampas la siguiente semana y métalas a la basura cuando estén llenas de cucarachas. Recuerde cuales áreas tienen las concentraciones más grandes de cucarachas.

2. Niégueles refugio, comida y agua.

Refugio: Cucarachas viven en espacios estrechos y prefieren vivir en superficies porosas como madera, papel, cartón, aislamiento y tela. Cerca de las áreas donde las trampas atraparon grandes cantidades de cucarachas, organice las áreas de almacenaje y limpie todas las superficies. También,

- tape o rellene hendiduras, rendijas y grietas con sellador de silicón
- enreje o cubra con tela las ventilas y coladeras de la casa
- selle los espacios alrededor de esquinas y tubería

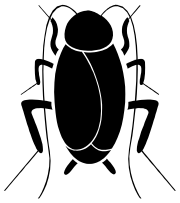
Comida

- mantenga la comida en recipientes a prueba de plagas
- no deje la comida o agua de las mascotas afuera durante la noche
- limpie y seque los platos sucios inmediatamente
- limpie y deseche las sobras de la comida
- mantenga bien tapado el basurero y evite que se acumule mucha basura dentro de la casa

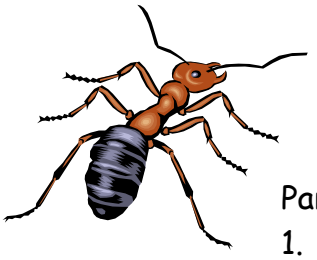
Agua

- evite la acumulación de agua en el lavamanos
- repare las llaves y tubería que gotean
- elimine el exceso de agua en macetas
- aísle la tubería de agua fría para evitar su condensación

3. Mátelas.



Si todavía encuentra cucarachas después de tomar estas medidas, trate de usar plaguicidas menos tóxicos como polvo de ácido bórico o cebos para matar las plagas que quedan. Espolvoree el ácido bórico en las hendiduras y rendijas en que viven las cucarachas. Coloque los cebos o espolvoree ácido bórico cerca del rodapié, debajo y detrás del refrigerador, la estufa, lavamanos, lavaplatos, lavadora y secadora. Las cucarachas comen el ácido bórico y el veneno en los cebos y también cargan a sus nidos el veneno en sus patas. El ácido bórico es tóxico para niños y animales, entonces trate de aplicarlo en áreas donde niños y mascotas no lo alcancen.



HORMIGAS

Para controlar las hormigas en su casa, trate de:

1. Buscar y sellar su punto de entrada.
2. Destruir su nido.

Busque y selle su punto de entrada a la casa.

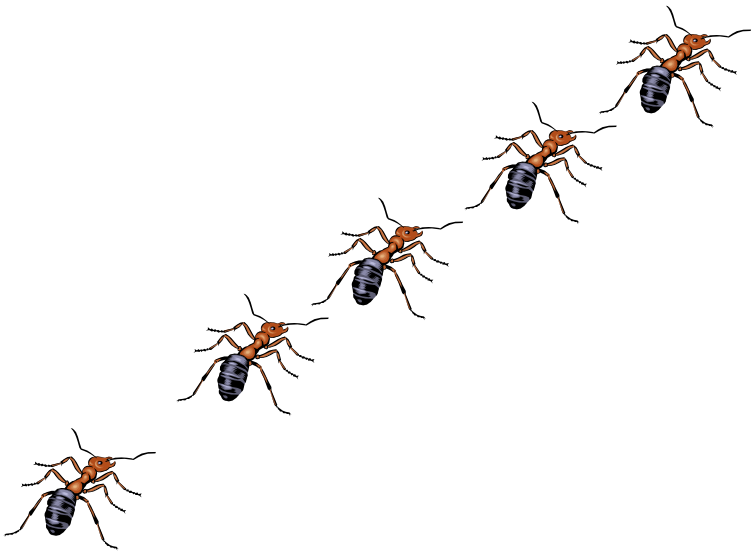
Siga la línea de hormigas hasta encontrar el lugar donde están entrando. Trate de prevenir su entrada con jugo y cáscara de limón fresco, gis, posos de café mojados, harina de huesos, polvo de carbón, o pimienta de cayena. Puede sellar el área temporalmente con vaselina, hasta sellarlo permanentemente con sellador de silicón.

En áreas donde hay muchas hormigas, limpie el área con agua y jabón o con una mezcla de mitad de agua y mitad de vinagre.

Destruya el nido.

Si no puede encontrar el nido, puede colocar cebos de ácido bórico cerca del punto de su entrada. Puede comprar los cebos en una ferretería o puede hacerlas usted mismo, mezclando 2 cucharaditas de polvo de ácido bórico, 4 onzas de agua y 1 cucharadita de azúcar. Coloque la mezcla en una tapadera o recipiente bajo. Las hormigas se tragaran el veneno y también lo cargaran a su nido, envenenando así el resto de ellas. El ácido bórico es tóxico para niños y animales, entonces trate de aplicarlo en áreas donde niños y mascotas no lo alcancen.

Si ha encontrado el nido, eche 1 - 2 galones de agua hirviendo directamente sobre el hormiguero. Tenga cuidado de no derramar el agua sobre plantas que no quiere destruir alrededor del hormiguero.



PULGAS

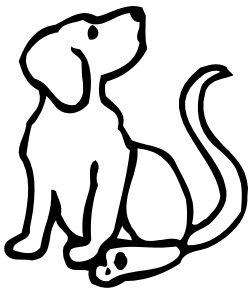
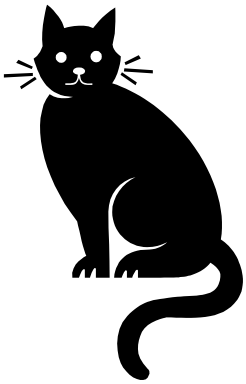
Si tiene una mascota con pulgas, trate de controlarlas con las siguientes medidas:

- Cepille su mascota con un peine de pulgas para inspeccionar y quitar las pulgas
- Pase la aspiradora frecuentemente y tire inmediatamente a la basura la bolsa de la aspiradora
- Use jabón y agua para limpiar el área de dormir de la mascota; si la mascota tiene cama, lave la ropa de cama en agua caliente una vez por semana
- Bañe la mascota a menudo con jabón y agua, o con champú sin pesticidas

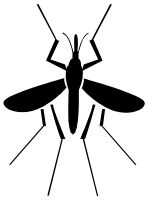


Si estas medidas no son suficientes, busque productos menos tóxicos:

- pastillas de feromonas (de veterinarios) para reducir la cantidad de pulgas
- productos designados en la etiqueta como "insect growth regulators" o "IGRs" ['reguladores del crecimiento de insectos' en español] para matar las crías de pulgas viviendo en su mascota. Tres productos que se encuentran en muchas tiendas de productos de mascotas son "Program", "Nylar," y "Biolar".
- trate de no usar cualquier producto que contiene los siguientes químicos dentro de sus "ingredientes activos": chlorpyrifos, dichlorvos, phosmet, naled, tetrachlorvinphos, diazinon, malathion, carbaryl and propoxur. Estos químicos son muy peligrosos para niños y adultos.

El Control del Mosquito



Reduzca el Riesgo

Las forma más efectiva para reducir la población local de mosquitos es destruir las fuentes o lugares donde estos insectos se crían, como ser llantas viejas, canales atascados, *los plantadores*, fuentes para pájaros, u hoyos de tocón. También debe vaciar las piscinas de niños cuando estas no están en uso. Otros pasos que deben considerarse incluyen:

- Mantener el césped corto y recortar los arbustos para aminorar los lugares donde pueden esconderse mosquitos adultos.
- Llevar sombrero y usar ropa suelta, en ambos caso de colores claros (evite usar ropa de color rojo.)
- Evitar el uso de jabones y champúes con fragancia, lociones, aceites, o perfumes, incluyendo productos bronceadores.
- Utilizar iluminación apropiada, las luces incandescentes atraen mosquitos, mientras que las luces fluorescentes no los atraen ni repelen.

Repelentes

La mayoría de los repelentes de insectos incluyen el DEET químico (N, N-diethyl-meta-toluamide). El DEET se absorbe por la piel y puede causar daño, especialmente a los niños. Otros repelentes incluyen ingredientes naturales tales como *citronella,* aceite de eucalipto, o soja, los mismos no son tóxicos y son más seguros para el uso en niños.

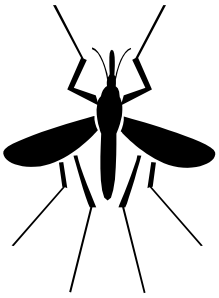
Si usted usa un repelente con DEET, este debe contener no más de 10 por ciento de la sustancia química. La concentración de DEET varía significativamente de producto a producto, así que lea la etiqueta de cualquier producto que usted compra. Repelentes con DEET no deben ser usados en niños menores de 2 años.

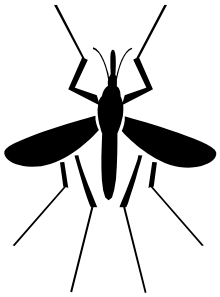
La agencia de Protección Ambiental Norteamericana (US EPA) recomienda las siguientes precauciones cuando se usan repelentes que contienen DEET:

- Aplique el producto sólo sobre la piel directamente expuesta. No lo use debajo de la ropa.

- Nunca use repelentes sobre piel afectada con cortes, heridas, o irritación.
- No aplique el producto en párpados, ojos o boca, y recuerde aplicarlo en menor cantidad en el área de las orejas. Cuando se usa el repelente en spray no debe rociarlo directamente en la cara; rocíelo en la mano primero y después en la cara.
- No permita que los niños manejen estos productos, y no lo aplique directamente en las manos de los niños. Cuando se usa en niños aplíquelo primero en sus manos y luego usted aplíqueselo al niño.
- No rocíe el repelente en áreas cerradas. Evite respirar un rocío del repelente, y no lo use cerca de alimentos.
- Use el repelente en pequeña cantidad apenas suficiente para cubrir la piel. La aplicación constante es generalmente innecesaria; si los insectos mordaces no responden a una película delgada de repelente, entonces aplique un poco más.
- Después de retornar a un ambiente cerrado lavé piel con jabón y agua o tómese un baño. Esto es particularmente importante cuándo el repelente se usa repetidamente en uno o más días consecutivos. También, lavé la ropa tratada antes de usarla otra vez.
- Sí usted sospecha que su niño tiene una reacción negativa a un repelente discontinúe su uso, lavé la piel tratada, y llamé a su centro local del control de envenenamiento e intoxicación, cuando vaya al doctor lleve el repelente con usted.

