

# OUR WORLD, YOUR TURN

Activities to protect our  
environment and your health



United States  
Environmental Protection Agency

*Office of Children's Health Protection (1107)*

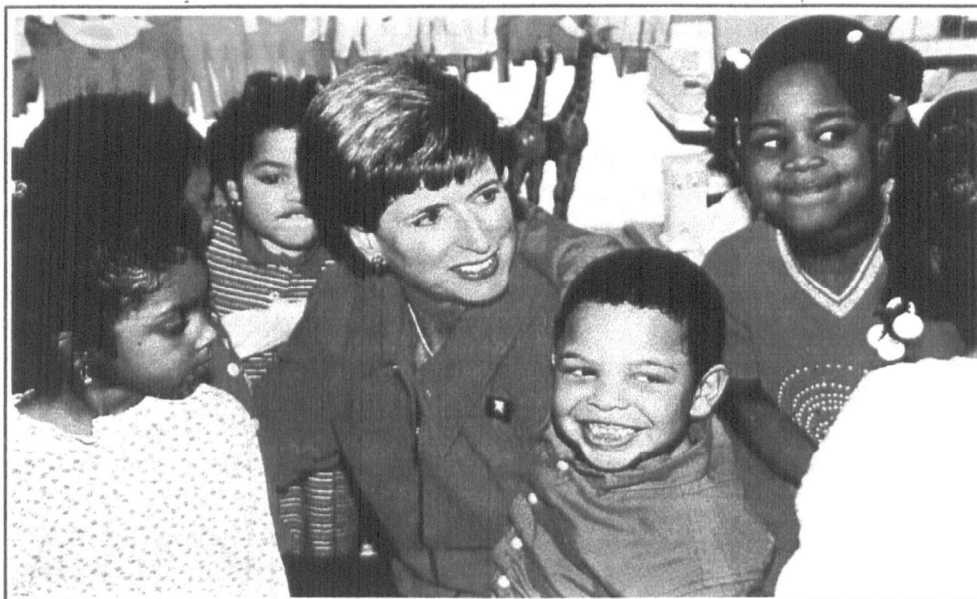
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Did you know that the quality of the air you breathe, the water you drink, and the land on which you play makes a big difference in the way your body grows and stays strong?

Well, it does, and this book will help you learn more about how you can take charge of your environment and make a real difference in your life and in the lives of your family and friends.

*"Our World, Your Turn"* offers each of you the opportunity to learn about environmental health issues that affect millions of people in our country, especially you and your friends. Each chapter of this book explains a different environmentally related problem, provides useful information about how to protect yourself and your friends from harm, and gives ideas for activities you can do to spread the news about what you have learned. While environmental health is a serious issue, I know you will find the information and activities in this book exciting and rewarding.

The United States Environmental Protection Agency has written this book to provide you with tools to meet the challenge of helping to protect children's health in a way that is fun. I encourage you to help us meet this challenge. It's "Our World, Your Turn"!

Christine T. Whitman  
Administrator  
United States Environmental Protection Agency

# LETTER TO YOUTH ORGANIZATIONS

Dear: Youth Organization

This document is a result of our partnership with the Girl Scouts of the USA, the Boy Scouts of America, the National FFA Organization, the National 4-H Council and the United National Indian Tribal Youth (UNITY) to educate and engage youth in children's environmental health. The purpose of "ENGAGE" is to provide youth organizations with a practical tool to educate and train their youth about environmental health and what roles they can play in protecting themselves, their families and their community against environmental health hazards. This document focuses on middle school and high school aged youth and addresses water contamination, pesticides, asthma, fish advisories, sun safety, second-hand smoke and lead poisoning. For each topic it defines the hazard, explains the impacts caused by the hazard, provides interventions, and gives examples of activities that youth can do at home and in their community. "ENGAGE" provides a wonderful opportunity for youth to learn the importance of environmental protection and how it relates to their environmental health and provide many avenues to help them develop and promote leadership skills and increased self-esteem through outreach projects.

For years, children have been educated on the importance of environmental protection. Because of increased awareness, children are becoming more conscious of how important the environment is to their lives and to future generations. In studying environmental perception and attitudes among youth, researchers found that the most important reason youth want to protect their environment is for human health. Youth Organizations have known for a long time that youth are ready to take action to learn what their role should and can be in protecting themselves and others from environmental hazards. In a 1992 public opinion poll conducted by Peter D. Hart Research Associates, young people ranked the environment as the most important issue we will face as a nation in the year 2000. The same poll reported that youth believe adults have failed to do enough to protect the environment and seek to influence their parent's behavior on environmental issues.

The National Library of Education states there are over 51 million children between the ages of 5 and 17 in the United States (1998-1999). Middle and early high school aged students represent a large portion of this population. National youth organizations have made great strides in representing and influencing youth in this age group. By giving national organizations the tools to educate their youth about environmental health and how it relates to their health and the environment, they will help promote the importance of environmental health protection, and help lay the groundwork for the next generation. Involving young people must be a part of the strategy. This can not and will not be accomplished without the help of national youth organizations who have access to a large portion of the nation's youth.

In order to assess the impact of this document on youth and their communities, an assessment of how the document is used in your programs would be valuable. This information would help other organizations who are interested in integrating environmental health into their programs.



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# Chapter 1: Introduction:

## Environmental Health and You

You have all heard the old saying, "What you don't know can't hurt you!"

When it comes to the environment and your health, this saying is far from true. Did you know that there are many environmental health hazards that you may face every day that could harm you?

- For example, radon gas is the second leading cause of lung cancer in our country. You can't see it, smell it or taste it. You have to test your home to find out if it's there. If you don't know about radon gas and what steps you can take to protect you and your family, then you or someone else may be hurt.
- What do you know about sun safety? We all know that wearing a hat is a good way to protect ourselves from the sun, but do you know what type of hat works best? This may not sound important, but research shows that hats that cover your ears provide the best protection. This is because your ears are very susceptible to sun exposure.
- Are your parents remodeling your old house? Do you know that lead paint dust can cause permanent injury to you, your family, and your pets?

For years you have learned about the environment and how important it is to protect it. But, did you know that protecting the environment can help you protect your own health? By simply using the knowledge you have to protect yourself from environmental hazards, you will be able to live a more healthy lifestyle. Think about this: the more we keep pollutants (pesticides, oil, trash, etc.) out of our rivers, lakes, and streams, the more



clean water we will have for our own needs. People who drink and come in contact with contaminated water are at risk of getting sick. Contaminated water also depletes our drinking water supply and limits our ability to use it for recreational purposes, like swimming or fishing. You can see how protecting the environment is directly linked to protecting your health.

There are many environmental health hazards that you need to be aware of to protect your health and the health of your family. In this book, you will learn all about environmental health threats that you may encounter everyday at home, at school and in your community and what you can do to protect yourself.





## Chapter 2: Tap Into This

Humans, plants, and animals depend on clean water to live. Americans use more drinking water per person than any other country in the world. We often take clean drinking water for granted; everyday the average American uses about 50 gallons of water for activities such as car washing, cooking, bathing, watering lawns and gardens, washing clothes, flushing commodes and household cleaning. We need to learn that clean drinking water is a precious resource

that is not available to everyone and should be protected. Around the world many people get sick because their drinking water is dirty. In fact, every eight seconds a child dies from a disease related to unsafe water.

Knowing where your drinking water comes from is a good first step in understanding the importance of clean drinking water and how you can help to protect it and yourself from potential contaminants that pollute drinking water sources. The largest supply of fresh water used for drinking is found under the earth's surface as groundwater. Approximately 140 million (53%) Americans get their drinking water from this source. Surface water, such as rivers, lakes and reservoirs supply drinking water to about 47% of Americans. Most people use public water systems to ensure clean drinking water, while 23 million Americans have private drinking water supplies.

The United States has one of the best supplies of drinking water in the world. Nonetheless, there are many possible contaminants or pollutants that can make our waters unsafe. Some are naturally found in our environment, like metals, minerals, and radon while others are man-made, such as chemicals, pesticides and motor oil. Contaminated water is a serious environmental health hazard, and threatens the health of all people who drink it. Forty-four percent of all of the waterborne disease outbreaks between 1981 and 1988 were linked to contaminated water.

Everyone is impacted when contaminants invade the drinking water supply. Some of the health risks resulting from chemical contaminants in the water include liver, kidney and nervous system disorders, hepatitis and dysentery, cardiovascular and hypertensive effects, anemia and increased risk of cancer. Health risks from waste contaminants in the water supply include pneumonia and digestive diseases.

## Protect Yourself from Contamination

The best way to protect yourself from contaminated drinking water is to prevent contamination from entering your drinking water supply. Outlined below is a list of actions that will help protect against drinking water contamination and drinking water source.

### Get drinking water tested:

- If your water comes from a public supplier, contact the supplier before you have your water tested. The supplier can tell you about the quality of your water, where your water comes from, what type of contaminants are in your water, and how your water is made safe. You can also get an annual water quality report that will tell you what contaminants are found in your water. If you decide to test the water yourself, test kits can be obtained from your state certification officer
- If you have a private drinking water supply it should be tested annually for nitrate and coliform bacteria. Test more frequently for potential contaminants like pesticides if you suspect a problem. Call your state certification officer to have your water tested
- Take used motor oil to a recycling center
- Limit the amount of fertilizer used on plants
- Install a well cap or sanitary seal to prevent unauthorized use of, or entry, into the well
- Disinfect drinking water wells at least once per year with bleach or hypochlorite granules, according to the manufacturer's directions.
- Avoid mixing or using pesticides, fertilizers, herbicides, degreasers, fuels, and other pollutants near the well.
- Pump and inspect septic systems as often as recommended by your local health department

- Never dispose of hazardous materials in a septic system
- Always let the cold tap water run for 30 seconds before drinking or using it for cooking
- Become educated about the water you drink and use
  1. EPA sets health-based standards to protect the nation's drinking water from unsafe amounts of contaminants. The Safe Drinking Water Act (SDWA) requires that information concerning your drinking water be made public.
  2. The EPA also has a drinking water web site [[www.epa.gov/safewater/](http://www.epa.gov/safewater/)]. The site provides information on EPA's implementation of SDWA, the contaminants regulated under SDWA, educational activities and drinking water publications. It also lists links to other drinking water web sites.
  3. The EPA has several publications that help communities develop and implement safe drinking water protection programs. These publications can be ordered through EPA's Safe Drinking Water Hotline [1-800-426- 4791] and are also available on the internet at: [[www.epa.gov/safewater/Pubs/new/pipdws.html](http://www.epa.gov/safewater/Pubs/new/pipdws.html)].

## Outreach Activities

1. Make copies of the Blue Thumb Tips and Trick Sheet attached. Pass out copies to your family and friends at school, church and home. This sheet helps you and others get involved by using these tips and tricks to help conserve and protect water, our most precious natural resource.
2. Help to organize a poster contest for your school or community. The posters can show ways to conserve and protect water. After the contest, ask to display the posters at shopping malls, stores, the library, water treatment plants and city hall.
3. At the neighborhood, county or state fair, set up a safe drinking water booth. Give handouts, and perform scheduled water demonstrations as well as hands on activities.



- Handouts can include: pamphlets and information booklets from EPA, Ground Water Protection: A Citizen's Action Checklist, Recommendations to Public Water System Users, Recommendations to Household Well Users, Safe Water Questions and Answers, A Blue Thumb Fun Pack (Which could include: Water Riddles, Blue Thumb Word Search, Blue Thumb Word Scramble, Blue Thumb Crossword Puzzle, Fun Water Facts, Focus on Water (kids find out where their watershed is located), and Water Drinker Bloopers)

4. Investigate and write a report on the water in your community (Hand out the findings at the fair).
5. Schedule demonstrations: How Water Wells are Drilled (After demonstration give a tip sheet to household well users on things that can pollute their wells and remedial steps).
6. Conduct a water contamination experiment using the information above and from other resources mentioned. Create a display and explain ways that contaminants get into the water supply.



GIVE DRINKING WATER A HAND.

## Youth Activity

# Conserve - Protect - Get Involved

Each person's actions can affect our drinking water supplies. By following the Blue Thumb Basics—conserve, protect and get involved—you are choosing to help keep our water resources safe, our reservoirs full, and our decisions water-responsible. Every Blue Thumb action you take will be reflected in the water cycle and ultimately in our drinking water.

You can play a big part in taking care of our water resources. Think of ways you can "Ride the Water Cycle" and help protect water at every phase.

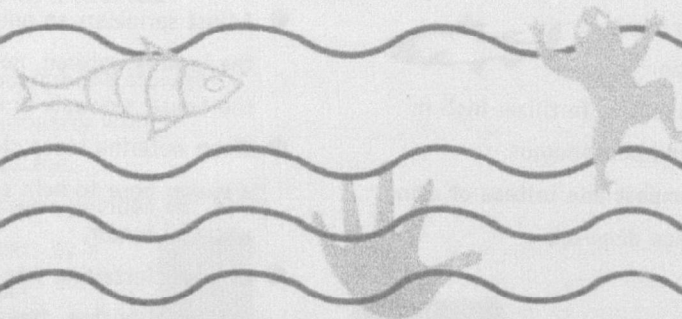
Some things you can do are:

- always fill up the dishwasher before you run it
- don't let the water run while you brush your teeth
- don't throw products such as batteries in the trash, because they contain elements that would be harmful to groundwater
- reduce the amounts of lawn fertilizers and pesticides that you use
- find out where your water community water supply comes from

Think of some more ways you can conserve, protect and get involved.

Create sentences about conserving water that start with the letter indicated below. Then "Ride the Water Cycle" and share what you've learned with other students, family, and friends.

B  
L  
U  
E  
  
T  
H  
U  
M  
B



# Blue Thumb Tips That Everyone Can Use

## Inside Tips



- Fill a pitcher with tap water and put it in the fridge, rather than running the tap every time you want a drink.
- Defrost frozen food in the refrigerator or in the microwave instead of running water over it.
- Check faucets, toilets and pipes for leaks.
- Use phosphate-free detergents.
- Choose natural cleansers — borax, ammonia, vinegar or baking soda.
- When washing dishes by hand, use two basins — one for washing, the other for rinsing — rather than letting the water run.
- Insulate your water heater and all hot water pipes. Less water will be wasted before hot water flows.
- Recycle water from fish tanks by using it to water plants. Fish emulsion is a good, inexpensive fertilizer high in nitrogen and phosphorous.
- Build a compost pile instead of using your garbage disposal.



