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The Environment and Women's Health

The Environment

Q: What do you mean by "the environment"?

A: The environment is everything around you, indoors or outdoors. The air you breathe, water you drink, the ground you walk on, and food you eat are all part of your environment. It's important that you know what things in the environment can affect your health and what you can do to help protect yourself and your family.

Q: How can the environment affect women's health?

A: Chemicals and other substances in the environment can cause serious health problems in women, such as cancer, lung disease, or reproductive system problems. They can also make health conditions worse. Scientists are studying the ways toxins in the environment may play a role in conditions such as breast cancer, endometriosis, and menopause. This fact sheet offers information about these toxins and steps you can take to limit exposure.

Q: How can the environment affect children's health?

A: Many types of environmental exposures are more harmful for children than for adults. There are many reasons for this:

- Relative to their body weight, children eat, breathe, and drink more than adults do. So children take in higher concentrations of any toxins in their food, water, or air.
- As organs develop, they are more likely to be damaged by exposure to toxins.
- The ways that toxins are removed from the body are not fully developed in children.
- Children spend more time outdoors, where they may be exposed to outdoor air pollution and ultraviolet radiation.
- Children do more intense physical activity, causing them to breathe air pollutants more deeply into their lungs.
- Young children tend to put their hands, dirt, or objects into their mouths.

Q: How can the environment affect women who are pregnant or nursing?

A: Exposure to some toxic substances — including lead, mercury, arsenic, cadmium, pesticides, solvents, and household chemicals — can increase the risk of miscarriage, preterm birth, and other pregnancy complications. These and other environmental toxins can also harm the developing bodies of fetuses and infants. Women who are pregnant or nursing or who plan to become pregnant should take special care to avoid exposure to certain chemicals discussed here.

Q: How can the environment affect older women?

A: Pollutants in the environment can contribute to some illnesses that are more common in older adults. Indoor and

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outdoor air pollution can aggravate the symptoms of cardiovascular and lung diseases, including high blood pressure, chronic obstructive pulmonary disease, and asthma. These conditions are more common in women over the age of 50 than in men over 50.

Older adults may be more susceptible to the health effects of toxic chemicals. People who are exposed to pollutants over the course of a lifetime may have health problems when they are older. For instance, long-term exposure to pesticides may cause cancer or dementia.

Lead is a toxic metal that may be stored in bones. In postmenopausal women who were exposed to lead early in life, bone loss can release lead into the bloodstream. This may cause kidney damage, increase the risk of high blood pressure, and decrease cognitive functions.

Outdoor Air Pollution

Q: What is outdoor air pollution and how can I be exposed to it?

A: There are many sources of pollution outdoors, such as:

- Emissions from cars and trucks
- Power plants that burn fossil fuels
- Factories and forest fires

Q: What are the health effects of outdoor air pollution?

A: Outdoor air pollution can cause your eyes and nose to burn, your throat to itch, and even breathing problems. Exposure to air pollutants at high levels over a long period of time may lead to cancer, birth defects, brain and nerve damage, and long-term injury to the lungs and breathing passages.

Air pollution affects everyone. Children are especially susceptible to the effects of air pollution because their lungs are developing. They also spend more time active outdoors. People with lung and heart diseases are also more sensitive to outdoor air pollution.

The U.S. Environmental Protection Agency (EPA) sets limits on certain air pollutants throughout the United States. Ground-level ozone and particle pollution are two of the most common pollutants and pose the greatest threat to human health in the United States.

Q: What can I do to reduce exposure to outdoor air pollution?

A: To find out about the level of outdoor air pollution in your community, you can check the daily Air Quality Index (AQI). The AQI is a measure of five pollutants: ozone (OH-zohn), particle pollution, sulfur dioxide (SUHL-fur deye-OKS-eyed), nitrogen oxide (NEYE-troh-jen OKS-eyed), and carbon monoxide (kar-bun moh-NOKS-eyed). Many newspaper, radio, and television weather forecasts also include the AQI. Learn more about the AQI, see color-coded air quality maps, and find your local AQI online at http://airnow.gov.

When the levels of air pollution are high, you can protect yourself and your family by limiting outdoor physical activity. This is because physical activity can cause you to take faster, deeper breaths, inhaling more pollutants into your lungs.