Fuentes: Academia Americana de Pediatría, Agencia de Protección Ambiental (US EPA), el Centro Tóxico de Acción y el Instituto de Medio Ambiente de Maine.





PRECAUCIONES SOBRE EL USO DOMÉSTICO DE PLAGUICIDAS

Plaguicidas químicos podrán eliminar insectos y otras plagas, pero este remedio puede ser peor que el problema. Plaguicidas usados adentro y acerca del hogar pueden envenenar a niños, adultos o mascotas. Estos también representan un riesgo potencial para el manto acuífero y el medio ambiente. Estos riesgos se incrementan cuando un plaguicida se usa de manera incorrecta o se almacena o desecha de manera indebida. Usted puede minimizar su exposición a plaguicidas tomando unas medidas muy simples:

- Evite que plagas entren en su casa
- Tome medidas no tóxicas para matar insectos que entran a la casa

Si es necesario usar plaguicidas químicos, mucho de los daños que pueden ocurrir durante su aplicación son evitables. Antes de cualquier aplicación siempre se debe:

- Leer la etiqueta del producto cuidadosamente y seguir todas las precauciones de seguridad
- Usar ropa de protección adecuada, como guantes de hule y camisas de manga larga.
- Lavar manos, ropa y equipo de aplicación después de usas las plaguicidas.
- Almacenar plaguicidas en los envases originales en áreas afuera del alcance de niños.
- Desechar los envases de plaguicidas vacíos apropiadamente.
- Nunca use plaguicidas agrícolas en el hogar

NUNCA USE PLAGUICIDAS AGRÍCOLAS EN EL HOGAR

El uso de plaguicidas agrícolas en el hogar es peligroso e ilegal. Estas sustancias no fueron producidas para usarse donde las personas están directamente expuestas. Los plaguicidas agrícolas usados apropiadamente en el exterior son disueltos por la luz solar, la lluvia y las bacterias. Al usarse en el interior, los plaguicidas agrícolas pueden permanecer por años. Usted, su familia y sus mascotas pueden sufrir daños a la salud si este tipo de plaguicidas se usa en el interior del hogar. Los plaguicidas

pueden entrar al cuerpo a través de la ingestión (tragados), respiración o por contacto a través de la piel.

Cuando se usan en el interior, los plaguicidas agrícolas pueden causar serios problemas a la salud, incluyendo:

- Mareos
- Visión borrosa
- Dolor de cabeza
- Dificultad al respirar
- Confusión y pérdida de memoria
- Debilidad y falta de coordinación
- Vómito y diarrea
- Muerte

Es ilegal hacer mal uso de los plaguicidas. Usted debe seguir las instrucciones de la etiqueta y nunca usar un plaguicida que no tenga instrucciones para su uso en la etiqueta.

Fuente: Junta de Control Estructural de Plagas de Texas

LA NORMA DE PROTECCION PARA EL TRABAJADOR

La Norma de Protección para el Trabajador (WPS) es una ley federal que trata de salvaguardar la salud de los trabajadores agrícolas y de los manejadores de pesticidas. Sus requisitos incluyen los siguientes:

Protección durante las Aplicaciones

Se prohiben las aplicaciones de pesticida en cierto modo que pueda exponer al trabajador a otras personas. Se excluyen a los trabajadores de entrar en las áreas mientras los pesticida están siendo aplicados.

Intervalo de Entrada Restringido (REI)

El intervalo de Entrada Restringido hay de ser especificado en toda etiqueta del producto del pesticida agrícola. Los trabajadores tienen que mantenerse fuera de las áreas tratadas con pesticidas durante los intervalos de entrada restringida, con sólo pequeñas excepciones.

Equipo de Protección Personal

Deben de proporcionarse el equipo de protección personal para la entrada a trabajar antes del tiempo especificado.

Notificación a los Trabajadores

Los trabajadores han de ser notificados sobre las áreas tratadas para que puedan evitar las exposiciones inadvertidas.

Suministros de Descontaminación

Los manejadores y trabajadores deben tener suficiente agua, jabón, y toallas para su rutina de limpieza y para descontaminación en caso de emergencia.

Asistencia de Emergencia

El transporte debe hacerse disponible a una facilidad de cuidado medico si el trabajador o manejador pueda haber sido envenenado o accidentado. Debe de proporcionarse la información sobre el pesticida que la persona pueda haber sido expuesta.

Entrenamiento de la Seguridad y los Carteles de Advertencia

Se requiere un entrenamiento para todo los trabajadores y los manejadores, y un cartel sobre seguridad con el pesticida tiene que ser desplegado en un lugar central.

Acceso a la Información de la Etiqueta e Información de los Lugares Específicos

Los manejadores y trabajadores tienen que estar informados de los requisitos de advertencia encontrados en la etiqueta del pesticida. Se requiere un cartel de anuncio central para todas las recientes aplicaciones de pesticida.

COMO DISMINUIR CONTACTO CON PESTICIDAS EN EL CAMPO

Trabajadores del campo pueden hacer varias cosas para reducir su contacto con pesticidas en el lugar de trabajo. Por ejemplo:

- Usar camisas de mangas largas, pantalones, sombrero, calcetines y zapatos o botas, y guantes (si es posible) todos los días.

- Darse un buen baño y ponerse ropa limpia inmediatamente después de llegar a casa.

- Durante el trabajo, lavarse bien las manos **antes** de comer, beber, fumar o ir al baño. Lavarse las manos **después** de ir al baño.

- No comer dentro del campo o en áreas donde se guardan pesticidas.

- No entrar a un campo agrícola que recién ha sido rociado con pesticidas o que tenga un rótulo avisando de la presencia de pesticidas. Si hay un rótulo, pregunte cuando es seguro entrar de nuevo al campo agrícola.

- Si le caen pesticidas en la piel, quitarse la ropa contaminada y lavar inmediatamente el área afectada con bastante agua y jabón. Tratar de averiguar el nombre del pesticida y conseguir atención médica.

COMO LOS TRABAJADORES DEL CAMPO PUEDEN PROTEGER A SUS FAMILIAS DE LOS PELIGROS DE PESTICIDAS

Trabajadores del campo pueden hacer varias cosas para reducir el contacto que sus familias tienen con pesticidas. Por ejemplo:

- Nunca lleve pesticidas del trabajo a la casa. Nunca cambie o mezcle los pesticidas a envases de otros productos que los niños puedan confundir con los de alimentos o bebidas (como botellas de refrescos).

- Lave su ropa de trabajo con detergente y agua caliente antes de volver a usarla. Lave la ropa de trabajo separada del resto de la ropa de la familia.

- Cubra el asiento de su carro con una lona cuando viaja con ropa contaminada con pesticidas.

- Lávese las manos (o darse un baño) y cambie su ropa de trabajo antes de tocar a sus hijos.

- Quítese los zapatos de trabajo antes de entrar a la casa.

- Dese un buen baño y póngase ropa limpia lo más rápido posible después de llegar a casa.

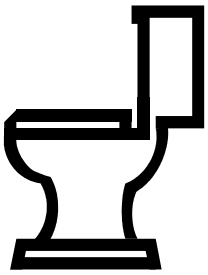
SANIDAD EN EL CAMPO

Requisitos de la Ley Federal

Patrones con 11 o más trabajadores en el campo son obligados a proveer:

Agua para tomar

- accesible a los trabajadores y dentro de una ¼ de donde están trabajando
- fría y en cantidades suficientes
- vasos de papel desechables
- en recipientes bien cubiertos, limpios y rellenados cuando sea necesario



Baños

- accesible a los trabajadores y dentro de una ¼ milla de donde están trabajando
- un baño para cada 20 trabajadores
- limpios y en buenas condiciones
- aguas negras se eliminan en una forma sana y segura
- ventilado y privado
- puertas que se sierran de adentro

Instalaciones para lavarse las manos

- accesible y cerca de los baños
- con suficiente provisión de agua potable,
  jabón y toallas desechables

Algunos estados tienen leyes con más protecciones.

Project Clean Environment for Healthy Kids

CLEAN DRINKING WATER AND SAFE WASTE DISPOSAL

A training curriculum for lay health educators

Farmworker Justice Fund, Inc.
1010 Vermont Ave., NW, #915
Washington, DC 20005
*(202)783-2628 * (202)783-2561 fax*
www.fwjustice.org

Activity	Methodology	Materials Needed	Time
Introduction *Complete pre-tests; review the workshop objectives; review local water& sanitation conditions*	Group Discussion	• Water & Sanitation Pre-test • Handout 1: Workshop Objectives	30 mins
Water Cycle *Review the water cycle*	Group Activity and Discussion	• Handout 2: Water Cycle and Definitions • Flip Chart and Markers	15 mins
Ground and Surface Water *Understand the difference between surface and ground water*	Group Activity and Discussion	• Clear plastic drinking cups • Sand, small pebbles & water • Piece of nylon stocking • Small rubber band • Spray bottle nozzle	30 mins
Water Contamination & Treatment *Review the common contaminants of ground and surface waters; Discuss how waste water is treated*	Group Activity and Discussion	• Same materials as above • Colored powdered drink mix • Clear plastic bag, confetti • Oil, spices, dirt, coffee grounds	35 mins
Health Effects of Water Pollutants *Discuss the health effects of common water contaminants; fish consumption advisories*	Small Group Discussion and Presentations	• Handout 3 a-e: Water Contaminants & Health Effects • Handout 4: *Should I Eat the Fish I Catch?* • Handout 5: *Do You Eat Fish?*	1 hour
Fecal-Oral Disease Cycle *Discuss the health effects of microbial contaminants and the transmission of water and sanitation-related diseases*	Brain Storm, Skits and Discussion Group Activity and Discussion	• Rubber doggie doo, powder, plastic bug, paper cut-outs of food, doll or stuffed animal • Handout 6: Fecal-Oral Disease Cycle • Flip Chart and Markers • Roll of toilet paper	1 hour
Water Quality and Hygiene *Review ways to prevent transmission of water and sanitation-related diseases*	Group Discussion	• Handout 7: Chlorination • Handout 8: Boiling • bottled water & water filter • Flip Chart and Markers	1 hour
Garbage *Understand the importance of safe disposal of trash*	Group Discussion and Small Group Presentations	• Handout 9: Types of Waste • Flip Chart and Markers	50 mins
Promoting Clean Water and Hygiene in the Community *Practice promoting lead education in the community*	Directed Role Play		45 mins
Conclusion and Evaluation *Complete the post-tests and evaluation forms*	Group Discussion	• Water & Sanitation Post-test • Workshop Evaluation Form	15 mins