## Outside Tips



- Do not drink water directly from a pond, creek, stream, river or lake without bringing it to a rolling boil for one minute. Let the water cool before drinking it.
- Use a broom, rather than the hose to clean sidewalks and driveways.
- Use a bucket of water, sponge and a hose with a shut-off nozzle to wash your car.
- Place a layer of mulch around trees and plants to retain water.
- If you have a swimming pool, get a cover for it and you'll cut the loss of water by evaporation by 90%.
- Use a moisture indicator to tell when your lawn needs watering and when it doesn't.
- Adjust sprinklers so only the lawn is watered, not the house, sidewalk or street.
- When watering steep slopes, use a soaker hose to help prevent wasteful runoff.
- Consider installing drip irrigation for individual bushes, trees, flowers, and garden areas. This method gets water slowly and directly to the plant roots where it's needed most.








# Blue Thumb Tips That Everyone Can Use

## All-Around Tips



- Use rechargeable batteries.
- Choose organic paint and natural finishes — wax and organic wood stains and natural preservatives.
- Support wetland preservation. These areas help maintain clean water. 
- Urge local officials to implement a wellhead protection program if your community relies on groundwater.
- Support plans to improve your community's water system, sewage system or waste disposal landfills.
- Appeal to political figures to enforce regulations regarding the dumping of hazardous wastes. 
- Have any abandoned wells on your property sealed by a licensed contractor.
- Replace any underground storage tanks on your property with aboveground storage.
- Have septic systems pumped out every one to three years by a qualified plumber. 



GIVE DRINKING WATER A HAND

## Our Relationship to Water

Nearly 60% of the world population lives on or near coastal waters, where people rely on water for food, energy, and income. Here are some interesting facts to help celebrate the ways water has affected our everyday lives.

- Windmills helped ensure a water supply for early settlers in North America. Where there were constant swift prairie winds, windmills were used to pump well water to the surface. Windmills are abundant in Holland also.
- The first conservation issue to which Theodore Roosevelt, the 26th President of the United States, devoted himself was the irrigation of arid Western lands, for settling.
- Sam Collins, a Texas pipeline builder, was the first to extract diamonds on a commercial scale from the seabeds of South Africa's Forbidden Coast.
- The earliest reference to a method for capturing the energy of tides is in the Domesday Book, a chronicle of all British financial holdings undertaken by William the Conqueror in 1086.
- Missionaries ended the 1000-year-old sport of surfing when they arrived on the islands of Oahu, Hawaii, and Maui in 1821. The sport was not revived until after World War II, when it was recognized as an asset to the islands' tourist economy.
- Almost every nation relies on the animal resources of the world's oceans for food, but Japan and Russia are perhaps the two most industrialized fishing nations in the world.
- As late as 1720, wearing pearls in France was forbidden to anyone but royalty — a measure of the esteem in which pearls were held. Before the discovery of oil, many Middle Eastern economies relied on pearl diving as a source of income. Today, pearls are "farmed."
- While the sport of water skiing was invented in the French Alps — by the Chasseurs Alpains, a group of soldiers skilled in Alpine warfare, the first water ski was patented by an American in 1924.
- Tempura, the basis of which is shrimp, is Japan's national dish.
- Sahar H. Pritchard was a pioneer underwater painter. He accompanied William Beebe, an early underwater explorer, on his expeditions to the sea floor.



The word hurricane, a tropical cyclone with heavy rain, comes from the Spanish.



## Blue Thumb Tips and Tricks

*Get involved and use these Blue Thumb Tips and Tricks to help conserve and protect water, our most precious natural resource.*

Tip: Recycle water from fish tanks.

Trick: Use it to water plants. Fish emulsion is a good, inexpensive fertilizer high in nitrogen and phosphorous.

Tip: Check faucets for leaks.

Trick: Do-it-yourself and replace worn washers periodically.

Tip: Promote water pollution prevention in your neighborhood.

Trick: Organize the cleanup of a river, lake, stream, or canal in your community.

Tip: When watering the lawn, avoid watering the house, sidewalk, or street.

Trick: Adjust sprinklers so only the lawn is watered.

Tip: Don't let the tap run every time you want a drink.

Trick: Fill a pitcher with tap water and put it in the fridge.

Tip: Never pour toxic chemicals down the drain, on the ground, or in the trash.

Trick: Choose natural household cleaners like borax, ammonia, vinegar, and baking soda and recycle hazardous household waste at waste collection centers.

Tip: Promote water conservation by watering trees and plants only once a week.

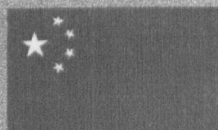
Trick: Place a layer of mulch around trees and plants to retain water.

Tip: Know how often your lawn needs watering.

Trick: Use a moisture indicator to tell when your lawn needs watering and when it doesn't.

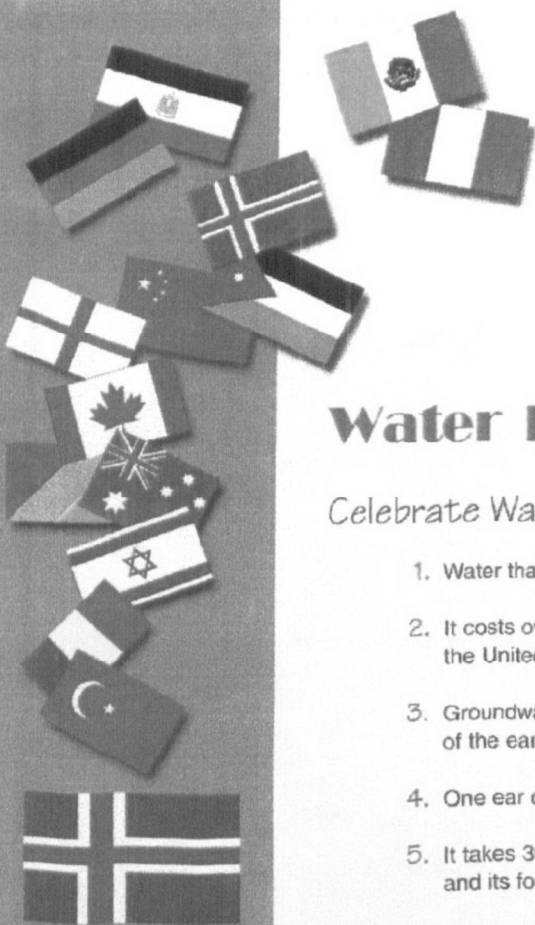
Tip: Get involved and voice your opinion about water issues in your community.

Trick: Attend a water board or planning commission meeting.



**The Chinese discovered the purifying effects of boiling water.**





The word walrus comes from Iceland by way of Scandinavia. In Icelandic, this animal is called a *hross-hwair*, meaning a "horse whale" because of its horselike neighing. In Scandinavia, the name became "whale horse" or "walrus" in English.

## Water Facts of Life

*Celebrate Water with these fun facts.*

1. Water that is safe to drink is called potable (pronounced pò'ta-bal).
2. It costs over \$3.5 billion to operate water systems throughout the United States each year.
3. Groundwater is water that sinks into the upper portion of the earth's surface.
4. One ear of corn is 80% water.
5. It takes 39,090 gallons of water to manufacture a new car and its four tires.
6. For the price of a single can of soda—an average 50 cents—many communities deliver up to 1,000 gallons of fresh, clean drinking water to homes.
7. Each year, nearly 10,000 cubic miles of water flows along the world's rivers to the oceans.
8. Public water suppliers in the US process nearly 34 billion gallons of water per day for domestic and public use.
9. On average, 50%–70% of household water is used outdoors for watering lawns and gardens.
10. Americans drink more than 1 billion glasses of tap water per day.

## Water Questions & Answers

**Q.** Is it okay to substitute other drinks for the recommended six to eight glasses of water needed each day to maintain good health?

**A.** Juice, milk, and soft drinks are almost all water, so they do count toward the required daily fluid intake. Nutritionists often recommend tap water because some beverages contain chemicals like caffeine and alcohol that do not help the body maintain fluid balance as well as other drinks.

**Q.** Why does dishwater or the dishwasher leave spots on glasses?

**A.** The spots that may appear on glassware after washing and air-drying are caused by nontoxic minerals that remain on the glass when the water evaporates. Spots on glass shower doors appear for the same reason. Commercial products are available that allow the water to drain from glassware more completely.

**Q.** What is a watershed?

**A.** A watershed is the region of land where all water drains—or “sheds”—to the same river, reservoir, or other body of water.

**Q.** In towns and cities, what is the major cause of pollution of drinking water sources?

**A.** The major source of pollution in towns and cities is rainwater that flows into street catch basins (called urban runoff or stormwater runoff). While the rainwater alone is not necessarily harmful, it frequently carries untreated waste products from our streets and yards directly to rivers, lakes, and streams — our drinking water sources.

**Q.** Why is ocean water salty?

**A.** Rainwater doesn't contain any salt, but when it falls on the ground, salt from the soil dissolves in the water as it flows back to the ocean. When this water evaporates from the ocean, the salt stays behind. This process has been going on for more than a billion years. Over that very long period of time the ocean got more salt in it with each cycle.

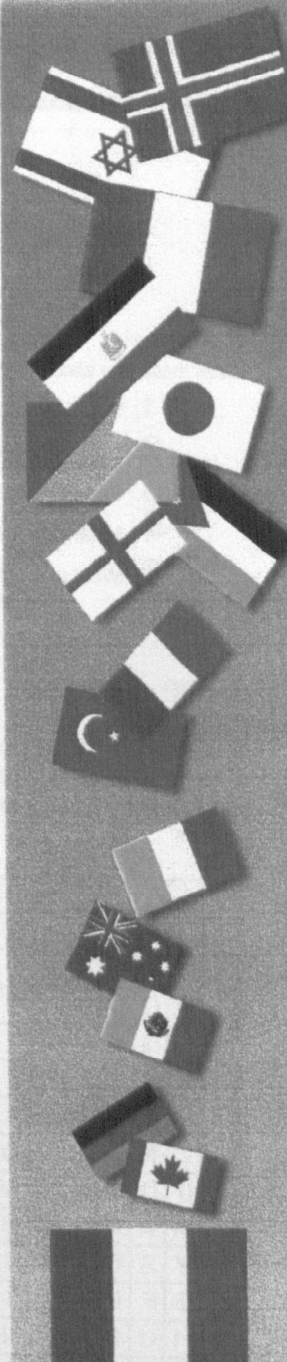
**Q.** Why does drinking water often look cloudy when first taken from a faucet and then clear up?

**A.** The cloudy water is caused by tiny air bubbles in the water similar to the gas bubbles in carbonated soft drinks. After a while, the bubbles rise to the top and are gone. This type of cloudiness occurs more often in the winter, when the drinking water is cold.

**Q.** Why is some drinking water stored in large tanks high above the ground?

**A.** Two reasons. First, this type of water storage ensures that water pressure and water volume are sufficient enough to fight fires, even if the electricity that normally pumps water is turned off. The second reason is to provide an extra source of drinking water during the day when water use is high. The water storage tanks are refilled at night when drinking water use is low.

These questions and answers are from *Plain Talk About Drinking Water: Questions and Answers About the Water You Drink* by Dr. James M. Symons, published by American Water Works Association, copyright © 1997.



**Q.** He is France's most famous oceanographer, author, and environmentalist?

**A.** Jacques Cousteau

# More Fun with Water

## Water Riddles

Share these silly water riddles with friends and family.

1. What lives in winter, dies in summer, and grows with its root upward?
2. What three letters mean "stiff water"?
3. What kind of bank needs no money?
4. What runs and has no feet, roars but has no mouth?
5. What runs but never gets tired?

## Blue Thumb Word Search

In this word search, look for the names of great rivers. When finished, talk about their geographic location and importance in the lives of people near and far, past and present.

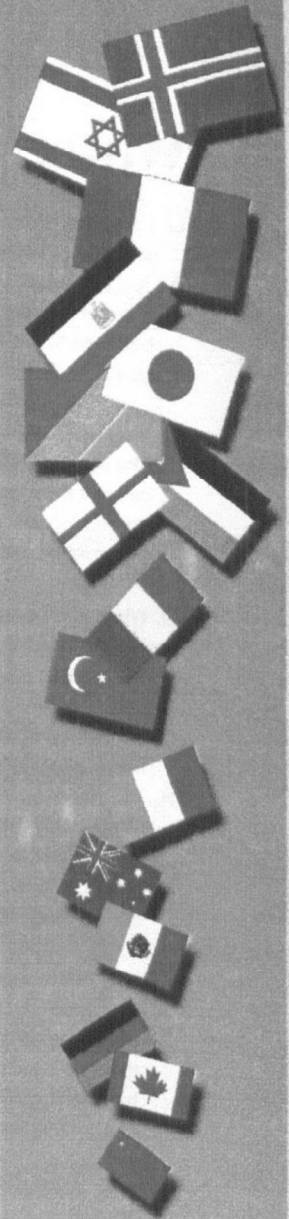
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C	Y	R	J	C	X	E	E	Z	T	G	N	A	Y
M	Q	I	P	A	G	N	F	P	Y	T	M	M	O
I	O	O	X	M	N	I	A	G	R	A	T	B	M
S	O	G	N	O	C	E	V	D	N	I	L	E	I
S	X	R	B	T	K	S	G	F	R	D	K	Z	K
I	B	A	V	O	D	A	R	O	L	O	C	I	T
S	Z	N	Y	P	N	O	J	X	N	P	J	P	R
S	J	D	L	G	A	W	N	G	B	Q	S	O	E
I	M	E	E	G	M	R	J	H	V	R	E	E	S
P	Y	S	O	Z	A	H	W	E	O	N	M	T	U
P	B	F	R	E	Z	I	H	L	L	I	A	S	D
I	H	U	D	S	O	N	T	P	G	T	H	L	N
A	S	Q	E	C	N	E	R	W	A	L	T	S	I

Amazon	Mekong	St. Lawrence
Colorado	Mississippi	Seine
Congo	Niagra	Thames
Ganges	Nile	Volga
Hudson	Potomac	Yangtze
Indus	Rhine	Zambezi
Jordan	Rio Grande	

## Water Proverbs

A proverb is a short phrase or saying that expresses a simple truth or idea. Many proverbs are rooted in a country's ancient cultural heritage or religion. Read each proverb and discuss its meaning.