Q: What is ground-level ozone and how can I be exposed to it?

A: Ozone is a gas that is naturally found in earth's upper atmosphere, where it forms the ozone layer. The ozone layer

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blocks some of the sun's harmful ultraviolet (UV) rays. To learn more, see UV Radiation on page 10.

Ground-level ozone is ozone in the lower atmosphere, close to the Earth's surface. This is one of the main components of smog. Ground-level ozone is formed when sunlight and heat cause chemical reactions between nitrogen oxides and volatile organic compounds (VOCs). VOCs are pollutants released by motor vehicles, factories and power plants, and chemicals such as paints and cleaners. Ground-level ozone is a pollutant that can harm the environment, crops, and human health.

Q: What are the health effects from exposure to ground-level ozone?

A: High levels of ground-level ozone can make it difficult to breath deeply, cause coughing and throat irritation, and even damage the lining of your lungs. People with chronic lung conditions such as asthma, emphysema, and bronchitis may be more sensitive to the effects of ozone. Ozone can also have a greater impact on the health of children and adults who are physically active outdoors when ozone levels are high.

Q: What is particle pollution and how can I be exposed to it?

A: Particle pollution are tiny solid particles and liquid droplets in the air. This is also called particle matter or PM. These particles come from dust, fires, motor vehicles, power plants, and factories. Many types of particle pollution are too small to be seen with the naked eye. Particle pollution causes haze.

Q: What are the health effects from exposure to particle pollution?

A: Exposure to particle pollution can irritate your eyes, nose, and throat. Inhaling these particles can cause coughing and wheezing, even if you are healthy. Long-term exposures to particle pollution can reduce lung function and lead to chronic bronchitis. High levels of particle pollution may aggravate symptoms of lung and heart diseases.

Q: What is "acid rain"?

A: "Acid rain" is a term used to describe rain, snow, fog, dry gases, and particles containing acids. Sulfur dioxide and nitrogen oxides released by power plants, cars and trucks, and other sources are the primary cause of acid rain. Acid rain harms plants, animals, fish, and building surfaces.

Q: What are the health effects from acid rain?

A: Acid rain does not directly affect human health. But the main components of acid rain — sulfur dioxide and nitrogen oxides — do. These gases contribute to particulate pollution, which can affect the heart and lungs. High levels of sulfur dioxide can aggravate lung and heart diseases. Nitrogen oxides increase levels of ground-level ozone, react with other chemicals to form toxins, and contribute to global warming.

Q: What is global warming?

A: Global warming is an increase in the Earth's average temperature. This increase can cause a variety of changes in local climates around the world, such as changes in rainfall patterns and a rise in sea level. It also triggers a wide

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range of changes in plants, wildlife, and human life.

"Greenhouse gases," including carbon dioxide and methane, trap the heat of the Earth. In the last 200 years, human activities — like burning fossil fuels — have increased the levels of greenhouse gases in the atmosphere. This has caused average temperatures to rise. Temperatures are expected to continue to rise in the future.

Q: What are the health effects of global warming?

A: Scientists predict that global warming may affect human health in many ways:

- Extremely high summer temperatures may lead to more heat-related deaths.
- Warmer climates can increase the spread of some infectious diseases.
- Climate change may lead to more extreme weather events, such as hurricanes and floods.
- Higher temperatures can increase concentrations of ozone and particulate pollution.

Q: What can I do to reduce outdoor air pollution and global warming?

A: Motor vehicles and power plants that burn fossil fuels are major sources of air pollution. They also release greenhouse gases that lead to climate change. But there are many steps you can take to use less energy and reduce air pollution and greenhouse gases. Many of these steps can also save you money.

- Replace incandescent (in-kand-ESS-ent) light bulbs with compact fluorescent (flor-ESS-ent) bulbs.
- Turn off lights and appliances when they're not in use.
- Reuse and recycle to conserve raw materials and energy.
- Buy ENERGY STAR appliances.
- Choose a vehicle with good fuel economy and low emissions.
- Drive less. Carpool, walk, bike, or use public transportation if you can.