CLEAN DRINKING WATER AND SAFE WASTE DISPOSAL TO PREVENT ILLNESS

(Total time: about 7 hours)

Workshop Objectives

- Understand the water cycle
- Explain the difference between surface and ground water
- Review how water can be contaminated
- Identify common water contaminants and their health effects
- Understand the fecal-oral disease cycle
- Review ways to prevent diseases caused by contaminated water
- Understand the importance of safely disposing of trash and human waste
- Describe the different types of trash and management of trash
- Practice techniques to promote clean water and sanitation issues in the community

I. Introduction

Pre-test
Time: 15 minutes
Materials: Water Pre-tests

Distribute the pre-test to the participants before starting the workshop. Explain that this is a questionnaire to help the facilitator make sure that she is presenting the information effectively and doing her job well. Ask participants to answer the questions without consulting with anyone else. If anyone has questions or needs help to answer the questions, ask the facilitator. When all have finished, collect the pre-tests and explain that you will go over the correct answers at the end of the workshop.

Workshop Objectives
Time: 5 minutes
Materials: Handout 1 (Water Workshop Objectives)

Distribute Handout 1: Workshop Objectives. Review the objectives with the group. Ask them if there are any questions or objectives

that they would like to cover that are not included on the handout. Tell the group that throughout the workshop they should feel free to ask questions whenever there is anything they don't understand, and that by the end of the day, you will try to answer all their questions as best you can.

Introductions/Group Discussion
Time: 10 minutes
Materials: Flipchart and markers

Water and Sanitation Conditions at Home
Explain to the group that you want to get an idea of the water and sewer issues that are important to them and to their community. Have each person introduce him/herself and answer the following questions. Write their answers on the flipchart and summarize.

- **?** What is the source of your family's drinking water?
- **?** Is your house connected to the municipal sewage system?

Water and Sanitation Conditions in the Community
Ask the participants to explain the water and sanitation conditions in the communities where they live and work.

Ask them the following questions:

- **?** Are there any *colonias* or neighborhoods that don't have running water? Which ones?
- **?** Where do people get their drinking water if they do not have running water?
- **?** Which areas have municipal wastewater (sewerage) services?
- **?** How do families dispose of wastewater in areas that do not have municipal wastewater/sewerage services?

II. Water Cycle

Explain to the participants that in order to begin understanding and discussing water problems, it is important to understand the water cycle.

Water Cycle
Time: 15 minutes
Materials: Flip chart and markers, Handouts 2 and 2a

Using a flip chart, work with the participants to draw the water cycle. Ask for a volunteer to help you to draw. To start, ask the volunteer to draw some clouds with rain falling from them. Ask the

participants what happens to the rain. Ask the volunteer to draw their responses on the flip chart. Continue to ask questions and to draw their responses on the flip chart until you have a completed a water cycle as shown in Handout 2: Water Cycle.

Explain to the participants that from the time the earth was formed, water has been endlessly circulating. This circulation is known as the water cycle. When rain falls to the earth, some of it flows along the surface in streams or lakes. This is known as surface water. Some of the rainwater is used by plants, and some evaporates into the air by the heat of the sun. The water vapor forms clouds in the sky. Depending on the temperature and weather conditions, the water vapor condenses and falls to the earth as different types of precipitation (like rain or snow). Some precipitation runs from high areas to low areas on the surface of the earth. This is known as surface runoff. Other precipitation seeps into the ground and is stored as groundwater.

Distribute Handouts 2 and 2a: Water Cycle and Definitions. Review the definitions not covered in the discussion and ask them if they have any questions.

III. Ground Water and Surface Water

Aquifer Activity
Time: 25 minutes
Materials: Clear plastic drinking cup, a handful of small pebbles or aquarium gravel, a handful of sand, water

In the previous exercise two general sources of water were noted, groundwater, and surface water. The following exercise will help us better understand ground water by becoming familiar with the term "aquifer."

Ask for a volunteer to help you. Have the volunteer fill a clear plastic drinking cup with about one inch of sand. Add about 2 inches of small pebbles or aquarium gravel on top of the sand. Explain that the cup is a model for the earth's top layers. Ask the participants to describe the spaces between the gravel and between the sand. (The gravel has bigger spaces.)

Ask the volunteer to slowly pour water into the cup until it reaches the middle of the gravel layer. Ask them where the water went? (The water has filled in the spaces between the particles of sand and rock.) Explain that **groundwater** is water that is found underground in cracks and spaces in soil, sand and rocks. When it

rains, some of the rain flows into the soil, moving through these spaces until it eventually reaches a solid layer of rock or clay (like the bottom of the cup) and begins to fill spaces of the soil. These porous layers of gravel, soil and sand are called **aquifers**. The place where the groundwater ends is called the **water table** – this can be only a foot below the ground's surface or it may be hundreds of feet down. The water table may rise after a period of heavy rains or melting snow, or it can fall after a long drought or if it is used faster than it can be replaced.

Explain to the group that drinking water and the water we use for cleaning, bathing and watering our lawns can come from either groundwater sources (via wells) or surface water sources (such as rivers, lakes, reservoirs and streams). Water is taken from the ground or surfaces, treated, and then distributed for use. Nationally, most water systems use a ground water source (80%), but most people (66%) are served by a water system that uses surface water. This is because large metropolitan areas tend to rely on surface water, whereas small and rural areas tend to rely on ground water. In addition, 10-20% of people have their own private well for drinking water.

Note: Before the training, ask the local water supplier or someone with knowledge of the area's water, the sources of water for the area where the training is being facilitated. If time permits, develop a visual or hand out that explains the water source. (For instance, in the Lower Rio Grande Valley, Texas 100 % of their drinking water comes from the Rio Grande River. In El Paso, Texas the water source comes from the Rio Grande River and the Hueco Bolson.)

Well Demonstration
Time: 5 minutes
Materials: Empty plastic drinking cup, clear plastic drinking cup filled with a handful of sand, small pebbles and water, small piece of nylon stocking, small rubber band, and a spray nozzle

If time permits, do a simple exercise to show how wells pump out ground water. Cover the bottom of the tube of a spray nozzle with a piece of nylon stocking. Hold the stocking in place with a small rubber band. Place the bottom of the nozzle into the plastic cup with sand, rocks and water (used above). Ask the volunteer to pump water through the spray nozzle into another cup or into a paper towel. Although this pump works through manual power, most real wells are powered by an electric pump. The stocking works as a screen to keep sand and gravel out of the well water.

IV. Water Contamination and Treatment

There is no such thing as naturally pure water. In nature, all water contains some impurities. As water flows in streams, sits in lakes, and flows through layers of soil and rock in the ground, it dissolves or absorbs some of the materials that it touches. Some of these materials are more dangerous than others.

Group Discussion
Time: 5 minutes
Materials: Flipchart and markers

? What are the main sources of water contamination?

- Industrial and municipal wastewater
- Industrial discharges
- Runoff from farms, roads and yards
- Leaking storage tanks, septic systems
- Hazardous waste sites, landfills

? What are some local examples of water contamination sources?

- local factories, farms, human behaviors, etc.

Groundwater Contamination

? Is ground water protected from contamination because it is underground?

It was once believed that groundwater could not be contaminated like surface water. But, in the United States alone, more than 225 different pollutants have been identified in groundwater deposits. These sources of water contamination pollute not only surface water such as rivers and oceans, but also pollute groundwater.

Groundwater Contamination Activity
Time: 10 minutes
Materials: Empty plastic drinking cup, clear plastic drinking cup filled with a handful of sand, small pebbles and water, small piece of nylon stocking, small rubber band, and a spray nozzle, colored powdered drink mix

To explain how groundwater is contaminated use the spray nozzle and plastic cup (filled with sand and rocks) used in the previous groundwater activity. Ask for another volunteer to help you. Have the volunteer sprinkle a bit of colored powdered drink mix on top of

the rocks. This is the **contaminant** or pollution. Make it rain by adding a little more water over the contaminant until it begins to color the water in the cup. Tell the volunteer to withdraw water using the "well" (spray nozzle). Notice how the pumping of the well helps to spread the contamination in the cup. Also, notice that the well (which may be a source of drinking water) drew out the contaminated water.

Surface Water Contamination

? Does anyone know what the storm drain system is?

Storm drains are the holes carved into streets and sidewalks. When rain flows over streets and other surfaces, it picks up pollutants and carries them into the storm drain system. Many people don't realize that in most cities in the U.S., storm drains are NOT connected to sewer systems and treatment plants. Storm drains are meant to prevent flooding by moving water away from streets and other structures. But, usually the water isn't filtered or treated and all the contaminants it contains eventually flow to streams, lakes and oceans. Once there, all the polluted runoff can harm fish and shellfish or make them unsafe to eat. It can also make these waters unsafe for swimming.