- You can't learn to swim in a field. (*Spanish*)
- No snowflake ever falls in the wrong place. (*Zen*)
- One step too few is enough to miss the ferry. (*Chinese*)
- Help your brother's boat across and lo! your own has reached the shore. (*Hindu*)
- A small hole can sink a big ship. (*Russian*)
- To rule the mountains is to rule the river. (*Chinese*)

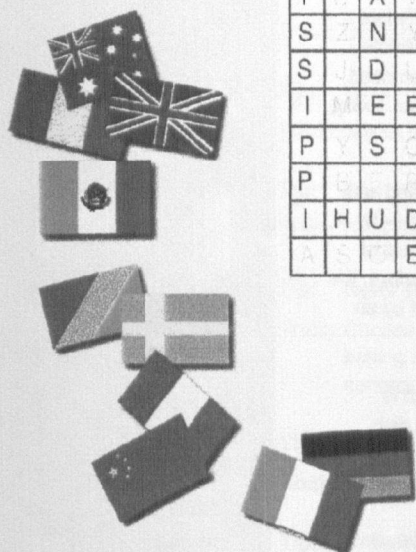




## Water Riddle Answers

1. An icicle
2. Ice
3. A riverbank
4. The sea
5. Water, from a tap or a river

Early Egyptians considered the Nile River the source of life itself. For this reason, Egypt is often called, "Gift of the Nile."



## Blue Thumb Word Search Answers

Q	I	R	T	E	N	P	O	H	A	B	I	Z	N
C	Y	R	I	C	X	E	E	Z	T	G	N	A	Y
M	G	I	P	A	G	N	P	H	T	M	M		
I	O	X	M	N	I	A	G	R	A	T	B	M	
S	O	G	N	O	C	E			N	I	L	E	
S	X	R	B	T	X	S	G	F	R	D	K	Z	
I	A	V	O	D	A	R	O	L	O	C	I		
S	Z	N	Y	P	N	O	J	X	N	P	J	P	
S	J	D	L	G	A	W	N	G	B	O	S	O	E
I	M	E	E	G	M	R	J	H	V	H	E	E	S
P	Y	S	O	Z	A	H	W	E	O	N	M	T	U
P	B		R	E	Z	I	H	L	L	A	S	D	
I	H	U	D	S	O	N	T	P	G	T	H	N	
A	S	E	C	N	E	R	W	A	L	T	S	I	





## The Case of the Mysterious Polluter

Where does water go when it rains?  
What does it pick up as it travels on its way?  
How is the water used?

### What You Need

For each group of 3-4 youth:

- ▶ plastic box + lid (approx. 9" x 14" x 6")
- ▶ 1 lb. sandbox sand
- ▶ water
- ▶ 1 qt. container for water
- ▶ two 10 cc plastic syringes (without needle)
- ▶ baking soda (the "pollutant")
- ▶ vinegar (the "pollution indicator")
- ▶ small cup for vinegar
- ▶ teaspoon
- ▶ eye dropper
- ▶ ice cube tray
- ▶ colored toothpicks or Monopoly Game houses

### What to Do

1. Fill box 1/3 way with sand.
2. Add water until sand is completely damp.
3. Model sand to be shaped like a hill leading to a lake (i.e., high at one end and low at the other).
4. Bury a teaspoon of baking soda somewhere in the hill, not too deep.
5. Mark with a toothpick or a Monopoly house, to represent a "house with a well."
6. Add 4 or 5 other "houses" (toothpicks or Monopoly houses) and mark out 2 or 3 "streets."
7. Ask one of the youth to read "The Story" (below). Youth should "test wells" by drawing out water from the sand using the syringe. Add a few drops from the "test well" to the ice cube tray, then add a few drops of "pollution indicator" (vinegar).
8. When the vinegar makes the water fizz, the youth will have found the pollutant.
9. Ask the youth to describe how they would "clean up" the pollutant and how they would keep the neighborhood water from being polluted again.

### The Story

The people in your town have asked you to help them. Someone has been dumping some leftover chemicals in their backyard. This is beginning to pollute a whole neighborhood's water supply. Several people already have gotten sick from drinking the polluted water. Because of this, no one can use any water until it has been cleaned and is not polluted any more. Although the town residents have been trying to clean up the water, they can't be completely successful until they have found the source of the pollution. Since no one in the town will admit to being the source, the town has called you in to do some environmental detective work. You must test the water near each of the houses by taking a sample from each well. Put the sample in the mixing tray and add the "pollution indicator" to it. If the water by that house is polluted, your sample will fizz.

Adapted from the SERIES curriculum, *From Ridges to Rivers*, by Elaine Andrews, Univ. of Wisconsin—Extension, Environmental Resources Center

The Humboldt current, off South America, was named after German naturalist and environmentalist, Karl von Humboldt

## Focus on Water

To keep water clean or to make sure there is plenty to drink, we need to understand where water comes from, how it flows, and how it's used at home, in schools, on farms, and in the community. In other words, it's time to get to know your watershed!

### What to Do

- A. Go outside and look at your surroundings. You can start anywhere—at your home, school, farm, or even downtown. Go to the highest point you can see within easy walking distance. If possible, go to the highest point in your community.
- B. Look over the land and the way the ground slopes down from this high point. If it rained, where would water flow? You're looking at a *watershed* or several watersheds. That is the area of land where all water drains or "sheds" to the same body of water. Walk around this area. Look for the following things in your watershed.

#### In my watershed, water flows to:

- |                                     |   |                                       |
|-------------------------------------|---|---------------------------------------|
| <input type="checkbox"/> low points | <input type="checkbox"/> gutters              | <input type="checkbox"/> storm drains |
| <input type="checkbox"/> ditches    | <input type="checkbox"/> lakes/streams/rivers | <input type="checkbox"/> culverts     |
| <input type="checkbox"/> _____      | <input type="checkbox"/> _____                | <input type="checkbox"/> _____        |

#### On its way, it passes:

- |                                    |   |                                       |
|------------------------------------|---|---------------------------------------|
| <input type="checkbox"/> bare soil | <input type="checkbox"/> grass/trees/shrubs | <input type="checkbox"/> wells        |
| <input type="checkbox"/> streets   | <input type="checkbox"/> shopping centers   | <input type="checkbox"/> parking lots |
| <input type="checkbox"/> industry  | <input type="checkbox"/> school             | <input type="checkbox"/> houses       |
| <input type="checkbox"/> litter    | <input type="checkbox"/> farms              | <input type="checkbox"/> animals      |
| <input type="checkbox"/> _____     | <input type="checkbox"/> _____              | <input type="checkbox"/> _____        |

- C. Does anything you see look like a possible water concern?
  - ▶ For example, is there bare soil? Is there erosion with soil washing into waterways?

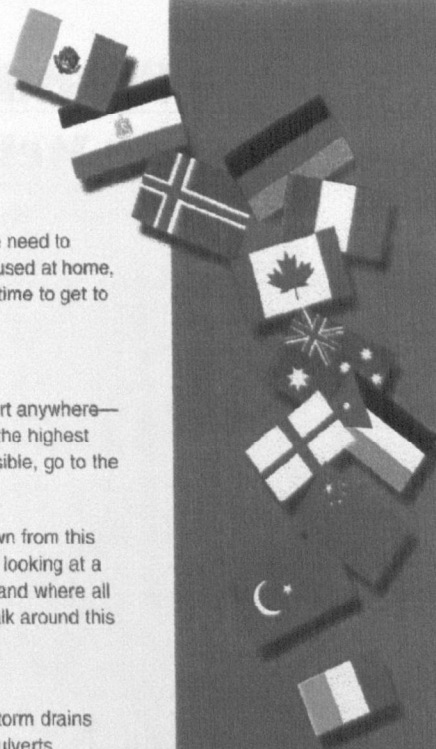
Can you find places where water has been carefully protected?

- ▶ For example, is grass planted on paths to keep soil from washing away?

Write down things you like and things that don't look right. If you aren't sure which things are helpful or are problems, just record what you do see for now. Later, you can share what you found with a natural resources expert in your community.

- D. Brainstorm a list of the ways you can affect water. Be sure to think of activities inside and outside. See how many ideas you can come up with. Two examples are: watering the grass and having a school car wash.
  - ▶ What activities use water?
  - ▶ What activities create wastewater?
  - ▶ What do you already do to conserve or protect water?

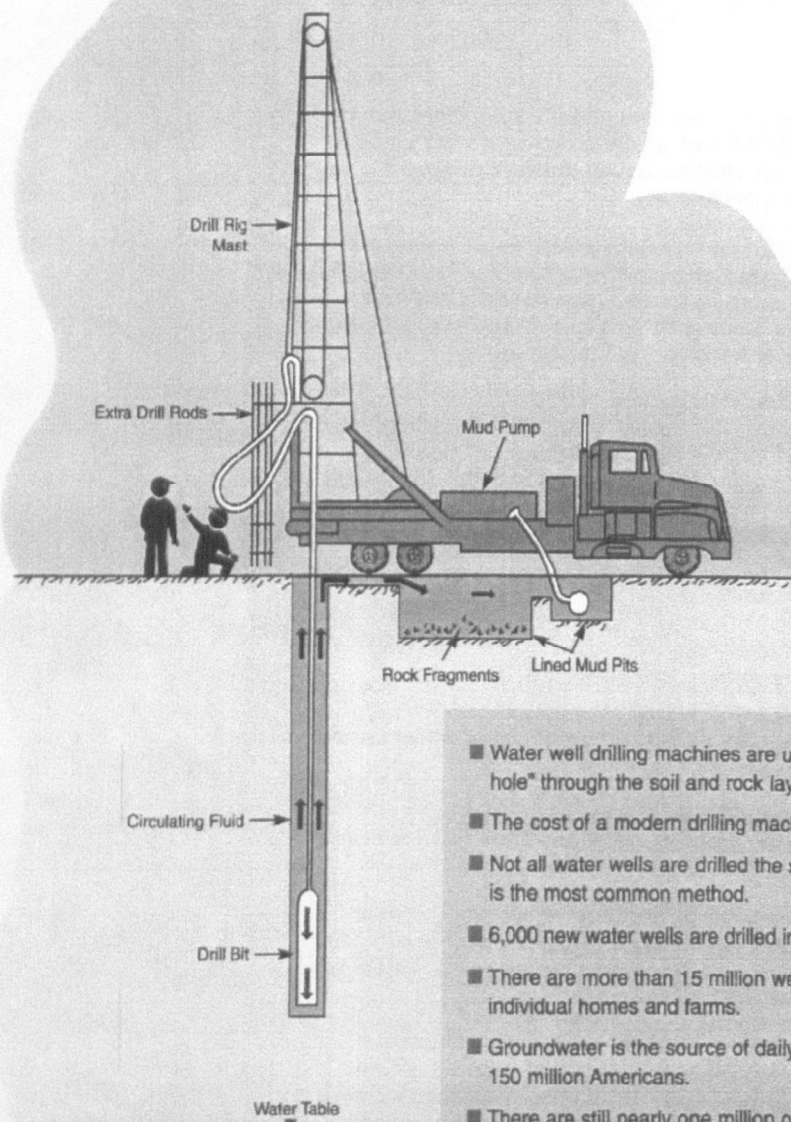
Adapted from Give Water A Hand. © 1996 University of Wisconsin Board of Regents.  
UWEX-Environmental Resources Center



One half of  
the world's  
fresh water  
is in Canada.

# Groundwater

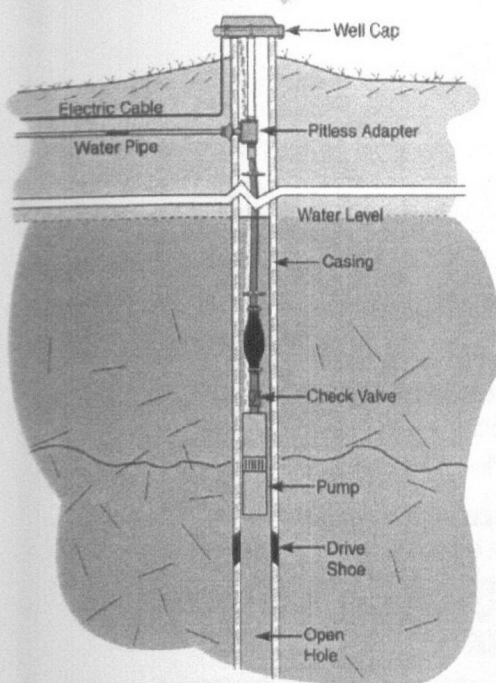
## How Water Wells Are Drilled



- Water well drilling machines are used to make an "engineered hole" through the soil and rock layers to reach groundwater.
- The cost of a modern drilling machine is about \$500,000!
- Not all water wells are drilled the same way, but rotary drilling is the most common method.
- 6,000 new water wells are drilled in America every week.
- There are more than 15 million wells in use in America for individual homes and farms.
- Groundwater is the source of daily drinking water for nearly 150 million Americans.
- There are still nearly one million old-fashioned "dug wells" in use. These are very difficult to keep free from water quality problems. Deep drilled wells are much more reliable and provide safer drinking water.