To learn more about:

- Reducing air pollution, visit EPA's Web page on how you can help clean the air at http://www.epa.gov/air/actions
- Reducing your greenhouse gas emissions, visit EPA's Personal Emissions Calculator at http://www.epa.gov/climatechange/wycd/calculator/ind_calculator.html
- Energy-saving appliances, visit the government's Web site on products and design at http://www.energystar.gov
- Low-emissions vehicles, visit EPA's Green Vehicles Guide at http://www.epa.gov/greenvehicles

Indoor Air Pollution

Q: What is indoor air pollution and how can I be exposed to it?

A: Most people spend about 90 percent of their time indoors. Therefore, indoor air pollution is as great a concern as outdoor air pollution.

Sources of indoor air pollution include:

- Gases from burning oil, gas, coal, or wood for heating and cooking
- Smoke from tobacco products
- Building materials, such as asbestos insulation and products made from pressed wood

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- Outdoor pollutants, such as radon, that can accumulate indoors
- Chemicals used for cleaning, pest control, and painting
- Personal care products such as hair spray and nail polish remover
- Biological contaminants, such as bacteria, molds and mildew, and pet dander

If your home does not have enough ventilation, pollutants may build up to unhealthy levels.

Q: What are the health effects of exposure to indoor air pollution?

A: Indoor air pollution can cause immediate effects. It can irritate your eyes, nose and throat; cause headaches; and make you feel dizzy or tired. These symptoms may be mistaken for symptoms of a cold or flu, but if the symptoms disappear when you are away from home, they may signal an indoor air problem.

Indoor air pollution can also cause more serious health problems, such as heart and lung diseases and cancer. These problems may develop many years after you were exposed to the pollution or after years of repeated exposures.

Some people are more sensitive to indoor air pollution than others are. As with outdoor air pollution, children, the elderly, and people with heart or lung conditions are more likely to be affected.

Q: How can I improve the indoor air quality in my home?

A: The best way to reduce indoor air pollution is to get rid of potential sources of pollution. You can also improve the ventilation in your home by running exhaust and attic fans and opening doors and windows. This is especially important when you are using products, like paints and cleaners, that may increase levels of indoor air pollution for a short time. Air cleaners may also help remove indoor air pollutants. The effectiveness of air cleaners varies. To learn more about air cleaning systems, read the EPA booklet, "Residential Air Cleaning Devices," available online at http://www.epa.gov/iaq/pubs/residair.html.

Q: What are combustion products and how can I be exposed to them?

A: Stoves, heaters, fireplaces, and chimneys need to be vented correctly. If not, they can release dangerous amounts of carbon monoxide, nitrogen dioxide, and particle pollution into your home. Fuel-burning appliances may also release formaldehyde (form-AL-duh-hyd) (see "What are the health effects from exposure to VOCs?" on page 8).

Q: What are the health effects of exposure to combustion products?

A: Carbon monoxide and nitrogen dioxide are colorless, odorless gases. Carbon monoxide can cause headaches, dizziness, nausea, or fatigue. Breathing air with high levels of carbon monoxide may cause you to lose consciousness and may be deadly. Nitrogen dioxide can irritate your eyes, nose, and throat, and make it difficult to breathe. Eventually, it may contribute to lung infections and diseases.

Q: What can I do to reduce exposure to combustion products?

A: You can minimize the emissions from fuel-burning stoves and heaters.

- If you use unvented space heaters, follow the manufacturer's direc-

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tions and open a window or door to increase ventilation.

- Use exhaust fans, vented to the outdoors, over gas stoves and ranges.
- In your woodstove, use wood that is aged and dried and is not treated with chemicals.
- Have a trained contractor inspect, clean, and tune-up furnaces, flues, chimneys, and gas appliances every year. Repair any leaks as soon as you can. Change filters at least once every month during periods of use.

Do not operate cars, trucks, lawn mowers, snow blowers, and other machines with gasoline-powered engines in enclosed spaces. These engines release carbon monoxide.

Installing a carbon monoxide detector can also help protect you and your family from this dangerous gas.

Q: What is secondhand tobacco smoke and how can I be exposed to it?

A: The smoke from burning tobacco products and the smoke exhaled by smokers are called secondhand smoke. These products include cigarettes, cigars, and pipes.

Q: What are the health effects of exposure to secondhand tobacco smoke?

A: Nonsmokers who are exposed to secondhand smoke have an increased risk of lung cancer. Children of parents who smoke are more likely to suffer from pneumonia, bronchitis, ear infections, asthma, and sudden infant death syndrome (SIDS).