Surface Water Contamination Activity
Time: 10 minutes
Materials: Clear plastic trash bag, paper confetti, half a cup of vegetable oil, smelly spices, dirt or coffee grounds or other "contaminants"

Tear up about 5 pieces of paper into strips to make confetti and place it in a plastic bag. The confetti represents water in a nearby river or lake. Next, pour the oil into the bag. Tell the group that this is the oil from their recent oil change, which was then dumped into the street or left on the driveway. Next, add some dirt or coffee grounds to the mix. This represents their dog's poop that they didn't clean up after yesterday's walk. Next, add fragrant spices (like onion flakes, garlic powder, and oregano) or other materials (like powdered detergent, brown sugar or flour) to the mix. Each spice can represent a different contaminant, such as pesticides, fertilizers, cigarette butts, or trash. You can also add things like plastic bags, or pieces of hard plastic or metal. As each contaminant is added, ask participants how it could have gotten into the water. After all the contaminants have been added, pass around the bag and show the participants how polluted their water is. How could we keep out these contaminants?

Wastewater Treatment

Group Discussion
Time: 10 minutes
Materials: Flipchart and markers

? What happens to wastes and other contaminants that we pour down our drains and flushed down our toilets?

The way our modern water treatment and distribution system is designed has many flaws. Give the following example:

If I were to take a glass of drinking water, fill it with dirty toilet water, disinfect it through a complicated process that requires the use of chemicals, and then drink it, you would think I was crazy.

However, that this is how modern societies handle the treatment of water and the disposal of wastewater. At the municipal level, when we flush our toilets, the wastewater goes into pipes that make up our sewer system. The wastewater is taken away to a wastewater treatment plant, where it is treated and then disposed of.

? Where does the treated wastewater go when the plants dispose of it?

Generally, (although there are exceptions) it is disposed of by putting it into a body of water (i.e. river, ocean). Although treated and regulated by state and federal governmental agencies, it still pollutes our water, and it is one of the primary contaminants of water. This water is the same water that communities down stream will use for their drinking water. Water is taken from the river, is treated, and then distributed to households and industry, where it used and then turned into wastewater, etc., etc.

Even though the modern way of disposing of waste is problematic, it was designed in the 19th century in order to protect the public from what was once the primary source of water contamination, human excrement and organic waste. As we will discuss next, excrement or fecal material was and is largely responsible for infectious water-borne diseases.

V. Health Effects of Water Pollution

Major Water Pollutants
Time: 45 minutes
Materials: Flip chart and markers, Handouts 3a – 3e, 4 and 5

All of the sources of water contamination discussed so far may affect our health. The following exercise will help us better understand some of the health effects caused by water contamination of both groundwater and surface water sources.

Ask the participants to work in pairs. (This exercise requires five pairs or groups). Give each team one pollutant (Handouts 3a-3e), colored markers and a flip chart. Ask each team to prepare a presentation for the other participants, explaining their pollutant. Each group member must participate in the presentation.

When each team or group is finished, ask them to present their pollutant to the rest of the participants. Make it clear that they shouldn't just read aloud the information on their handout – encourage them to be creative in their presentations. After the presentations, distribute to everyone a complete set of Handouts 3a-3e: Major Water Pollutants and Health Effects.

Fishing in contaminated water

Briefly explain to the participants that fish are also affected by water pollution, and in many cases eating fish from contaminated water may be very dangerous. Fish are likely to be more affected by the contaminants than are people because of their smaller body weight. Also, some contaminants accumulate in the fat of the fish. So the longer the contamination persists in the water, the more it will accumulate in the fish.

<u>Fish caught in local waters</u>
It is important to check with the local health department or state environmental agency to see if any fish consumption advisories have been issued. Contact information for state agencies is listed on the EPA's fish and wildlife advisories website at http://map1.epa.gov. Distribute any information you learn about local advisories.

<u>Commercially bought fish</u>
The US Food and Drug Administration (FDA) recommends that women who are or may become pregnant, nursing mothers and young children not eat large fish that can contain high levels of methylmercury, including shark, swordfish, king mackerel, or tilefish. Some scientists think that other fish should be added to this list, including canned albacore tuna, grouper, sea trout, orange roughy and bluefish. The FDA also advises that women who are pregnant or may become pregnant to limit their consumption of other species of cooked fish to 12 ounces (about 2 meals) per

week. The recommends that since albacore ("white") tuna has a higher mercury content, pregnant women and young children should limit consumption of this fish to 6 ounces per week.

Distribute Handout 4: EPA brochure *Should I Eat the Fish I Catch?* and Handout 5: EPA poster *Do You Eat Fish?* Another EPA publication available only in English is *Should I Eat the Fish I Catch? A Guide to Healthy Eating for Women and Children.*

VI. Fecal-Oral Disease Cycle

In this section we will go into more detail about a specific water contaminant—fecal material. Excrement or fecal material is an important topic because everyone—children, adults, and even animals—defecates. Contamination from fecal material is very problematic. Since excrement and fecal material are such formal words and it's a topic that people do not always feel comfortable discussing, it is something that *promotores* must feel at ease talking about. This next exercise is a game to help the group get comfortable with "excrement" and "fecal material" without embarrassment.

Fecal material brainstorming activity
Time: 15 minutes
Materials: Flip chart and markers

Hold up a plastic or rubber "fake poop." These are available from most toy stores or magic shops. Ask one of the participants what it is. Ask for another name. Continue brainstorming until you get between 10 and 20 words to describe excrement or fecal material. Decide as a group on the word that they are most comfortable using to describe fecal material or excrement, and use it for the rest of the workshop.

Germ transmission skit
Time: 20 minutes
Materials: Rubber or plastic fake dog poop, baby or talcum powder, plastic bug, (dark) paper cut-outs of fruit and tortillas, a stuffed animal

Ask for 2 volunteers to help you.

Volunteer 1: *(She has powder on her fingers)* I've just returned from a day of work in the fields and have just finished changing my baby's diaper. I've been so busy; I haven't even had time to shower or to wash my hands! *(Holds up hands.)* Here – help me with dinner.

She lays the tortillas and fruit on the table, next to where a stuffed animal lies. On a nearby table is the pile of dog poop, sprinkled with powder, and a plastic fly. Put the fly on the dog poop and make sure it gets covered in powder. Make the fly "fly" to the tortillas, fruit and toy. Make sure that you can see the powder on the food.

Volunteer II: Okay. I'll put the food on the table. *(She puts the tortillas and food and puts them in front of some of the other participants.)*

Questions for discussion

? What do you see on the food? (germs, pesticide residues) How did it get there?
? Where will the germs go after we eat them? How will we feel after dinner?
? How could we keep these germs off of our food? (washing your hands, keeping out flies or protecting food, disposing of excrement safely)

Fecal-oral Disease Cycle
Time: 15 minutes
Materials: Flip chart and markers, Handout 6

Remind the group that excrement (use the word chosen by the group) is the cause of many diseases such as cholera, hepatitis A etc. Using a flip chart, draw excrement at one end of the paper and draw a mouth at the other end. Explain to the group that the reason that excrement is so dangerous and that it needs to be disposed of safely is that it causes many diseases if we swallow it. Ask the group to remember what they learned in the previous skit. Now, ask them describe other ways that excrement could get into the mouth. As the group provides answers draw their responses on the flip chart with arrows going from the excrement to the their answer to the mouth. These are some possible responses:

- Hands
- Water
- Utensils
- Food
- Flies
- Ground etc.

Remind the group as you are doing this exercise, that all people and animals defecate and that excrement whether it is from a baby, an adult or chicken is something that needs to be disposed of safely. *They should be very careful about where they choose to change a baby's diaper and where they put dirty diapers so as not to contaminate a public area. Ask them for examples of inappropriate places to change or dispose of dirty diapers.*

Distribute Handout 6: Fecal-Oral Disease Cycle.

Toilet paper activity (optional)
Time: 15 minutes
Materials: roll of toilet paper

Ask for 5 volunteers. Have them form a line at the front of the room. Hand the roll of toilet paper to the first person in line. Tell her to tear off some toilet paper from the roll, crumple it into a ball, and throw it on the floor in front of her. Then, tell her to hand the roll to the next person in line. Repeat this with the next 4 volunteers. At the end of the exercise, there should be a small mound of toilet paper on the floor.

? Have you seen mounds of toilet paper like this in public bathrooms?
? Why do some people throw the paper on the floor? Is this necessary?

Explain to the group that in some parts of the world, plumbing and sewage systems can get clogged from too much toilet paper. For this reason, they might see waste baskets next to toilets to collect the toilet paper. Even if a waste basket is not next to the toilet, people may throw the toilet paper onto the floor in order to avoid clogging the toilet.

? Do you think that throwing paper on the floor poses a health risk? Why?
? If it is necessary to keep paper out of the toilet, how can it be done more safely? How can we protect ourselves from any health hazards?

In general, most toilets in the U.S. can accept reasonable amounts of toilet paper and it is not necessary to put the paper in a separate bin. Often, clogged toilets can be fixed using a simple plunger. If a separate bin for paper is necessary, it should be lined with a plastic or paper bag in order to make disposal safer and easier. If a liner is not available, the bin should be cleaned after disposal and the person emptying the bin should wear rubber gloves and wash

his/her hands afterwards. If gloves aren't available, thorough hand washing is essential.

VII. Water Quality and Hygiene

Group Discussion
Time: 1 hour
Materials: Flip chart and markers, Handouts 7 and 8, a sample bottle of bottled water and a low-cost water filter

Shigellosis, Cholera, Hepatitis A, Giardiasis, and Cryptosporidiosis are some of the diseases that can be spread by drinking contaminated water. If not properly disposed of, the excrement of a person who has one of these diseases can contaminate the water that others use for drinking or cooking. Some of the symptoms of these diseases include stomach pains, diarrhea, vomiting, nausea and fever.

Questions for discussion

? How can farmworkers be exposed to these parasites and bacteria?

- By forgetting to wash their hands after using the toilet
- When field toilets are not kept clean, or if there is no hand washing water or soap available
- When field toilets are not available, workers may relieve themselves in the fields, contaminating other workers
- When drinking water is dirty, or kept in an open container
- If there is only one communal cup available for drinking water, instead of individual disposable cups

Explain to the group that since they understand the source and transmission routes of diseases they are ready to discuss how to prevent its transmission.