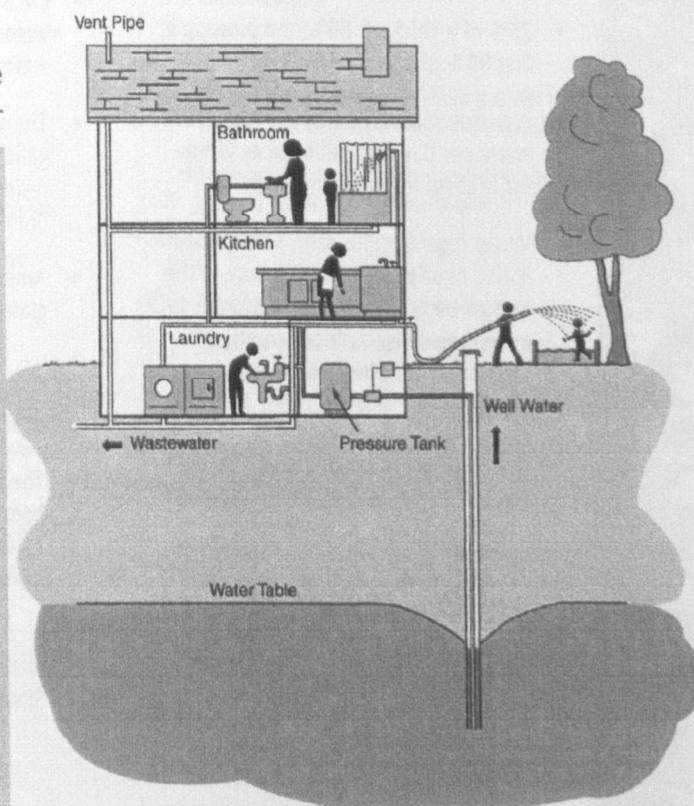


## Equipment Used in a Water Well

- Casing is put in the well to stop the hole from collapsing and to prevent the risk of surface water getting into the well.
- A seal of "grout" is often placed between the casing and the drilled hole to stop any surface water moving down outside the casing.
- The most common well pumps in use are called "submersible." They are powered by electricity and push the water up to the surface.
- In any area where there is frost, the water pipe comes from the well through a pitless adapter below ground level. In warmer climates there is no need to use a pitless adapter; the water pipe can come out of the top of the well.
- Water should drain away from the well head and the well cap should be tightly sealed.

## Protect and Conserve Groundwater

- In a home with a private well, it is the home owner's responsibility to test the water once a year.
- Most wells do not require chemicals for treatment because the water moves straight from the rocks via the well into the house.
- If a home does use conditioning equipment, for example to reduce iron or hardness, the system should be kept in good working order.
- It makes sense to conserve water, whether your home is on a well or a public system, and to ensure that no harmful chemicals are disposed of down the drain.
- There are more acres of garden lawn in America than any other crop! To protect groundwater, home owners should go easy on using lawn chemicals and pesticides.
- Homes with a well and a public supply must never connect the two systems.



American Ground Water Trust • 16 Centre Street • Concord, NH 03301  
 (603) 228-5444 • E-mail [agwt@aol.com](mailto:agwt@aol.com) • Internet: [www.agwt.org](http://www.agwt.org)





## WATER FACTS

SAFE DRINKING WATER ACT • CELEBRATING 25 YEARS • PROTECT OUR HEALTH FROM SOURCE TO TAP

### Drinking Water Facts and Figures

- Water is the only substance found on earth in three forms – solid, liquid, and gas.
- A person can live more than a month without food, but only about a week, depending on conditions, without water.
- 66% of the human body is water; 75% of the human brain is water.
- 75% of a chicken, 80% of a pineapple, and 95% of a tomato is water.
- A person must consume 2.5 quarts of water per day from all sources (drinking, eating) to maintain health.
- Water regulates the earth's temperature. It also regulates the temperature of the human body, carries nutrients and oxygen to cells, cushions joints, protects organs and tissues, and removes wastes.
- It is possible for people today to drink water that was part of the dinosaur era.

### Usage

- Industries as well as people need water. It takes on average 39,090 gallons of water to manufacture a new car and its four tires.
- 62,600 gallons of water are needed to produce one ton of steel; 1,500 gallons to process one barrel of beer; and 9.3 gallons to process one can of fruit or vegetables.
- On average, 50-70% of household water is used outdoors (watering lawns, washing cars).
- The average American uses over 100 gallons of water per day; the average residence uses over 100,000 gallons during a year.
- Americans drink more than 1 billion glasses of tap water per day.

### Infrastructure

- The average cost for water supplied to a home in the U.S. is about \$2.00 for 1,000 gallons, which equals about 5 gallons for a penny.
- It costs over \$3.5 billion to operate water systems throughout the United States each year.

## WHAT YOU CAN DO TO KEEP YOUR DRINKING WATER SAFE

### Be Aware of Your Water Source and Supplier

- Where does your water come from?
- Who is your water supplier?
- Has your water been tested recently?
- Is it tested regularly?
- How is it treated and protected from contamination?
- Have water shortages occurred in your community?

### Conserve Water In the Home/On the Farm

- Improve water use and management practices.
- Repair leaking faucets and toilets.
- Understand crop needs for water and irrigate appropriately.
- Water your lawn wisely.
- Take short showers.
- Turn off the water while brushing your teeth.
- Turn off the hose while washing your car.

### Minimize the Production of Waste

- Compost vegetable waste.
- Recycle newspapers, aluminum cans, glass containers.
- Don't buy more of anything than you can use.
- Recycle used motor oil, batteries, paints, solvents, and chemicals.
- Think of the impact of what you do on water quality.

### Wisely Use and Dispose of Household Lawn and Garden Chemicals

- Follow all directions carefully.
- Use only what you need.
- Sponsor or participate in pesticide collection/disposal activities.

### Learn the Facts About Your Water

- Look for and read your consumer confidence report (annual water quality report). Call your water supplier to get a copy.
- Don't believe everything you hear or read in advertisements – get the facts.
- Review results of drinking water tests in your community.
- Attend public meetings.
- Follow the news about drinking water matters, such as the development of new standards.
- Learn about potential contamination sources of ground water and surface water.

### Get Involved in Your Community

- Urge your water supplier and state and local regulatory and health officials to ensure that your water supply complies with all standards.
- Support efforts to educate the public and elected officials about the need to protect and improve the quality of drinking water.
- Express willingness to pay higher water rates, if necessary, to finance improvements in water quality.
- Support efforts to protect water supplies.

# Water Myths & Realities

**Myth** We shouldn't have to think about drinking water.

**Reality** We can no longer take our drinking water for granted. Public participation is vital to protecting our water resources, building adequate treatment plants, improving water delivery, analyzing costs versus risks, and enacting appropriate legislation.

**Myth** There are more pollutants in drinking water today than there were 25 years ago.

**Reality** Not necessarily. There may be more contaminants that can enter our water sources today. We did not have the technology to know what was in our drinking water 25 years ago. Today we have sophisticated testing instruments that enable us to know more about our water than ever before. With this knowledge, the drinking water community is taking steps to treat what's in our water, to curb the flow of pollution, and keep our water safe and wholesome.

**Myth** We have less water today than we did 100 years ago.

**Reality** There is the same amount of water on Earth today as there was three billion years ago. The difference is that today many more demands are placed on the same amount of water. These increased demands have, in a sense, created a different kind of water: water that is regulated, treated and sold.

Because our demands on water continue to grow, but our supplies don't, drinking water counts on everyone lending a hand to conserve, protect and get involved with decisions that affect our water resources.

**Myth** Once you use water, it's gone.

**Reality** After water is used, it's recycled... innumerable times. Some water is recycled for use within a week, other water may not be used again for years.

**Myth** Water is fragile and will be ruined by so much use.

**Reality** Water is resilient and responds well to treatment. However, using water and abusing water by contaminating lakes, streams, and wells with toxic chemicals are two different things. To keep our drinking water safe, we need not only appropriate treatment, but also appropriate source protection.

**Myth** "New" water is better than treated water.

**Reality** There is very little water on Earth that is "new." Most of our water has been touched by some type of human or animal activity. Even in "pristine" wilderness areas, studies have found bacteria contaminating water. Therefore, it's always best to drink water that you know has been treated.



# Water Myths & Realities

**Myth** Bottled water is safer than tap water.

**Reality** Not necessarily. The safety of bottled water and tap water initially depends on the source of the water. Monitoring and source protection, treatment and testing ultimately determine the quality of the finished product. In the United States, the 1996 reauthorization of the Safe Drinking Water Act will require that bottled water be monitored and tested in the same rigorous manner that tap water has been subject to for years.

**Myth** Using a home water treatment device will make tap water safer or healthier to drink.

**Reality** Some people use home water filters to improve the taste, smell and/or appearance of their tap water, but it does not necessarily make the water safer or healthier to drink. Additionally, all home treatment devices, regardless of the technologies they use, require regular maintenance. If the maintenance is not performed properly, water quality problems may result.

**Myth** If lead is in your water, it's the utility's fault.

**Reality** The most common source of lead in drinking water is the plumbing in your home. Your plumbing may have lead pipes or lead solder in the connections. Lead is a contaminant that is particularly harmful to pregnant women and young children. If you are concerned about lead in your water, contact your local health authorities to find out how you can have your water tested by a certified laboratory. If tests reveal that the lead content of your water is above 15 parts per billion, you should reduce your exposure to it. Since warm water absorbs more lead than cold, when you cook, always start with cold water. Because water standing in pipes tends to absorb lead, clear the pipes before drinking by letting your tap run until the water is cold. Catch the running water and use it to water your plants.



GIVE DRINKING WATER A HAND.



# Water Contamination Experiment

The following experiment is designed to help young people understand how drinking water counts on them to prevent water pollution.

**Objective** *Young people will create a miniature well so they can observe the effects of groundwater contamination.*

**Taxonomy Level** *Comprehension*

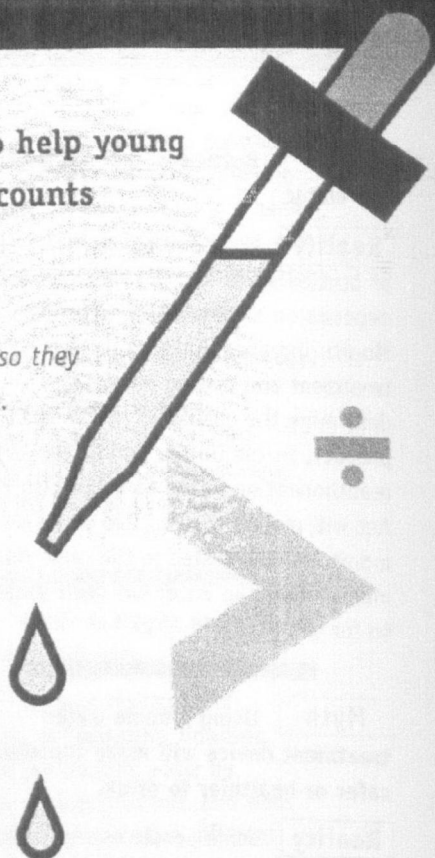
**Time Needed** *30 minutes*

## Teacher's Notes

Approximately 53 percent of the population in the United States gets its water from underground aquifers. An aquifer is a geological (created by rocks) formation containing water. Like the holes in a sponge, an aquifer has openings or pores that can store water. Water for drinking is drawn up to the surface by a well or spring. The world's largest aquifer is the Ogallala Aquifer, which extends from Nebraska to Texas.

Since water seeps down through soil into the aquifer, the soil filters the water. But, many activities threaten the safety of this source of drinking water. Gasoline and other

harmful liquids have been allowed to leak from underground storage tanks into the groundwater supply. Pollutants can seep into groundwater from poorly constructed landfills or septic systems. Groundwater can also be polluted by runoff from fertilized fields or livestock areas. Homeowners unknowingly contribute to groundwater contamination by dumping toxic chemicals down the drain or pouring them on the ground.



# Water Contamination Experiment

## Materials Needed

- Cup for each student
- 6 inches (150 millimeters) of nylon net per student
- Plastic tie for each student
- One eyedropper for every three students
- One bottle of vegetable-oil food dye (red, green or blue) for every three students
- Enough water to fill each student's cup
- Enough potting soil to fill each student's cup
- Pencil for each student

## Activity Directions

Students should wrap the nylon around their pencil and secure it with a plastic tie. Put the

nylon-wrapped pencil in the middle of the cup, so it can act as a "well."

Carefully place the soil in the cup around the nylon-wrapped pencil.

Finally, untie the plastic tie and slip the pencil out of the soil (allowing the nylon to remain in the hole) and pour water into the cup.

After a few minutes, the water should appear in the opening of the well. Students should remove water with the eyedropper and see that it is clear in color. After returning the water to the well, students can add a drop of food dye to the surrounding soil to

represent contamination. After a few minutes, remove water again with the eyedropper. This time the water should have color in it from the dye.

## Questions to Expand Students' Thinking

- What would happen to the lakes and rivers that are fed by water from this aquifer?
- What types of things in your household, if poured on the ground, might contaminate drinking water?
- Should you throw toxic household items in the trash?

## Count on Blue Thumb for More

If your class or youth group wants to learn more about how drinking water counts on everyone to use their Blue Thumbs to protect our water resources, visit our Web site:

<http://www.awwa.org/bluethum.htm>

or write to:

**Blue Thumb Club**  
**American Water Works Association**  
 6666 West Quincy Avenue  
 Denver, CO 80235  
 (303) 794-7711, ext. 6284

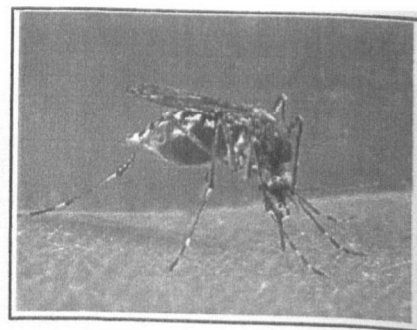


GIVE DRINKING WATER A HAND.

Activity source: Intermediate Te 30X, American Water Works Association

# Chapter 3:

## Ugh!, Such A Pest



Chemicals are very common in household products we use every day. From personal care products to lawn and auto products, we use chemicals in a variety of ways to help make our lives easier. Pesticides are another form of chemical used to control weeds and pests. Pests can be insects, mice and other animals, fungi, or microorganisms such as bacteria and viruses. There are many examples of how pests can be harmful, such as termite damage to our homes, bites and stings from wasps, bees and other insects, fleas on our dogs and cats, and dandelions and other weeds in our lawns and gardens. However, pesticides used to control these pests contain chemicals that can be harmful to people, animals, or the environment. For this reason it is very important for you to know and understand how to protect yourself and your family from pest and pesticide poisoning. Listed below are examples of pesticide products we use in our homes:

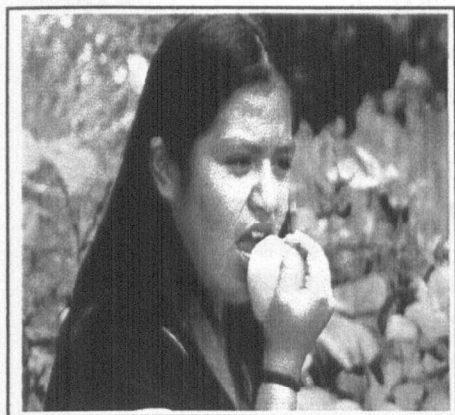
- Cockroach sprays, fogs and baits
- Mosquito sprays and repellants
- Rat poisons
- Flea and tick spray, powder, and pet collars
- Cleaners used to disinfect kitchen floors
- Cleaning products used to remove mildew from on bathroom tiles
- Household plant sprays
- Lawn and garden products to kill insects and weeds
- Some swimming pool chemicals

Many people have had at least one problem with some type of insect or animal in their home. Studies have shown that 75 percent of homes in the United States use at least one pesticide product indoors per year. Some people find pests in their home and go bonkers with pesticides trying to rid the home of one bug. Is this smart? Using pesticides the wrong way can harm you and your family. The smart approach would be to find out if a pest problem really exists, and how to effectively rid the home of pests without causing harm to you and your family.

Pesticides can cause many health related problems in humans. Birth defects, nerve damage, and cancer are some of the illnesses caused by pesticide poisoning. Children are at a



greater risk when exposed to harmful pesticides because 1) their internal organs are still developing and maturing, 2) in relation to their body weight, infants and children eat and drink more than adults, possibly increasing their exposure to pesticides in food and water, and 3) certain behaviors—such as playing on floors or lawns or putting objects in their mouths—increase a child's exposure to pesticides used in homes and yards. In 1990, the American Association of Poison Control Centers reported that 79,000 children were poisoned by or exposed to pesticides.



Pesticides may also harm children by not allowing their bodies to function in a normal manner. For example, some pesticides block the function of the digestive system in children, and nutrients from food that are needed to grow are not used by the body. Also, some pesticides block the body's ability to get rid of poison. Toxins can stay in the body for long periods of time and cause more damage to a child's system.

In addition, children may be exposed to pesticides when they are stored within their reach. An EPA survey regarding pesticides used in and around the home revealed that 47% (almost half) of all households with children under the age of five had at least one pesticide stored in unlocked cabinets (within the child's reach). In addition, 75% of households without children under the age of five also stored pesticides in unlocked cabinets. This number is significant because 13% of all pesticide poisonings occur in homes other than the child's home.

## Alternatives and Safe Pesticide Use

Pesticides are not the only way to get rid of and control unwanted guests in and around your home. Integrated Pest Management (IPM) is an environmentally-friendly management approach that relies on common-sense practices to manage pests. The IPM approach can be applied to farming, home and/or workplace settings. IPM takes advantage of all appropriate pest management options including, but not limited to, the smart use of pesticides.

Using an IPM approach in and around your home is simple. All you have to do is follow four easy steps.

- (1) **Be Realistic** : Sighting a single pest does not always mean control is needed.
- (2) **Monitor and Identify Pests**: Not all insects, weeds, and other living organisms require control. IPM programs work to monitor for pests and



identify them correctly, so that proper control decisions can be made without becoming a threat. IPM prevention measures can be very useful and inexpensive and present little or no risk to people or the environment. There are two main types of prevention: indoor and outdoor.

#### ■ Indoor Prevention

**Remove excess water sources.** All living things, including pests, need water. To eliminate water sources, talk to your parents about leaky plumbing, water bowls for pets and water trays under house plants.

**Food control.** Store your food in sealable containers and keep your kitchen clean (including ovens and overhead exhaust fans). Do not leave food in pet bowls or open food items on counter-tops or in pantries and cabinets (snacks like potato chips and cookies are good examples). Always animal-proof garbage cans and empty your trash frequently.

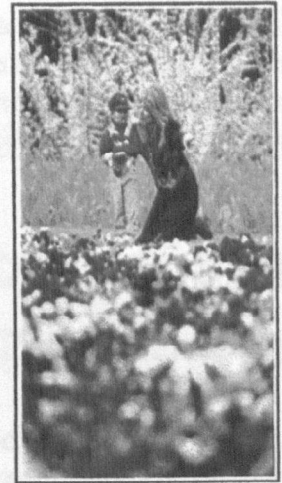
**Install "Not Welcome" preventions.** Caulk cracks and crevices to keep pests from coming into your house. Install screens on floor drains, windows, and doors to keep pests out. Don't store newspapers, paper bags, and boxes for a long period of time (pests like roaches love to hide out in spots like these). Bathe pets regularly, wash mats and other surfaces where pets lie, and check packages for pests before bringing them into the house. Keep doors closed.

#### ■ Outdoor Prevention

**Remove or destroy outdoor pest hiding places.** Remove wood or other wood products from under or around your home. Destroy diseased plants, trees and pick up fallen fruit that will attract pests. Always rake up leaves. Keep plants and shrubs away from your house.

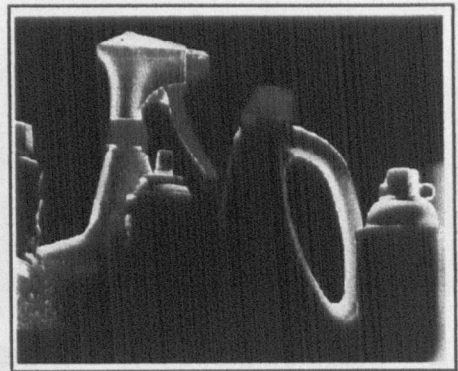
**Take away mating spots.** Clean up pet droppings from the yard. Get rid of litter and garbage. Remove standing puddles of water and make sure pipes drain away from your house.

**Become a green thumb.** Learn to take care of your flowers, shrubs, lawn and trees. Good plant health can reduce pest control needs. Plant at the best time of the year, use mulch to reduce weeds and hold in moisture, keep plants watered and use native flowers, shrubs, and trees around your home. These measures will promote healthy growth.



**3) Control Measures:** When using IPM control measures it is important to consider two things, 1) how effective the chosen measure will be, meaning identify the pest and use the control measure that will work best for that pest and 2) the risk to people. Measures that are less risky to people should be used first. For example, when you are controlling pests like roaches and ants, baits and traps are safer than sprays and fogs. Where a pesticide is used the following precautions are suggested.

- Buy legally sold, EPA-registered pesticides
- Read the label first and follow label instructions
- Reread the directions on labels before each use and follow directions carefully
- Ventilate the area during and after pesticide use
- Dispose of unused pesticides safely
- Keep products in their original containers - never tore them in food or drink containers
- Provide warning signs to keep your children and pets away from treated areas
- Always store pesticides in locked cabinets away from children
- Conduct targeted spraying for pesticides in stead of everything in sight
- Know where to call for help-many labels contain a number to call in an emergency. Also, know the number for your local poison control center. Keep it handy by the phone



The best way to protect you and your family from pesticide hazards is to educate yourself on pesticide controls and safety measures. The Environmental Protection Agency

has developed Citizen's Guides to pesticide safety as well as numerous web sites to help individuals protect themselves and their families from pesticide poisoning. Take time to find out more information about pesticide safety and what you can do to protect yourself from pesticide hazards; contact EPA's Public Information Center at (202) 260-2080 or log on to <http://www.epa.gov/pesticides>.

## Integrated Pest Management In Schools

As the public becomes more aware of health and environmental risks posed by chemicals used in schools to control pests, youth are getting more involved in helping school administrations develop and implement alternative control measures that are less harmful to children. Through IPM clubs and programs, youth are learning what roles they can play to help schools control pests like roaches, rats and flying insects. EPA's booklet entitled *Pest Control in the School Environment* outlines how to develop an IPM program in schools. It highlights several activities for which youth around the country are taking responsibility in their schools. Through classroom projects and school clubs and programs activities, students are helping to ensure that IPM programs are being completed thoroughly. Trash should be taken out daily, pet food put up before dismissal and the lids on the trash cans closed tightly to control mice and rats. To find out how you can start an IPM club or program in your school, contact EPA's Office of Pesticides Program at (703)305-5017.

## Outreach Activities

1. **Promote personal responsibility:** Talk to your friends about what they can do to prevent pests and pesticide use in their home and at school. Share the following tips:

- Keep your school lockers and desks clean - don't store food in your locker
- Clean up after yourself at home and in the cafeteria
- Clean up spills and crumbs right away at home and at school
- Don't leave open bags of food or candy lying around
- Eat at the table instead of spreading crumbs all over
- Wash your dirty dishes right away
- Keep a tight lid on trash and empty it often
- Don't leave your pet's food out overnight



- Wipe liquids off the counter
- Report any leaky faucets at school and home
- Check things like boxes and bags for roaches before bringing them into the house
- Get rid of stacks of papers, magazines and cardboard boxes

**2. Conduct a community survey:** Determine how residents in your community store pesticides. Distribute an EPA fact sheet on pesticides and child safety to educate the community on proper use and storage.

**3. Conduct a household Hazardous Waste Collection Day:** Along with your local solid waste management authority, environmental agency or health department, help to sponsor a household hazardous waste collection day to get rid of unwanted pesticides. Work with the authorities to promote and inform the public on proper pesticide and waste disposal.

**4. Help your school, church or community center to plan and host a poster contest:** Some possible themes: 1) Preventing kids from pesticide poisoning 2) How to get rid of pests without using chemical pesticides 3) Good bugs/bad bugs 4) Prevent pesticide misuse. Hang the winning posters at school, library, hospital, bank or other community places.

**5. Develop a rap song:** Write a rap that focuses on pesticide safety. Perform at school, mall event or other community events.

**6. Visit daycare centers:** Conduct training for daycare providers to educate them on pesticide use, safety, and alternatives to protect young children.

**7. Develop an In-School IPM Promotional Campaign:** Develop a student-led campaign for your school that will educate the student body on steps they can take to prevent pests in your school and at home. Promotional activities can include: writing articles in the school newspaper, developing posters, hosting a "clean out your locker" day, asking science teachers to set aside discussion time.





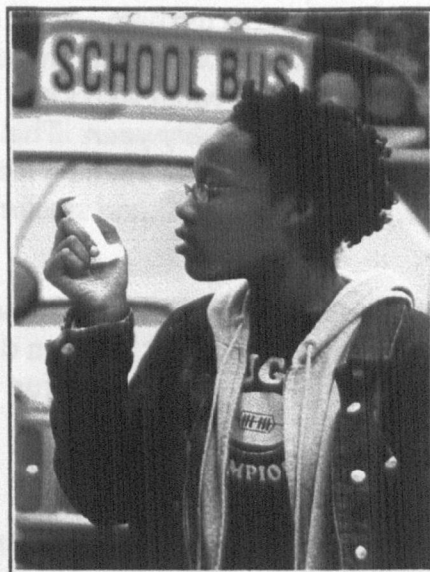
**8. Design an IPM checklist for students and teachers:** Design a checklist of actions students and teachers can take to help manage pests in their school. The most important responsibility of students and staff is sanitation. Much of the prevention and reduction of pest infestation at the school depends on whether students and staff clean up paper clutter and food in the lockers and under desks, as well as report any evidence of infestation. Create a pledge for the student body. Have each school designate "patrols" to ensure students and teachers are doing their jobs.

**9. Perform educational skits:** Develop skits that can be performed at community events, malls, schools and scout meetings. Possible skit topics:

- Safe Use of Pesticides
- Using IPM to Control Pests instead of Traditional Chemicals

# Chapter 4: Waiting to Inhale

Anyone with asthma can tell you that nothing matters when you can't breathe. Unfortunately more people than ever are experiencing difficulty breathing as evidenced by the increase of asthma in the United States. Although asthma is a major public health problem affecting Americans of all ages, races, and ethnic groups, children have been affected most. Asthma is worse among lower income and minority children. Asthma episodes are accompanied by wheezing, coughing, chest tightness, pressure or pain in the chest and shortness of breath.



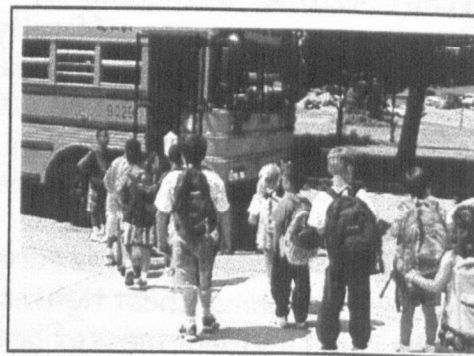
They can range from mild to life threatening. Doctors don't know the main cause of asthma, but certain factors in our environment can trigger asthma attacks. The frequency and severity of asthma episodes can be decreased by reducing the exposure to environmental triggers, which can be found in both indoor and outdoor environments. Symptoms can vary from child to child. Highlighted in the table below are common asthma triggers that affect children.

**Common Asthma Triggers**

Allergen	Non-allergen
House dust mites	Tobacco smoke
Mold or yeast spores	Smog
Pollen	Natural gas, propane, or kerosene used as cooking fuel
Cat hair, saliva and urine	Wood smoke
Dog hair and saliva	Coal smoke
Cockroach particles	Gas, wood, coal, and kerosene heating units
Aspirin or other nonsteroidal anti-inflammatory drugs	Paint fumes
Metabisulfite, used as a preservative in many beverages and some foods	Viral respiratory infections
	Exercise
	Weather changes

Asthma is a serious public health issue in homes and schools. An estimated 5 million children under 18 have asthma. It is a particular concern because their lungs are still developing, making them more susceptible to asthma triggers. Nearly 1 in 5 of all pediatric emergency room visits are asthma-related. Asthma causes about 5,000 deaths nationwide every year. The home is the most significant place of exposure for children because they spend a lot of time there. An estimated 9-12 million children are exposed to secondhand smoke at home, which is one the most common triggers.

One in 13 school children has asthma. Children often spend up to eight hours a day in school buildings. Asthma accounts for 10 million missed school days nationwide per year. Poor indoor air quality can trigger asthma attacks and headaches, dizziness, sleepiness and other factors inhibiting performance in the classroom. Sleep patterns of children with asthma are often interrupted. The cost of asthma to the U.S. economy was estimated to \$11 billion in 1997.



## What Can Be Done

You can take a number of preventive measures to protect yourself against asthma triggers. Healthy indoor environments at home and school are crucial in the management of asthma. Schools can improve indoor environments for all students and personnel, especially those with asthma, by reducing their exposure to pollutants such as secondhand smoke, dust, mold, mildew, pet dander and cockroaches. Other preventative measures to help children breathe easier:

### Second Hand Smoke

Don't smoke or let others smoke in your home, your car or near your kids.