Questions for discussion

? How can we avoid getting these water-borne diseases?

- Handwashing
- Safely storing our water
- Drinking only clean water
- Safely disposing of human and animal excrement

Handwashing

Washing our hands correctly is the first line of defense against spreading infectious diseases – not only those mentioned above, but also others like colds and flu. These are some simple steps to remember for proper hand washing:

- Wet your hands, soap them, then rub your palms and the back of your hands for at least fifteen seconds.
- Don't forget your nails and the areas between your fingers. For best results, first wash them with a brush and get under your fingernails.
- Rinse under running water from your wrist to the tip of your fingers.
- Dry your hands with a clean towel.

When is it most important to wash our hands?

- Before cooking
- Before eating
- After you touch raw meat or poultry
- After using the bathroom
- After changing a diaper
- After touching clothing, bedding, toilets, or bed pans soiled by someone who has diarrhea
- After touching dirt or animals
- Children should be supervised by adults to make sure they wash their hands well

Municipal water systems

Municipal water systems in the U.S. must comply with national standards set by the US EPA. Companies and municipalities that supply water to the public must test for over 80 contaminants that may occur in drinking water. If a contaminant is found, the supplier must treat and disinfect it. If there is a problem with the drinking water that cannot be treated immediately, the supplier must notify the people who drink its water and tell them how they should respond. If the water presents an immediate health threat, such as when people need to boil water before drinking it, the system must use television, radio, and newspapers to get the word out as quickly as possible. Each year, the water supplier must mail to its customers a water quality report that summarizes any water quality violations that occurred during the previous year.

For adults with no special health conditions, most municipal tap water is safe to drink. However, pregnant women, very young children, the elderly, people with chronic illnesses, and people living with weakened immune systems (because they have HIV/AIDS,

had an organ transplant, or are on chemotherapy), can be especially vulnerable to the risks posed by contaminated water. Those who may be vulnerable to a contaminant in the tap water should consult with a doctor to consider alternative sources of drinking water.

Private Well Water

Some people, especially in rural and agricultural areas, get their water from private wells that are not subject to the same testing and enforcement standards as public water supplies. As we discussed earlier, because of the potential contamination by fertilizer and pesticide run-off, the water in these wells may be at increased risk for nitrate and nitrite contamination.

Private water supplies should be tested annually to detect contamination from fertilizers and human or animal wastes. They should be tested more frequently and for more potential contaminants, such as radon or pesticides, if a problem is suspected.

Many laboratories are available to test water quality. Lists of laboratories certified by the state or the U.S. EPA may be available from local or state public health departments. Some local health departments also test private water for free.

There are some simple ways to disinfect water that is contaminated with some types of viruses and bacteria. One method is **boiling**. Heating water at a rolling boil for one full minute kills most germs. Be careful not to recontaminate the water when transferring it from one container to another. After the boiled water cools, put it in a clean bottle or pitcher with a lid and store it in the refrigerator. Another method is **chlorination**. Basic household bleach (unscented) will disinfect water for 72 hours. The recommended dose is 8 drops of chlorine for each gallon of water (or 2 drops of chlorine per liter of water). *Note that these methods are not effective for reducing nitrates in the water.*

Use disinfected water for drinking, cooking, or making ice. Water bottles and ice trays should be cleaned with soap and water before use. Do not touch the inside of them after cleaning.

Distribute Handouts 7 and 8: Chlorination and Boiling.

Bottled water

We should not assume that bottled water is purer or safer than most tap water. Just because a label contains words like "well water," "artesian well water," "spring water," or "mineral water" it

does not guarantee that it is any cleaner or safer than water from the tap. About 25 percent or more of bottled water is really just tap water in a bottle -- sometimes further treated, sometimes not. Most bottled water is safe to drink, but studies have found elevated levels of arsenic, bacteria, or other contaminants in a minority of bottled water brands.

Some bottle labels or caps contain information about the water's source. Bring in a bottle of water to show to the group.

Filters

When buying a water filter for the home, there are several things to consider. First, make sure to get a filter that removes the contaminants you are concerned about in your tap water. The outside packaging of the product should describe the type of contaminants it removes. Second, look for a filter that has been certified to remove these contaminants by an independent organization (like NSF). Third, maintain the filter as the manufacturer recommends in order to avoid recontaminating the water.

Bring in a water filter to show the group the different parts of the label and packaging.

Swimming pool safety

Avoid swallowing water when swimming in the ocean, lakes, rivers, or pools, and when using hot tubs. The same germs in fecal matter that contaminate drinking water can also spread diseases through water used for swimming. Chlorine in swimming pools kill these germs but chlorine doesn't work right away. Some germs can live in pools for days. For this reason it is important to take some precautions in order to keep germs and fecal matter out of swimming areas. We can protect others by being aware that germs on our bodies end up in the water.

- Don't swim when you have diarrhea. This is especially important for kids in diapers.
- Change diapers in a bathroom and not at poolside. Germs can spread to surfaces and objects in and around the pool and spread illness.
- Wash your hands with soap and water after using the toilet or after changing diapers.
- Wash your child thoroughly (especially the rear end) with soap and water before swimming.

VIII. Garbage

Group Discussion
Time: 30 minutes
Materials: Flip chart and markers, Handout 9

Explain to the participants that the trash that humans produce is generally divided into five different categories. Write the different categories on a flip chart and ask participants to give examples of each category.

- Municipal Solid Waste – garbage and trash generated by households, schools and offices
- Hazardous Waste –waste that requires special handling because it presents serious threat to human health and the environment if not properly managed
- Medical Waste – waste generated by hospitals, laboratories, morgues, and dental clinics
- Industrial Waste – waste generated by industries that is not as dangerous as hazardous waste
- Radioactive Waste – wastes that are radioactive

Distribute Handout 9: Types of Waste

Municipal Solid Waste
Even though most waste is generated by industry, the garbage generated by households has a major effect on the health of the members of that household.

? What can happen if household waste is not disposed of properly?

- Contamination of food and water
- Infestation of rats, mice, flies, cockroaches, etc.
- Spread of illnesses
- Contamination of the environment

Ask the participants how people in their Community handle the disposal of garbage. Do they burn it? Does a garbage truck pick it up? Where does the truck take it? Do people dump their garbage in rural areas? Do they take the garbage to the dump?

Hazardous Waste
Not all hazardous waste comes from industry. We have products in our homes that create dangers to people and the environment if not properly disposed of. Americans generate about 1.6 million tons of household hazardous waste every year.

Questions for discussion

? What is hazardous waste?

- A product that, because of its chemical nature, can poison, corrode, explode, or ignite easily when handled improperly. Household hazardous wastes fit into one of four categories:
  - **Toxic:** Poisonous or lethal when ingested, touched, or inhaled—even in small quantities
  - **Flammable:** Ignites easily
  - **Corrosive:** Eats away materials and living tissue by chemical action
  - **Reactive:** Creates an explosion or produces deadly vapors (e.g., bleach mixed with ammonia-based cleaners)

? What are some examples of hazardous waste in your home?

- Pesticides
- Used motor oil
- Old car batteries
- Leftover house paint, stains and varnishes
- Some cleaning products
- Old appliances (stoves, refrigerators)
- Old televisions and computer equipment

Hazardous waste disposal

Group Activity
Time: 20 minutes
Materials: Flip chart and markers

Divide the group into 2 teams. Have one group discuss and make a list of the WRONG ways to get rid of hazardous waste in their homes. The other group will make a list of the RIGHT ways to get rid of these products. The teams can choose a spokesperson to read their list, or they can present it as a skit or some other creative way. Give a small prize to the most creative presentation.

To review the issues with the group, ask them the following questions.

? What are the WRONG ways to dispose of these items?

- Pouring them down the drain
- Pouring them on the ground or into storm sewers
- Putting them out with the regular trash
- Dumping them along the side of the road, in a vacant lot, etc.

? How can they harm us?
- They can contaminate septic tanks or wastewater treatment systems
- They can hurt children or pets if left around the house
- They can hurt sanitation workers
- They can contaminate the groundwater and wildlife

? What can we do to reduce these dangers?
- Use less of these items
- Share leftover materials with neighbors or friends, donate to charity (like old appliances and TVs)
- Ask the trash collector or local public works department about where to take these kinds of trash
- Recycle (old car batteries and motor oil)

We can also educate neighbors and friends about the danger that household chemicals pose to drinking water supplies. Many communities sponsor household hazardous waste disposal days to promote proper handling of waste paints and thinners, pesticides, used oil, and other hazardous materials.

IX. Promoting Clean Water and Hygiene in the Community

Role plays
Time: 45 minutes

Divide participants into groups of four. Give each group about 10 minutes to prepare one of the following role plays. Remind the participants that the most effective way to educate the community is to engage individuals in a dialogue. Encourage participants to ask many questions of the community member during their roles as *promotores* to facilitate this exchange of ideas. Note that simply lecturing to the community members is likely to turn them off. Tell them that they are welcome to use any of the materials and props that were used during the workshop. Visit each group as they are preparing to see if they have any questions. Have each group present their role play to the rest of the participants. After each group presents their role play, be sure to provide feed back. Ask the other participants to help you point out what was done well and what can be improved.

- *Promotores de salud* visit the home of a family that gets its drinking water from a well and has a septic tank. The *promotores* talk about appropriate steps to take regarding water disinfection and safe hygiene practices.

- *Promotores* visit the home of a family that doesn't have a regular trash pickup at their home. They usually burn their trash in a field behind their house. The *promotores* explain the dangers of burning trash for their health and the environment, and offer some alternative solutions for trash disposal.

- *Promotores* visit a farmworker couple and talk to them about how to practice safe hygiene in the field and avoid parasitic and other diseases.

- *Promotores* visit the home of a home mechanic and speak to him and his wife about how hazardous waste can affect their family's health. They explain how to properly dispose of hazardous waste generated by his home business and hazardous household waste.

X. Conclusion and Evaluation

Time: 15 minutes
Materials: Water and Sanitation Post-tests, Evaluation forms

Ask the group if there are any questions or comments. Distribute any materials that they will be giving to members of the community, including referral information to nearby health clinics, governmental agencies, legal services organizations and community-based organizations, and information about local resources for safe disposal of hazardous waste and recycling.