### Dust/Dust Mites

Wash sheets and blankets once a week in hot water.

Choose washable stuffed toys; wash them often in hot water. Keep stuffed toys off beds.

Cover mattresses and pillows in dust proof (allergen impermeable) zippered covers.

Remove dust with a damp cloth.



Vacuum carpet and fabric-covered furniture often to reduce dust build-up.

(Allergic people should leave the area when it's being vacuumed.)

Using vacuums with high efficiency filters or central vacuums may be helpful.

### **Pets**

Your pet's skin flakes, urine and saliva can be triggers. Consider keeping your pets outdoors.

Keep pets out of bedrooms at all times.

Keep doors closed.

Keep pets away from fabric covered furniture, carpets and stuffed toys.



### **Molds/Mildew**

Wash mold/mildew off hard surfaces and dry completely.

Fix leaky plumbing or other sources of water.

Use exhaust fans or open windows when showering, cooking or using the dishwasher.

Vent clothes dryers to the outside.

### **Pests (Cockroaches and other insects)**

Put food and trash away in closed containers to keep pests from coming into your home.

Clean up crumbs and liquid spills immediately.

Don't use pesticides unless you have to--look for alternatives such as baits & traps.

If using bug sprays, remember to open windows and keep allergic people out of the area.

Read the product labels and follow the directions.

Limit outdoor activity when air pollution is bad, as on ozone alert days.



These strategies and other resource tools have been developed to help educate the public on preventive measures that will protect children and adults in homes and schools from indoor environmental asthma triggers. For more information on asthma and asthma triggers call the EPA at (877) 590-KIDS. Or you can log onto the website at:  
<http://www.epa.gov/iaq/asthma/kids/index.html>.

Schools can overcome many indoor environmental issues using an EPA kit called Indoor Air Quality Tools for Schools (IAQTFS). IAQTFS is a successful program used in over 4000 schools nationwide. Many IAQ problems can be easily identified and solved by school staff and students working together.

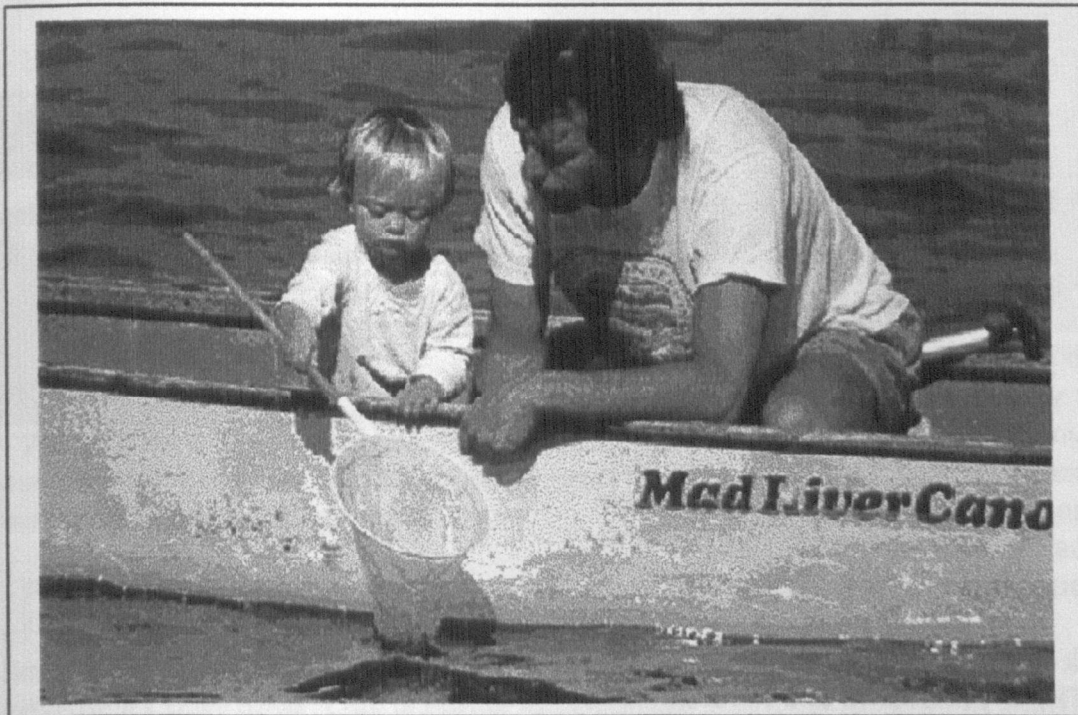
## Outreach Activities

1. Develop an asthma awareness web site where youth can share community projects and activities on asthma prevention measures.
2. Develop partnerships with school administrators to participate in IAQ Tools for Schools programs.
3. Conduct an environmental health fair on asthma triggers.
4. Shoot a youth-led video on asthma triggers that can be used as a public service announcement for schools and other community organizations.
5. Create school or community "SAAT" (Student Against Asthma Triggers) team. Students can create and distribute asthma publications, especially brochures, in their schools and community.
6. Partner with youth corps, schools and other youth-oriented organizations currently working on asthma issues. These older youth corps members could serve as mentors to younger kids.
7. Create plays, songs, mottos, story boards, displays, badges, or short stories to train others in asthma prevention measures.
8. Write an article in your school or local newspaper about asthma triggers and what can be done to protect children.
9. Invite a doctor or community health care professional to give a presentation on asthma at your school, local daycare provider, church, or community center.

# Chapter 5: A Fishy Tale

## The Good, The Bad, and The Best

If you love to fish, then you know how exciting it is just getting all of your gear together, traveling to your favorite fishing spot, enjoying the wonders of nature, and most of all hooking a fish that will give you the fight of your life. WOW!! Fishing is exciting for people who fish to provide a food source for their families.



The thrill of catching big fish and more fish is the same for everyone. The difference is that one group tends to catch and release their fish, while the other group tends to eat the fish they catch. There are facts that you should know if you decide to eat any of the fish you catch. By understanding what's good about fish, what's bad about them, how to select the kinds of fish to eat, and how to clean, prepare and cook the fish you eat, you can enjoy all the benefits of fish.

## The Good

Eating fish is a healthy and highly nutritious food choice. Fish are a good source of protein and are low in saturated fats. In fact, they have a good balance of the special types of fats we all need to live a more healthy lifestyle.

Fish contain many valuable vitamins and minerals and are leaner than most animal protein sources.

For many people, fish oils may help with arthritis pain and cut the risk of heart disease.

## The Bad

Fish that are caught in polluted waters might make you sick. Polluted water contains chemicals that can affect the way fish breathe, eat, move, and reproduce. Fish can and often times do get sick. The same chemicals that can cause fish to get sick can be passed along to you and make you sick if you are not aware of how to protect yourself. Eating fish that contain pollutants may cause serious health effects like liver damage, cancer, and birth defects. Certain chemicals can pass from a mother to her fetus or to her child through breast milk.



Fish become sick by being exposed to chemical pollutants in the water and through the food they eat. These pollutants are often found in the skin, fat, organs, and sometimes in the muscle of the fish. The muscle is the part of the fish people usually eat.

The type and size of fish gives a good measure of how polluted a fish may be. Fish that eat from the bottom of rivers, lakes, and streams, like catfish, carp, and suckers, are more likely to carry pollutants than smaller pan fish like bluegill and green sunfish.

Pollutants build up in the mud on the bottom of waterways and bottom feeding fish are exposed to these pollutants while looking for and eating creatures that live in the mud. Pan fish eat insects that are not on the bottom of waterways and are less likely to be exposed to the same amount of pollutants. Also, because pan fish are smaller, they usually contain smaller quantities of chemicals than larger ones.

However, fish that eat other fish as the primary source of their diet, like bass, walleye, and lake trout, tend to have more chemicals because they eat the parts of fish that contain most of the pollutants (the skin, the fat, and the internal organs).



# The Best

Now that you know fish are an important part of a healthy diet and that eating fish that contain chemical pollutants can make you sick, the next step is to understand how to select and prepare fish so you and your family can continue to enjoy the benefits of nutritious fish:

## Find out if the water in your favorite fishing spot is polluted

- Look for warning signs posted along the edge of the water. Do what they say!!

- Call your local or state health, park or environmental protection department and ask about the waters where you are planning to fish.

- Ask if there are any advisories for water quality concerning public health or fishing? If so, what are they? Ask if the waterbody has been tested.

- For fish advisories, ask for information on the types and sizes of fish that can be eaten from the waterbody. And ask if you can have a copy of any information on water quality testing and fish advisories they have. This is public information.

- You can also get fish advisory information where fishing licenses are sold: ([www.epa.gov/ost/fish](http://www.epa.gov/ost/fish))

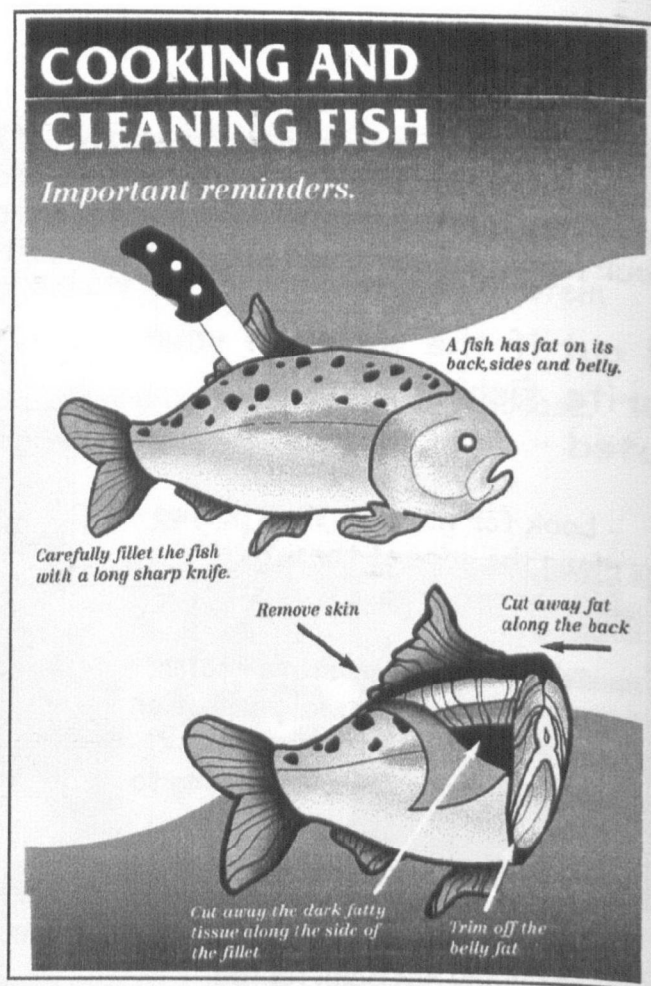




## Clean Fish properly to get rid of chemical pollutants

The way you clean your fish is one of the most important ways you can protect yourself from harmful pollutants.

- Always remove the skin before cooking.
- Cut away fatty areas. The belly, the top of the back, and the dark meat along the sides are the worst spots for fat. (See attached drawing)
- Remove the head, tail, and all internal organs before cooking.
- Fillet fish instead of cutting them into steaks. This will help eliminate the fat under the skin.
- Clean fish as soon as possible.
- Keep freshly caught fish on ice and out of the sun.



**CLEANING INSTRUCTIONS**  
With thanks to Michigan  
Department of  
Community Health

## Cook fish the right way to eliminate pollutants

- Always cook fish so the fat will drip away. That means broiling or grilling it. By letting the fat drip away you remove pollutants stored in the fat.
- Don't fry or deep fry fish too often. Frying seals any pollutants in the fat of muscle tissue. Muscle tissue is the part you eat. If you fry fish, drain and throw away the oil.
- For smoked fish, fillet and remove skin before cooking.

## Choose the right kind and size of fish to eat

- Younger and smaller fish contain fewer pollutants than bigger, older fish. Choose to eat these fish. Here's a hint, these fish will be right at or just over the legal size limit.
- Check with your local fish and bait shop for size regulations for fish in your favorite fishing hole.
- If you plan to eat the fish you catch, choose lean ones. Pan fish like bluegill, and fish that live in streams and rivers like brook trout and brown trout tend to be lower in fat.
- Sport fish like largemouth, walleye, and northern pike, are ok to eat if they are of legal size. Check with local fish and bait shops for size regulations.
- Staying within the legal limit for these fish is very important because they tend to have higher levels of elements like mercury.
- In general, bottom feeding fish such as carp, suckers, and cat fish contain a lot more chemicals than pan fish and legal size sport fish. Check with local authorities, but the rule of thumb is, these fish are not the best choice for eating.



## Eat the right amount - it matters

- The type and size of the fish you choose to eat will determine how much of that fish you can eat without the risk of getting sick. State and local fish advisories will provide recommendations on how much you can eat of different types of fish, depending on their size. The amounts will be different in each region of the country.

- To get more information on fish and some of the problems with fish, contact the Environmental Protection Agency at 202-260-2090. Ask for the Fish Contamination Program in the Office of water; or go to : [www.epa.gov/ost/fish](http://www.epa.gov/ost/fish)

## Fish Outreach Activities

### Conduct a live demonstration in your community on fish protection measures

In your demonstration, illustrate the kinds of fish that should be eaten. Fish should come from one or more of your local waterbodies. Demonstrate methods to determine the proper size of fish in the field. Demonstrate the proper way to clean and prepare fish before cooking (Remove skin, fat, head, and internal organs and fillet correctly). Provide information on the best ways to cook fish to eliminate pollutants. Material you will need: fish from local waters, good surface to work on, ruler, fish-advisories for waters in your area, and a sharp knife. Suggested demonstration sites: your home, school, community center, church, club, the Scouts.