Distribute the post-test and workshop evaluation forms. Review the correct answers for the pre- and post-tests.

XI. Sources

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OBJECTIVES

- Understand the water cycle
- Explain the difference between surface and ground water
- Review how water can be contaminated
- Identify common water contaminants and their health effects
- Understand the fecal-oral disease cycle
- Review ways to prevent diseases caused by contaminated water
- Understand the importance of safely disposing of trash and human waste
- Describe the different types of trash and trash management
- Practice techniques to promote clean water and sanitation issues in the community

WATER RELATED DEFINITIONS

Water Cycle

Water is neither used nor created. The same water that is here today existed during the signing of the Declaration of Independence, during the reign of Caesar, and during the age of dinosaurs. Water used to fill a tea kettle may disappear as steam or be drunk and discharged as sewage; however, it will eventually return to that same spot. This is because of the hydrologic cycle, which has no beginning or end and is in continuous operation.

Wagner, In Our Backyard, 1994

Ground water:

water that is underground. We can not see it. Think of ground water as water that fills spaces between rocks and soil particles underground, in much same that water fills a sponge. Groundwater begins as precipitation such as snow or rain and soaks into the ground.

Aquifer:

underground areas where ground water is stored.

Water table:

the top of the water-saturated portion of an aquifer.

Surface water:

water that flows on the surface of the earth and is naturally open to the air. The vast majority of the earth is covered with surface water. Even though oceans make up 99% of all surface water, generally speaking, the term surface water refers to rivers, streams, lakes, reservoirs, ponds, and estuaries (places where salt water and fresh water meet).

Runoff:

excess water located in depressions in the land to form pools of water or at the top of the soil and becomes overland flow. It also happens in areas where impermeable surfaces prevent ground infiltration, such as in streets, buildings, parking lots, and rock. Runoff primarily enters streams and rivers, where it eventually returns to the ocean.

Filtration:

process that filters large-to micro-sized particles. Filters can be made of screens, sand, or synthetic membranes.

Transpiration:

the moisture that moves up plant roots, through their trunks or stems, and out through tiny holes on the underside of their leaves.

Precipitation:

droplets or ice crystals that falls out as rain, snow, sleet, hail, fog, or dew.

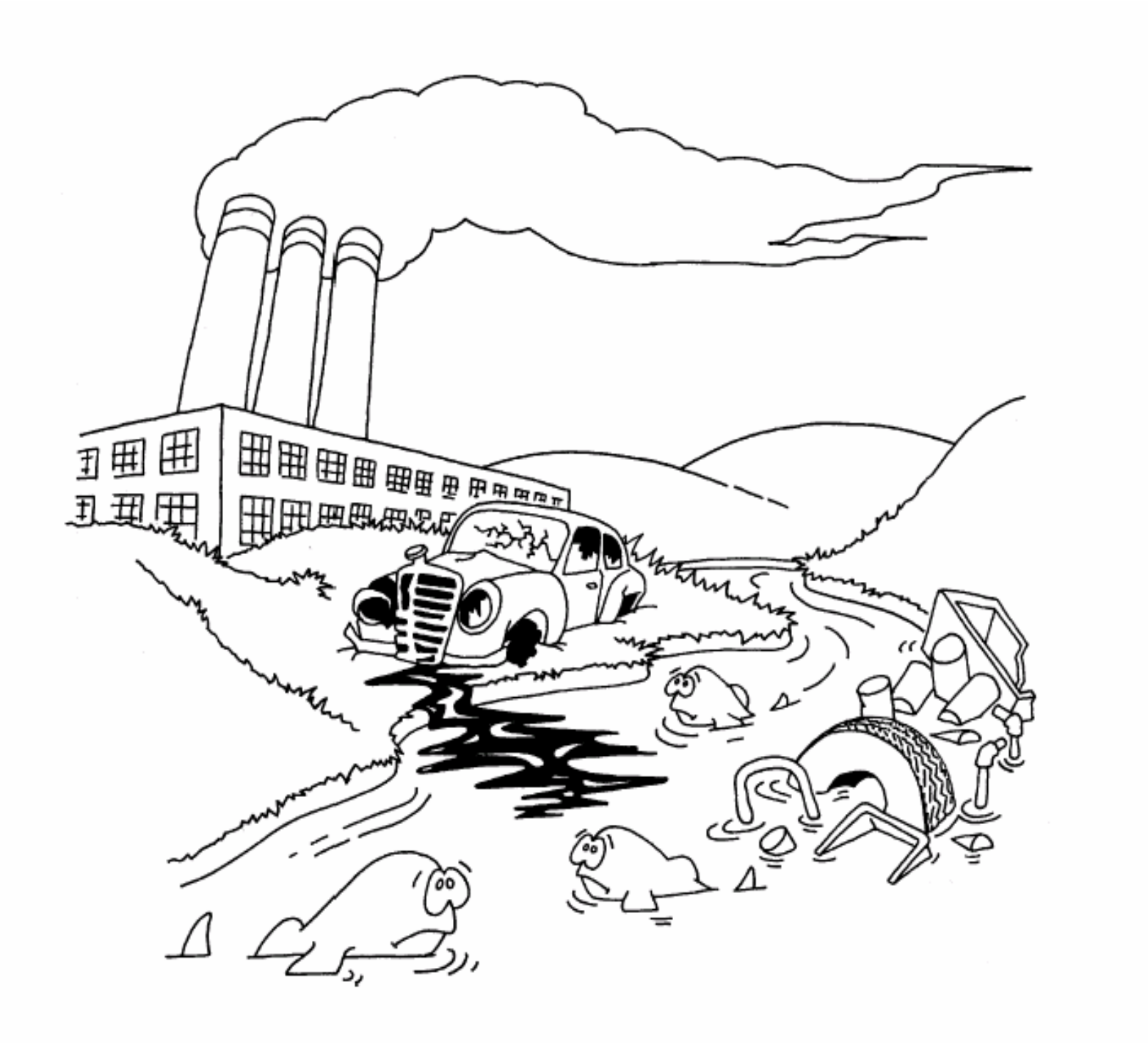
Condensation:

a process where water vapor cools and forms droplets or ice crystals.

Evaporation:

is the process where liquid water is transformed into a gas.

Water Contaminants



Handout 3: Water Contaminants and Their Health Effects

Nitrates

What are nitrates?

Nitrates are chemicals that are found naturally in small amounts in the soil. Fertilizers and animal waste are also nitrate sources.

How can they contaminate my drinking water?

Nitrates can mix with the water in the ground and then seep into a well, especially wells that are shallow, poorly constructed or improperly located.

Wells contaminated with nitrates usually are located near leaking septic tanks, areas where a lot of nitrogen fertilizer is used, or poultry, cattle or hog farms.

How can they affect my family's health?

Babies under six months old who drink water with nitrates may develop "blue baby syndrome." This means that the babies' blood can't carry enough oxygen throughout their bodies. This condition can be serious and can sometimes even cause death. Boiling the water only makes the problem worse. When nitrate-contaminated well water is boiled to make baby formula, the boiling concentrates the nitrates in the water and increases the health risk to the baby.

Certain adults may also be harmed by nitrates. People with severe heart or lung disease may be hurt by nitrates. Pregnant women who drink nitrate-contaminated well water may be more likely to have a miscarriage.

Mercury

What is mercury?

Mercury is a metal that exists naturally in small amounts in water, air and the earth's crust. Mercury is used to produce batteries and pesticides. It is also used in electric light bulbs, electrical components, barometers and thermometers.

How can it contaminate my drinking water?

Mercury enters the air from mining ore deposits, burning coal and waste, and from manufacturing plants. Mercury from the air can drift and be deposited in surface water, accumulating in rivers and oceans. Bacteria in water can transform mercury into methylmercury, which can be very toxic.

Most of the mercury in humans enters the body through food, especially fish. Fish absorb methylmercury in the water when they eat small aquatic organisms and it builds up in their fat and tissues.

How can it affect my family's health?

The nervous system is very sensitive to all forms of mercury. Exposure to mercury can permanently damage the brain, kidneys, and developing fetus. Effects on brain functioning may result in irritability, shyness, tremors, changes in vision or hearing, and memory problems.

Mercury may be passed from the mother to the fetus. This could cause brain damage, mental retardation, lack of coordination, blindness, seizures, or the inability to speak in the baby. Children poisoned by mercury may also develop problems of their nervous and digestive systems, or kidney damage.

Atrazine

What is atrazine?

Atrazine is an herbicide. It is used to kill weeds, primarily in corn and sorghum fields. It has also been used on highway and railroad rights-of-way.

How can it contaminate my drinking water?

Atrazine sprayed on agricultural fields may run off into streams or groundwater where it will stay for a long time, because the chemical breaks down slowly in water. People may also be exposed to atrazine by drinking water from wells that are contaminated with it.

How can it affect my family's health?

There is evidence that atrazine may cause cancer, as well as liver, kidney, and heart damage. Some studies suggest that atrazine could affect pregnant women by causing their babies to grow more slowly than normal or by causing women to give birth too early.

Automotive Gasoline

What is gasoline?

Gasoline is used as a fuel for engines in cars. Gasoline is produced from petroleum in the refining process. Typically, gasoline contains more than 150 chemicals, including small amounts of benzene, toluene, xylene, and sometimes lead.

How can it contaminate my drinking water?

Gasoline spills can contaminate both surface water and groundwater. Underground storage tank leaks can also contaminate groundwater.

How can it affect my family's health?

Many of the harmful effects seen after exposure to gasoline are due to the individual chemicals in the gasoline mixture, such as benzene and lead. Breathing or swallowing large amounts of gasoline can irritate the lining of the stomach, damage the nervous system, and even cause death.

Fecal Matter

What is fecal matter?