## Investigate fish advisories in your community

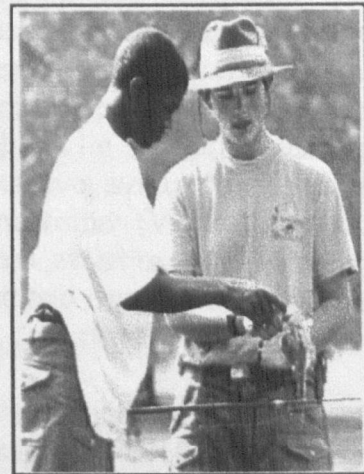
Investigate and write a report on fish advisories for two waterbodies in your community. If possible make one waterbody a stream or river and one a lake. Find out what types of fish are included in the advisories, the size limits, and the amount recommended for consumption. Identify special recommendations for women and children. Tell where parents can get more information on fish protection measures. Share your report in the community.

## Develop a communication plan to get the word out about fish protection measures

Using the information from the chapter and from local fish advisories,

develop a communication plan to inform your community about fish advisories for local waters. Your plan should include: 1. What your message will focus on: to minimize exposure to pollutants, to increase awareness and knowledge of the problem, to have people take actions to promote safety measures, or all of the above.

2. Your plan should include fish advisories from your local or state park or environmental health department to ensure that information is correct. 3. Your plan should include what people can do to protect themselves and their families. 4. It should include where information can be obtained on fish protection measures and what questions to ask. It should also detail what is currently being done on this issue. 5. Your plan should outline your target population (parents, teens, families with small children, etc.). 6. Include how you will get the message out: cable TV, fliers, door-to-door, community meetings, radio, etc.





# Chapter 6: How To Be SunWise, Not Sun Crazy

People love spending time outdoors, especially on warm, sunny days. You probably take part in a lot of outdoor activities through clubs, school activities, athletic events, and recess, but you might not realize the effect that being out in the sun has on your long-term health. Some exposure to the sun can be enjoyable and healthy, but too much can be dangerous. While we all need the sun's light and heat to live, overexposure to ultraviolet (UV) radiation can lead to serious health effects, including skin cancer, eye damage, and problems with your immune system.



Ozone is a naturally occurring gas that is found in two layers of the Earth's atmosphere. In the layer surrounding the Earth's surface (the troposphere) ground-level or "bad" ozone is a key ingredient of urban smog. The troposphere extends up to the stratosphere, which is where "good" ozone forms a protective shield by absorbing some of the sun's UV rays. Researchers have determined that the stratospheric ozone layer is thinning, allowing more UV rays to reach the Earth's surface. These increased levels may cause the incidence and severity of UV-related health effects to rise, particularly given current sun protection practices in the United States.

Did you know that 1 in 5 Americans will develop skin cancer in their lifetimes? We can expect 1 million new cases of skin cancer every 12 months in the United States. Skin cancer can begin with a simple sunburn years before the cancer is actually detected. In fact, most of a person's sun exposure occurs before age 18, that's why it's especially important to protect your skin now.

Melanoma is the most serious form of skin cancer, and it is rising fast in this country. Non-melanoma skin cancer, although usually not fatal, is much more common than melanoma and can cause disfigurement and more serious health problems if left untreated.

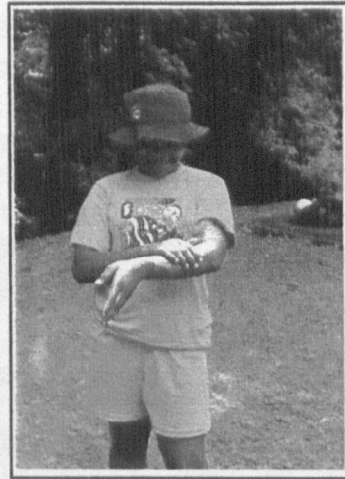
No matter what type of skin you have--dark or light--you could be susceptible to the other effects of UV radiation:

**Skin growths on parts of the body exposed to the sun.**

**Premature aging: thick, wrinkled, leathery skin.**

**Cataracts, which cloud vision.**

**Suppression and weakening of your body's immune system, which fights disease.**



## *The SunWise School Program*

To promote sun-safe behavior in kids, the U.S. Environmental Protection Agency (EPA) developed the SunWise School Program, a national education program for children. The SunWise School Program teaches children and their care-givers how to protect themselves from overexposure to UV radiation.

Through SunWise, your club can:

Learn and practice important action steps to prevent skin cancer and avoid overexposure to UV radiation (see below).

Learn about the UV Index, an important tool for sun protection (see below).

Measure the UV Index in your area, using a hand-held device.

Play interactive games and activities and report the UV Index on the SunWise Web site.

Get brochures and posters with more information on UV radiation and sun protection.

Promote sun protection in your area through community partnerships.

For more information, visit EPA's SunWise Web site at [www.epa.gov/sunwise](http://www.epa.gov/sunwise) or call EPA's Stratospheric Ozone Information Hotline at 800 296-1996.

## *The UV Index: Your Guide to Sun Safety*

The UV Index is an important resource that helps you avoid overexposure to the sun's rays. Developed by the National Weather Service and EPA, the UV Index is issued daily in selected cities across the country. The UV Index uses numbers to represent the likely level of UV exposure (Minimal: 0-2; Low: 3-4; Moderate: 5-6; High: 7-9; Very High: 10+).

### *What Is Your Role in Sun Safety*

There are plenty of simple steps you can take to enjoy the sun safely.

**Limit time in the midday sun.** The sun's UV rays are strongest between 10 a.m. and 4 p.m. To the extent possible, limit exposure to the sun during these hours.

**Wear sunglasses.** By wearing sunglasses that provide 99 to 100 percent UV-A and UV-B protection, you will greatly reduce eye damage from sun exposure.

**Wear protective clothing.** A hat with a wide brim offers good sun protection for your eyes, ears, face, and the back of your neck. Tightly woven, loose-fitting clothes provide additional protection.



**Use shade wisely.** Seek shade when UV rays are most intense, but keep in mind that trees and umbrellas do not provide complete protection. Follow the shadow rule: "Watch Your Shadow - No Shadow, (or Small Shadow) Seek Shade".

**Use sunscreen.** Apply a sunscreen with a sun protection factor (SPF) of 15+ generously and reapply every 2 hours, or after working, swimming, playing, or exercising outdoors.

**Watch for the UV Index.** Take special care to follow sun safety steps when the UV Index is moderate or above.

**Avoid sunlamps and tanning salons.** The light source from sunbeds and sun lamps damages the skin and unprotected eyes. All artificial sources of UV light should be avoided.



Remember everyday exposure counts. You should take precautions even when having lunch outside, going on field trips, or engaging in sports. Inform your friends and family about these simple sun safety steps!

## ***Outreach Activities***

1. Organize a sun-safe relay race. Form teams that must race from a starting point to an area where sun-safe outfits have been laid out. Each team must dress one team member in the most sun-safe outfit (including appropriate hat, sunglasses, sunscreen, and clothing) and race back to the starting point.
2. Conduct experiments using UV-sensitive beads. This activity is conducted outside. Observe beads changing from clear light colors to darker ones corresponding to the intensity of the sun's UV rays. Examine the effectiveness of different forms of sun protection on the beads by covering them with sunscreens of various SPF levels, sunglasses, wet and dry clothing, and tightly woven and loosely woven clothing. Afterwards, make UV bead bracelets and necklaces, so you will always know how strong the sun's rays are when outdoors.
3. Organize a sun-safe hat game. Have a wide variety of hats on hand and rank them on their sun-protection value. Discuss the sun-protection pros and cons of each hat.
4. Research the following animals and find out how they protect themselves from the sun through natural mechanisms:

**Elephant**  
**Hippopotamus**  
**Meerkat**  
**Tortoise**  
**Koala**

See if you can think of other animals that protect themselves from the sun. Try to relate what these animals do to what you do.

5. Make your next visit to camp a sun-safe experience. Help build a shade structure on ball fields, picnic spots, or other open areas. Don't forget to pack your hat, sunglasses, and sunscreen!
6. Conduct a beach or park cleanup and promote sun protection for participants. Bring hat, sunglasses, and sunscreen.



7. Using handheld UV monitors, scouts can measure the intensity of UV rays at ground-level. After gathering the data, they can compare findings with daily UV Index forecasts at [www.epa.gov/sunwise/uvindex/index.html](http://www.epa.gov/sunwise/uvindex/index.html).

8. Create a commercial or short video advertising the steps that people should take to protect themselves from the sun. Ask local community groups, cable access channels, or schools to run the video tape.

9. Form partnerships with local television and radio stations. Have your meteorologist give you a tour of the weather center and discuss UV radiation. You can also access the UV Index for your area at the SunWise Web site at [www.epa.gov/sunwise/uvindex/index.html](http://www.epa.gov/sunwise/uvindex/index.html) and report it on the radio each day.

10. Teach younger kids the importance of sun protection. Organize a "Safe Fun in the Sun" parade where everyone wears sunglasses, sunscreen, hats, and other UV-protective items. You could also design worksheets, puzzles, and games for younger troops.

11. On Arbor Day, plant tree saplings in a local park or community playground. The trees will eventually shade citizens.

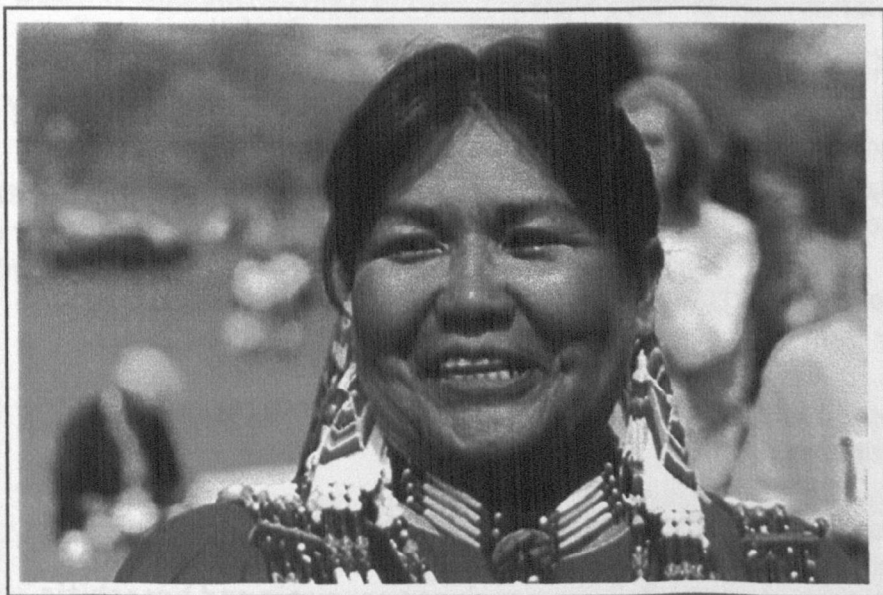
12. Conduct a sun protection poster contest to illustrate the sun-protection steps above. Display entries and winning designs at a booth at a 4-H, County Fair, Tech Fair, or similar event. You could also get permission to have the posters displayed in schools as community service projects.

13. Participate in your county fair, by sharing the sun safety tips mentioned above. Have a sun safety booth and turn it into a "Stop and Slop" by offering free sun screen to all fair goers.

# Preface to Secondhand Smoke

Prepared by members of the United National Indian Tribal Youth, Inc (UNITY) staff

In the current rush to provide truth to the American public about the disastrous health effects of tobacco, the realization has arisen that among the more than 550 nations that make up Native America, tobacco is sacred. It has been used by American Indians for thousands of years as a medicine to promote good health and assist with spiritual guidance and growth. Upon the arrival of Columbus in the new world, the Spanish observed the use of "tabaqu" by natives in ceremonial offerings of prayer to the creator. The origin of the word tobacco means "gift to the father". Its use remains important today to Indian people. However, the regular and prevalent use of commercially processed tobacco has produced a myriad of illnesses and death among Indian people. Across Indian Country, it is presently estimated that forty percent (40%) of preventable deaths among Indian people is a direct result of smoking. Second-hand smoke is now the third leading cause of preventable deaths behind alcohol. Therefore, the challenge is to distinguish between sacred use and secular abuse of tobacco products.



# Chapter 7: Yes, I Mind Your Smoke!



One of the worst things people can do to others is expose them to tobacco smoke. Smokers may ask, "How is my smoke affecting others? After all, I'm the one inhaling." Well, your smoking can be deadly to those around you. The smoke given off at the burning end of a cigarette, pipe, or cigar contains over 4,000 toxic substances, with more than 40 of those substances known to cause cancer in humans and animals. To expose the people you love (family, friends, others) to this type of danger is rude. The smoke exhaled from the lungs of smokers and from the end of cigarettes, pipes and cigars is commonly known as secondhand, sidestream, or environmental tobacco smoke. Whether you smoke or not, you can benefit from knowing the dangers of secondhand smoke and how to protect yourself and others from this hazard.

## Secondhand smoke is a serious health risk to children

- Secondhand smoke has been classified by the U.S. Environmental Protection Agency (EPA) as a known cause of lung cancer in humans (Group A carcinogen).
- Passive smoking is estimated by EPA to cause approximately 3,000 lung cancer deaths in nonsmokers each year.
- The developing lungs of young children are heavily affected by exposure to secondhand smoke.
- Infants and young children whose parents smoke are among the most seriously affected by this exposure. They are at increased risk of lower respiratory tract infections such as pneumonia and bronchitis. EPA estimates that secondhand smoke is responsible for between 150,000 and 300,000 lower respiratory tract infections in infants and children under 18 months of age annually, resulting in between 7,500 and 15,000 hospitalizations each year.

- Children exposed to secondhand smoke are also more likely to have reduced lung function and symptoms of respiratory irritation like cough, excess phlegm, wheezing.
- Secondhand smoke can lead to buildup of fluid in the middle ear, which promotes ear infections in young children.
- Asthmatic children are especially at risk. EPA estimates that exposure to secondhand smoke increases the number of episodes and severity of symptoms in hundreds of thousands of asthmatic children. EPA estimates that exposure to secondhand smoke worsened the condition of between 200,000 and 1,000,000 asthmatic children.

## Other health implications

- Exposure to secondhand smoke causes irritation of the eye, nose, and throat.
- Secondhand smoke may affect the cardiovascular system, and some studies have linked exposure to chest pain.

## How Can You Protect Yourself From Secondhand Smoke?

Knowing what you can do to protect yourself and your family from secondhand smoke is very important. Over 10,000 children are hospitalized each year due to illness from secondhand smoke. To protect yourself you must take **ACTION**:

- Ask others not to smoke in your home.
- Ask people who smoke to go outside.
- If people in your house smoke, ask them to limit their smoking to one room in the house.
- Open windows and outside doors to bring in fresh air if family members and friends must smoke in the house.
- Let family members, friends and others know that you hate being around their secondhand smoke.
- Make your car and/or your family car a no-smoking zone. If others have to smoke in the car, make sure the windows are rolled down, even in cold weather.



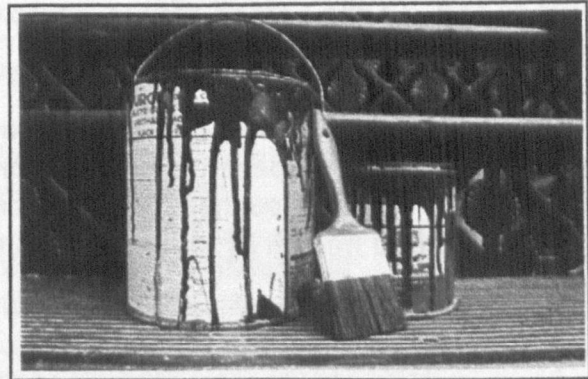
- If possible, (depending on distance, weather, etc.) walk or ride your bike instead of riding in a car with friends who don't respect your feelings about secondhand smoke.
- Make sure your school, after-school program, and community hang-outs have established no-smoking zones.
- In restaurants, ask to sit deep in the non-smoking section.
- Encourage and help your family and friends to quit smoking.
- Educate yourself on the dangers of secondhand smoke. Contact your local health department or other local/national organizations that provide information and anti-smoke programs.

## Outreach Activities

1. Create a Public Service Announcement (PSA) on secondhand smoke. Contact local newspapers, radio stations and TV stations to investigate running the PSA.
2. Develop a training program and design a brochure on secondhand smoke for parents. Present and distribute materials in daycare centers, schools, churches, and community centers.
3. Create a community/school newsletter on secondhand smoke.
4. Organize a "no-smoking" day for your family/community. Include information on how smokers can reduce secondhand smoke exposure to others and why it would be a good idea to quit smoking.

# Chapter 8: Simon Says, No Lead

"Home Sweet Home," that great American phrase. However, your home may be sweet or sour depending on what you know. Millions of children who live in comfortable, older homes in nice communities are unaware of the dangers of lead poisoning. It's not easy to detect. In fact, some individuals with lead poisoning show no symptoms, while others have symptoms similar to common illnesses, like the flu. Lead cannot be seen nor felt; you have to get tested!



Lead is a metal that has been used for many years in several products found in or near homes. Until 1978 almost all paint products included lead. That means homes built before 1978 will have lead-based paint on the walls, windows, doors, stairs, railings, banisters, porches and fences. Dust can become contaminated with lead when lead-based paint is scraped or sanded. Lead chips and dust gather on surfaces and objects that people touch or children put in their mouths. Soil can be contaminated with lead when houses and buildings painted with lead-based paint start to chip. Refineries put lead in gasoline prior to 1978, which discharged into the air with car and truck exhaust. Therefore, soil near roadways may be contaminated from past use of leaded gasoline.

Other sources of lead contamination are older plumbing fixtures, such as lead pipes and pipes connected with lead solder. Drinking water is often contaminated with lead due to these factors. Some other types of lead hazards: vinyl mini-blinds, painted toys and household furniture made before 1978, lead-glazed ceramic pottery made abroad and lead brought home from work sites on clothes, shoes, and skin.

Lead is poisonous because it interferes with some of the body's basic functions and can affect both children and adults. However, lead is more dangerous to children under the age of six than to adults. They are at a critical stage of development--their growing bodies absorb lead more quickly, and their brains and nervous systems are more sensitive to damaging effects. Similarly, children are exposed more often because they put their fingers, toys, and other objects possibly contaminated with lead into their mouths. Blood-lead levels for children tend to increase rapidly from six to twelve months of age, peaking at 18-24 months of age. In the United States, approximately 900,000 children ages 1 to 5 have blood-lead

their brains and nervous systems are more sensitive to damaging effects. Similarly, children are exposed more often because they put their fingers, toys, and other objects possibly contaminated with lead into their mouths. Blood-lead levels for children tend to increase rapidly from six to twelve months of age, peaking at 18-24 months of age. In the United States, approximately 900,000 children ages 1 to 5 have blood-lead levels exceeding standards.

You should know that exposure to low levels of lead can permanently affect children's motor skills, speech, and behavior. Exposures to high levels of lead can cause seizures, unconsciousness, and, in some cases, death. A detailed description of the symptoms and health effects of lead in adults and children are highlighted below:

**Symptoms and Health Effects of Lead Poisoning in Adults**

<b>Symptoms</b>	<b>Health Effects</b>
Fatigue	Increased illness during pregnancy
Depression	Harm to a fetus including brain damage or death
Muscle and joint pain	Reproductive problems in both men and women
Abdominal pain	Digestive problems
Gout	Nerve disorders
Kidney failure	Memory and concentration problems
High blood pressure	Heart failure
Wrist or foot weakness	Anemia



### Symptoms and Health Effects of Lead Poisoning in Children

Symptoms	Health Effects
Persistent fatigue or hyperactivity	Nervous system and kidney damage
Irritability	Learning disabilities, attention-deficit disorder
Loss of appetite	Behavioral problems and lower intelligence
Weight loss	Speech, language, and hearing damage/problems
Abdominal pain	Slowed growth/decreased muscle and bone growth
Nausea/vomiting	Anemia
Apathy/lethargy	Anorexia
Shorter attention span	Seizures
Difficulty sleeping	Unconsciousness
Constipation	Death (in rare cases)
Poor muscle coordination	
Headaches	
No symptoms	



## Testing for Lead

If your home was built before 1978 there is a good chance that your paint contains lead. There are many ways to avoid lead poisoning, one of which is getting your home, yourself and your children tested. A good time to do it is before you move into a new house or have a baby. You may also want to test your home if it has painted surfaces in poor condition.

Before you begin home repair or remodeling projects, test any painted surfaces that will be removed or remodeled. Disturbing lead-based paint is likely to create a lead-poisoning hazard.

Only a professional trained in lead removal should check your home for lead or do remodeling jobs if needed. A trained professional can tell if your home contains sources of lead exposure-such as lead dust or peeling paint. She/he will give you a report that identifies lead hazards and ways to control them. If you suspect you have a lead problem, a "risk assessment" is usually the most appropriate way to test for lead hazards. A lead inspector can reveal the lead content of every painted surface in your home. An inspection will not tell you whether the paint is a hazard or how you should deal with it. The purpose of the inspection is to check each type of painted surface in your home and answer two questions:

- 1) Is lead-based paint present?
- 2) If so, where is it?

If you think your water might contain lead, call either the EPA Safe Drinking Water Hotline at (800) 426-4791 or your local health department or water supplier to find out about testing your water. Meanwhile, use only cold water for drinking and cooking. Run tap water for 15 to 30 seconds (or until it feels much colder to your hand) before drinking it, especially if you have not used the tap for several hours.

The best thing to do for your child is to check the amount of lead in his or her body. This can be accomplished with a blood test. Contact your doctor or your local health center to administer the test and explain the results. If your child is at risk of being exposed to lead, have the child tested at the age of six months. Repeat the test every six months until the age of two years. Following that, have the child checked at least once every year until age six. If your child is not at high risk for lead exposure, have the child tested for the first time at the age of one year, and again at age two. If your child has a high blood-lead level you should consult your physician about preventive measures.

## Reducing lead hazards in your home

### 1. Get rid of dust:

- Prevent lead dust by wet sanding instead of dry sanding and scraping
- Clean major areas where dust collects in your home.

Dusting should be done weekly. When cleaning for dust use wet sponges; wet mops; steam cleaning; disposable, non-abrasive dusting cloths or "dusters"; and all-purpose

**Common Areas Where Lead Dust Accumulates**

<b>Interior</b>	<b>Exterior</b>
Window sills	Porch swings
Floors or steps	Window troughs
Cracks/crevices	Steps
Carpets/rugs	Exposed soil
Mats	Sandboxes
Upholstered furnishings	Window coverings
Radiators Grates/registers	Heating/ventilation and air conditioning systems

cleaners or cleaners made specifically for lead. Do not use mops with a "scrubber" strip attached, steel wool, scouring pads, abrasive cleaners, or solvent cleaners that may dissolve the paint.

### 2. Playing it safe:

- Don't be afraid to visit your doctor (your doctor can easily tell if you have lead in your body)
- Don't eat too many fatty foods: that can boost the amount of lead in your body)

- Play in grassy areas not in dirt (sometimes, dirt contains lead and you may get sick)
- Eat healthful foods (you are less likely to get sick if you eat healthful food)
- Wash hands often (always wash your hands before eating)
- Don't put things besides food in your mouth
- Wash toys children play with
- Remind parents to change their clothes and shoes before they leave work if they work around lead, and wash their work clothing frequently
- Frequently replace filters in heating and air conditioning units
- On the outside of your home remove as much dust and dirt as possible from all paved surfaces (sidewalks, patios, driveways, parking areas)
- Cleanup is the most important step. Wrap up and label any trash from your lead cleaning efforts, dispose of trash in heavy-duty plastic bags, use a vacuum instead of a broom



# Outreach Activities

- Do presentations/demonstrations in your communities
- Put an article in your school/organization/tribal newsletter
- Invite a doctor or community health care professional to give a presentation at your next club meeting, at school, or church
- Plant trees, grass or groundcover on bare soil that may contain lead
- Work with your school to make the grounds and buildings as lead-free as possible
- Call 1-800-424-LEAD and get lead pamphlets to hand out in the neighborhood, or click on [www.epa.gov/lead](http://www.epa.gov/lead) for more information

## Start your own GET THE LEAD OUT CAMPAIGN:

- in your home
- in your school
- in your community

Get together and divide into teams; brainstorm using these suggestions, and come up with 2-3 ideas you could try.

- Create a display in your school or daycare center that warns about the hazards of lead poisoning (get free posters and materials from EPA by calling NLIC) (1-800-424-LEAD).
- Encourage teachers to instruct children about healthy habits that will prevent exposure to lead.
- Call your local and state health departments (or departments of environmental quality) for information about testing day-care centers and schools for lead-based paint and lead in drinking water, soil, and dust.
- Work with community groups, local landlord/tenant associations, and realtors to raise public awareness of childhood lead-poisoning prevention.
- Help to set up lead education seminars in community centers, places of worship, public libraries, community colleges, and other locations where training is provided or information shared.

- Mobilize local volunteer organizations to "GET THE WORD OUT... GET THE LEAD OUT!" distributing flyers, door-to-door campaigns, and youth group activities.
- You can order the 76-page guidebook for parents, *"Lead in Your Home: A Parent's Reference Guide"* (this provides parents with a handy resource booklet that contains all the information they need, including other contacts from the National Lead Information Center at 1-800-424-LEAD, and how to get posters, pamphlets and materials). Pick a Saturday and pass them out in your neighborhood, or one with (pre-1978) homes. For more information, visit EPA's lead homepage at [www.epa.gov/lead](http://www.epa.gov/lead).

### **Play the Lead Basket Relay Game**

- Divide into teams and give each team a basket or a bucket. Have a collection of items (empty chip bags, cereal, spinach boxes, milk cartons, etc.) and have the teams relay race, with each kid picking up one item at each "pass" by a large table or bin. The "LEAD BLOCKER" foods (high in calcium and iron) earn you one point each. Other foods, high in fat, with no LEAD BLOCKER VALUE, cost you one point. The team with the most points wins!

### **Take the LEAD IQ QUIZ**

(Divide into teams and see which team has the best score, then discuss).

#### **What Is Your Lead IQ?**

Lead, you say? Haven't we outlawed lead in paint and gasoline? Why should I be concerned about it now? Does it still affect us kids? Take this pop quiz to find out your "lead IQ"!

1. Is lead still a problem for children?  
☐ Yes, it affects nearly one million children under the age of six in the U.S.  
☐ No, it has been nearly eradicated as a problem for U.S. children.
2. Can lead harm you?  
☐ Yes. You can get very sick from lead poisoning. It can slow your growth, give you headaches, ruin your hearing, and cause learning disabilities.  
☐ No. Children are no longer exposed to lead--it has been removed from paint, gasoline and older housing.

3. Where do you find lead today?
  - a. Pencils
  - b. Pre-1978 housing
  - c. Soil, air (as dust), and water
  - d. B and C
  - e. All of the above
4. If you seem healthy, and feel healthy, you can't be lead poisoned.
  - a. True
  - b. False
5. How do you get tested for lead?
  - a. With a simple blood test.
  - b. You can't be tested for lead — you have to wait for symptoms to appear.

#### POP QUIZ ANSWERS

1. **Yes.** The Centers for Disease Control and Prevention estimated (in 1994) that 890,000 children in the U.S. under the age of 6 have elevated blood lead levels. While levels have declined, there are still thousands of poisoned kids. Lead-based paint was banned for residential use in 1978; however, it still exists in pre-1978 housing, in soil contaminated from peeling paint or leaded gasoline, and can leach into the water from leaded pipes or lead solder.
2. **Yes.** Even at low exposure levels, lead can cause serious health problems for children. Because the bodies of children are developing, they are more vulnerable to the toxic effects of lead than adults. Lead in a child's body can result in damage to the brain and nervous system, behavior and learning disabilities, slowed growth, headaches, and hearing problems.
3. **D.** All of these are sources of lead except pencils, which are made with graphite. You can find lead all over in chipped and peeling paint, in the air (as lead dust), in the water from lead pipes and lead solder and in the soil. If you live in a home built before 1978, get your home tested for lead right away!
4. **False.** Even children who seem healthy can have high levels of lead in their bodies. Once symptoms appear, your child is already lead-poisoned (and lead poisoning is often not identified as the culprit for these symptoms, e.g., learning disabilities).
5. **A.** A simple blood test is all it takes to detect lead, which can be easily done in your doctor's office or clinic. Blood tests are usually recommended for:
  - Children at ages 1 and 2.
  - Children or other family members who have been exposed to high levels of lead.
  - Children who should be tested under your state or local health screening plan.

How did you do? Whether you got 100% (or not), there is good news, lead poisoning is an entirely preventable condition!

## NOTES



## NOTES