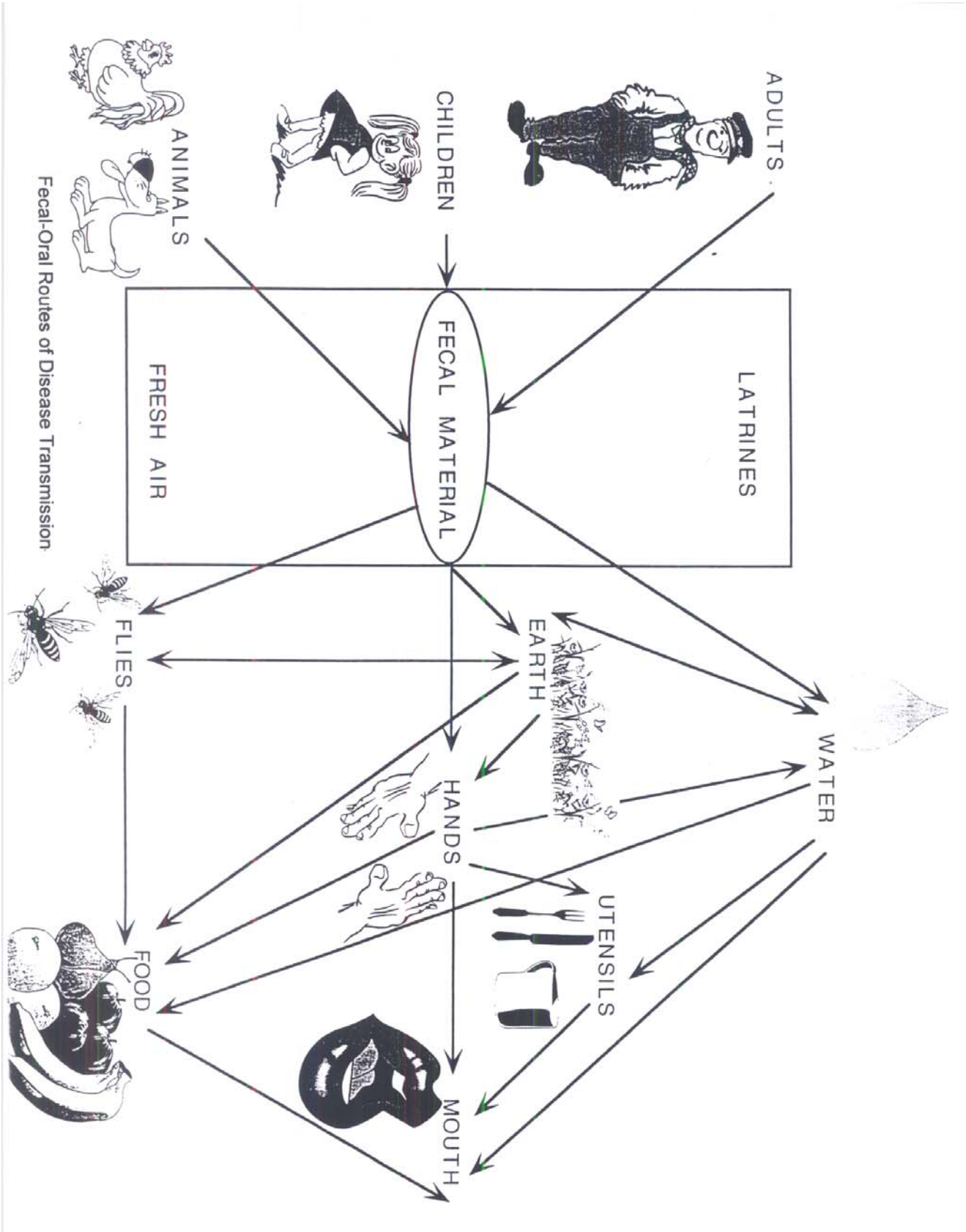
Fecal matter is the excrement produced by animals and humans ("poop"). Sometimes this matter contains organisms like bacteria, viruses and parasites that can cause illness.

How can it contaminate my drinking water?

These organisms or their eggs can enter the water supply through untreated sewage, poorly maintained and improperly constructed septic tanks and latrines, and runoff or flood waters.

How can it affect my family's health?

These organisms can cause diseases like cholera, hepatitis, gastroenteritis, typhoid fever and dysentery.



Handout 6: Fecal-Oral Disease Cycle

Types of Waste

Toxic Waste

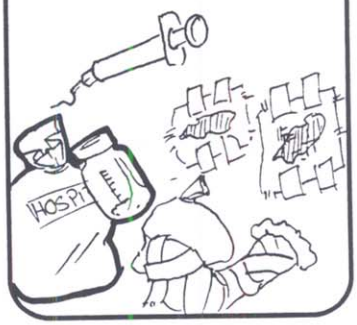
All wastes are toxic. However, some present a minimal risk when managed properly.

Municipal Solid waste

Garbage and trash that is generated by households, schools, offices, and similar facilities.

Medical Waste

Waste generated by hospitals,laboratories, morgues, and dental clinics.



Hazardous Waste

Waste that meets the legal definition of hazardous and requires special handling because it presents serious threat to human health and the environment if not properly managed. It is primarily industrial waste.

Industrial Waste

This category includes industrial waste that is not legally defined as hazardous (which does not necessarily mean that it is not toxic). It includes manufacturing waste, mining waste, coal combustion waste, and oil and gas production waste.

Radioactive Waste

All wastes that exhibit radioactivity, including spent nuclear fuel, high-level and transuranic radioactive waste from weapons production, low-level radioactive waste, and uranium mill tailings from the processing of uranium ore.

Source: Wagner, In our Backyard, (New York: Van Nostrand Reinhold, 1994).

Handout 9: Types of Waste

OBJETIVOS

- Revisar el ciclo del agua
- Explicar la diferencia entre agua de la superficie y agua bajo la tierra
- Revisar como se contamina el agua
- Identificar los contaminantes comunes de agua y sus efectos para la salud
- Entender el ciclo oral-fecal de enfermedades
- Revisar las maneras de prevenir enfermedades producidas por agua contaminada
- Entender la importancia de eliminar la basura y los desechos humanos en una manera segura
- Describir las categorías de basura y las diferentes formas de manejar la basura
- Repasar como promover la práctica de agua limpia y sanidad en la comunidad

Material 1: Objetivos del Taller de Agua y Sanidad

Material 2: Ciclo del Agua

DEFINICIONES RELACIONADAS CON EL AGUA

Ciclo del Agua

El agua no es usada ni creada. La misma cantidad de agua que existe hoy ha existido durante la firma de la independencia, durante el reinado del César, y durante la era de los dinosaurios. El agua utilizada para llenar una cafetera puede desaparecer como vapor o puede ser tomada, o puede ser desalojada en el drenaje; sin embargo, en cualquier momento, esta agua regresará al mismo lugar. Esto es porque el ciclo hidrológico (del agua) no tiene principio ni final, y está en constante movimiento.

Wagner, In Our Backyard, 1994

Agua subterránea:

Agua que se encuentra en el subsuelo. No podemos verla. Piense en el agua subterránea como el agua que llena los espacios de las partículas de las rocas y la tierra subterránea, se parece mucho al agua que absorbe una esponja. El agua subterránea inicia con la precipitación por lluvia o por nieve y se filtra en el subsuelo.

Acuífero:

Áreas en el subsuelo donde el agua subterránea se almacena.

Acuífero poco profundo:

Es la parte superior del acuífero saturada de agua.

Agua Superficial:

Agua que corre en la superficie de la tierra y que está en contacto con el aire. La gran mayoría de la tierra está cubierta con agua superficial. Aunque los océanos forman el 90% del agua superficial, generalmente cuando se habla de agua superficial se refiere a los ríos, arroyos, lagos, presas, estanques (los lugares donde agua salada y agua dulce se juntan).

Escurrimientos (Agua pluvial):

Es el exceso de agua localizado en las partes bajas del suelo donde se forman estanques de agua en la superficie del suelo y se vuelve fangosa (ya no absorbe más el agua). También sucede donde las capas impermeables del suelo impiden la filtración del agua, como en calles, edificios, estacionamientos, pedregales, etc. El escurrimiento se une primeramente a los arroyos y ríos, y posteriormente se une a los océanos.

Filtración:

Proceso que permite el paso del agua pero detiene las partículas grandes en la misma. Los filtros pueden ser de malla, de arena o de membranas sintéticas.

Transpiración:

La humedad que se forma en la parte superior de las plantas, a través del tronco y de las ramas y hojas, y sale a través de pequeños hoyos en la parte de abajo de las hojas.

Precipitación:

Son gotas de agua o cristales de hielo que caen como lluvia, nieve, granizo, neblina, o niebla.

Condensación:

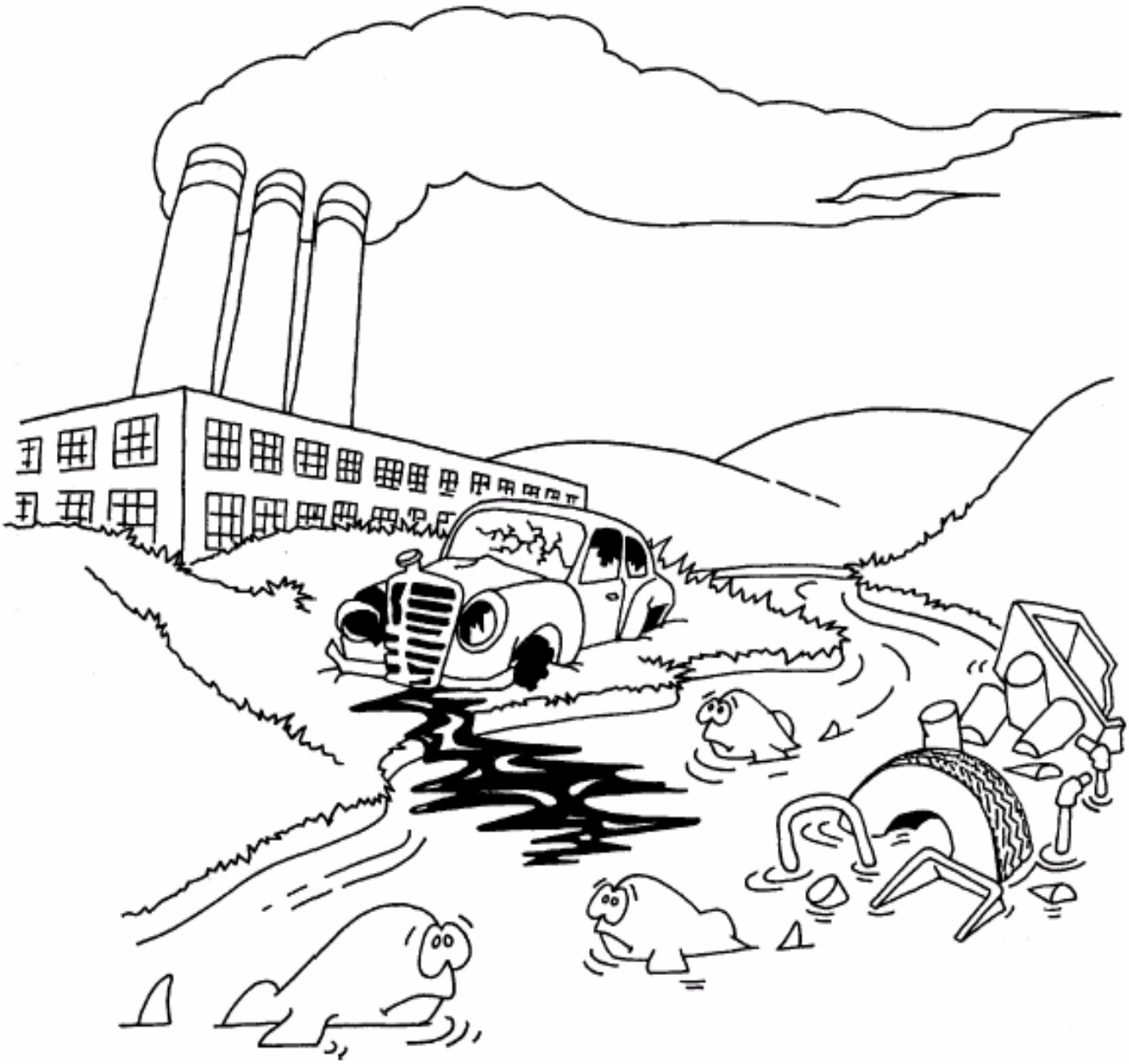
Es un proceso donde el vapor del agua se enfría y forma gotas de agua o cristales de hielo.

Evaporación:

Es un proceso donde el agua líquida se transforma en vapor o gas.

Material 2a: Definiciones Relacionadas con el Agua

Contaminantes del Agua



Material 3: Contaminantes del Agua y sus Efectos en la Salud

Nitratos

¿Qué son nitratos?

Los nitratos son sustancias químicas que se encuentran naturalmente en los suelos en pequeñas cantidades. Los fertilizantes y las aguas negras de origen animal también son fuentes de nitratos.

¿Cómo pueden contaminar el agua que tomo?

Los nitratos se mezclan con el agua subterránea y luego se infiltran en el agua de pozo, especialmente los pozos que son poco profundos, que no están bien construidos o que no tienen una ubicación adecuada.

Los pozos que están contaminados normalmente están localizados cerca de fuentes de contaminación como sistemas sépticos (que están fallando), fertilizantes con nitrógeno o criaderos de pollos, pavos, ganado o puercos.

¿Cómo pueden afectar a la salud de mi familia?

Los bebés que tienen menos de seis meses de edad y que beben agua con nitratos pueden desarrollar lo que se llama el "síndrome del bebé azul". Esto significa que la sangre del bebé no lleva suficiente oxígeno por el cuerpo. Esta condición puede ser grave y a veces puede causar la muerte. Si hierve el agua, el problema empeora. Cuando se hierve el agua contaminada con nitratos para mezclar la fórmula del bebé, el hecho de hervir concentra los nitratos en el agua y aumenta el riesgo para su bebé.

Personas que ya tienen problemas graves del corazón o alguna enfermedad de los pulmones pueden correr el riesgo de quedar aún más enfermos debido a esos nitratos. Las mujeres embarazadas que beben agua de pozo contaminada con nitratos, tienen mayor probabilidad de tener abortos espontáneos.

Mercurio

¿Qué es el mercurio?

El mercurio es un metal que existe de forma natural en el agua, el aire y la corteza terrestre. El mercurio es utilizado en la fabricación de baterías y pesticidas, en bombillas eléctricas y componentes, así como en barómetros y termómetros.

¿Cómo puede contaminar el agua que tomo?

El mercurio pasa al aire durante la extracción de depósitos minerales, al quemar carbón y basura y de plantas industriales. El mercurio cae desde el aire y puede alcanzar el agua superficial, acumulándose en corrientes y océanos. Las bacterias del agua provocan cambios químicos que transforman el mercurio en metilmercurio, que puede ser tóxico.

En el ser humano, la mayor ingesta de mercurio se debe a los alimentos. Especialmente, al consumo de peces debido a su alta retención de metilmercurio. El pez absorbe el metilmercurio del agua cuando se alimenta de organismos acuáticos.

¿Cómo puede afectar a la salud de mi familia?

El sistema nervioso es muy susceptible a todas formas de mercurio. El mercurio puede dañar en forma permanente a los riñones, el cerebro, y al feto. Los efectos sobre la función cerebral pueden manifestarse como irritabilidad, timidez, temblores, alteraciones a la vista o la audición y problemas de la memoria.

El mercurio que puede pasar de la madre al feto, causando daño cerebral, retardamiento mental, incoordinación, ceguera, convulsiones e incapacidad para hablar. Niños con envenenamiento de mercurio pueden desarrollar problemas al sistema nervioso, al sistema digestivo y lesiones al riñón.

Atrazina

¿Qué es la atrazina?

La atrazina es un herbicida. Es usada para eliminar hierbas, principalmente en fincas de maíz y sorgo, pero también se ha usado a lo largo de carreteras y líneas ferroviarias.

¿Cómo puede contaminar el agua que tomo?

Atrazina rociada sobre cosechas agrícolas puede pasar desde el suelo a arroyos o al agua subterránea donde permanece por largo tiempo. Su degradación en el agua es lenta. Personas que toman agua de pozos que están contaminados con atrazina también pueden ser expuestas a este herbicida.

¿Cómo puede afectar a la salud de mi familia?

Hay evidencia que la atrazina puede causar cáncer, daño del hígado, el riñón y el corazón. Algunos estudios sugieren que en mujeres embarazadas. la atrazina puede causar crecimiento retardado del feto, defectos de nacimiento, abortos o partos prematuros.

Gasolina de Automóvil

¿Qué es la gasolina?

La gasolina es usada como combustible para motores de automóviles. La gasolina es producida de petróleo en el proceso de refinación. Típicamente, la gasolina contiene más de 150 productos químicos, incluyendo pequeñas cantidades de benceno, tolueno, xileno, y algunas veces plomo.

¿Cómo puede contaminar el agua que tomo?

Derrames de gasolina pueden contaminar aguas superficiales. Gasolina que se escapa de tanques de almacenaje subterráneos puede contaminar al agua subterránea. Gasolina que se ha derramado sobre el suelo también puede contaminar al agua subterránea.

¿Cómo puede afectar a la salud de mi familia?

Muchos de los malos efectos observados después de la exposición a la gasolina se deben a los químicos individuales en la mezcla de gasolina, tales como benceno, y plomo. Inhalar o tragar grandes cantidades de gasolina puede irritar al estómago, dañar el sistema nervioso, y causar la muerte.

Materia Fecal

¿Qué es la materia fecal?

Materia fecal es el desecho sólido que producen los animales y los seres humanos (el "popo"). A veces esta materia contiene organismos como bacterias, víruses y parásitos que causan enfermedades.

¿Cómo puede contaminar el agua que tomo?

Los organismos (o sus huevecillos) en la materia fecal son descargados a través de las aguas negras no tratadas, o de fosas sépticas y letrinas sin mantenimiento adecuado, y a través de los escurrimientos o agua pluvial.

¿Cómo puede afectar a la salud de mi familia?

Estos organismos pueden causar enfermedades gastrointestinales como cólera, hepatitis, gastroenteritis, fiebre tifoidea y disentería.

Material 6: Ciclo Fecal-Oral de Enfermedades

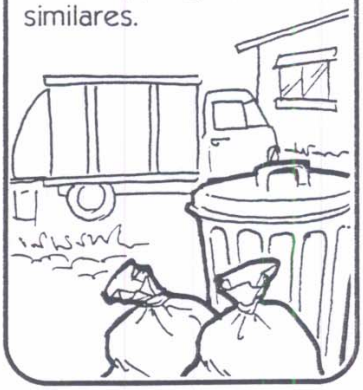
Tipos de Basura

Basura Tóxica

Toda basura es tóxica. Sin embargo algunos tipos presentan riesgos mínimos si se maneja apropiadamente.

Basura Sólida Municipal

Basura generada por hogares, escuelas, oficinas, y lugares similares.



Basura Infecto-contagiosa

La que se produce en laboratorios, centros hospitalarios, morgues y clínicas dentales.

Basura Peligrosa

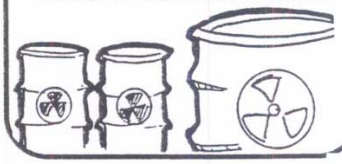
Reune las caracteristicas de basura peligrosa y representa ciertos riesgos para la salud y el ambiente cuando no se maneja apropiadamente. Principalmente es basura industrial.

Basura Industrial

Incluye basura industrial no clasificada legalmente como peligrosa (no significa necesariamente que no sea tóxica) y la generada por: procesos de manufactura, de minería, por combustion de carbón y petróleo y por producción de gas.

Basura Radioactiva

La que muestra radioactividad, incluyendo combustible nuclear usado, basura radioactiva de alto nivel por producción de armamentos, basura radioactiva de bajo nivel , y residuos de uranio del proceso mineral de extracción.



Fuente: Wagner, In our Backyard, (New York: Van Nostrand Reinhold, 1994).

Material 9: Tipos de Basura