Q: What can I do to reduce exposure to secondhand tobacco smoke?

A: To help protect yourself and your family from the harmful effects of secondhand smoke:

- Don't smoke in your home or car or allow others to do so.
- Ask smokers to smoke outside. Ventilation (opening windows, running exhaust fans, etc.) cannot completely protect nonsmokers and children from exposure to secondhand smoke.
- Don't smoke, or allow others to smoke, around children, especially infants and toddlers.

Q: What is radon and how can I be exposed to it?

A: Uranium (yoor-AYN-ee-um) is a natural radioactive substance found in many types of rocks and soil. As uranium decays, it releases radon (ray-don). Radon is a colorless, odorless, and tasteless radioactive gas. Small amounts of radon are present in outdoor air. High levels of radon can accumulate in enclosed spaces. Because radon comes out of the ground, it is more likely to accumulate in basements and the lower floors of buildings.

It is estimated that one out of every 15 homes in the United States may have high radon levels. Radon can enter any type of home through small gaps and cracks in walls and floors. In some areas, radon may also be present in groundwater.

Q: What are the health effects of exposure to radon?

A: Exposure to high levels of radon can cause lung cancer.

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Q: How can I tell if my home has a radon problem?

A: You can test the air in your home for radon. Hardware stores and other retailers sell many types of inexpensive radon test kits that allow you to test your home yourself. You can also hire a qualified radon testing professional. The EPA recommends that all homes should be tested below the third floor.

Two types of radon tests are available: short-term tests and long-term tests. Short-term tests provide results in less than 90 days. However, because radon levels may vary throughout the year, long-term tests, lasting more than 90 days, will give you a better idea of the average radon levels in your home year-round.

If a short-term test finds radon levels of 4 picoCuries per liter (pCi/l) of air or higher, you should conduct a second test. You should fix your home to reduce radon levels if the second test is:

- A long-term test, showing radon levels of 4 pCi/l or higher

  or

- A short-term test, and the average of the first and second tests was 4 pCi/l or higher

Q: What can I do to reduce exposure to radon?

A: A qualified radon contractor can fix your home to reduce radon levels. Costs can range from $800 to $2,500. If radon levels are high in your indoor air and you have a private well, you should also have your water tested and treated if need be.

Your state radon office can provide information about radon in the ground and water in your area. They can also refer you to qualified radon testers and radon contractors. You can find contact information for your state radon office at http://www.epa.gov/iaq/whereyoulive.html.

Q: What is asbestos and how can I be exposed to it?

A: Asbestos (ass-BESS-tohs) is a fiber that has been used in insulation and fireproofing materials. The EPA has banned many asbestos products. Many companies have also cut down on their use of asbestos. Today, asbestos is most often found in:

- Older homes (in building, pipe, and insulation materials)
- Textured paints
- Floor tiles

Asbestos fibers are released into the air when asbestos-containing materials are disturbed. The most dangerous asbestos fibers are too small to see.

Q: What are the health effects from exposure to asbestos?

A: After asbestos fibers are inhaled, they can remain in the lungs. Asbestos can cause:

- Lung cancer
- Lung scarring (asbestosis)
- Cancer of the chest and stomach lining (mesothelioma)

These health problems may develop many years after exposure.

Q: What can I do to reduce exposure to asbestos?

A: Asbestos should only be removed by trained professionals. Do not attempt to remove asbestos-containing materials yourself. If asbestos-containing materials are in good condition, it may be safest to leave them alone.

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If you think your house may contain asbestos that has been disturbed, contact a trained contractor. A professional may recommend removing the materials or sealing them off to keep fibers out of the air. Call the EPA's Toxic Substances Control Act Hotline at (202) 554-1404 to find out if your state has a program to train and certify contractors who specialize in removing asbestos.

Q: What are volatile organic compounds (VOCs), and how can I be exposed to them?

A: Volatile organic compounds (VOCs) are emitted as gases from certain solids or liquids. VOCs include a variety of chemicals. Many types of household products contain VOCs, including paints, paint strippers, adhesives, cleaners, pesticides, building materials, and office equipment.

Q: What are the health effects from exposure to VOCs?

A: VOCs may cause eyes, nose, and throat irritation; dizziness and nausea; and memory loss. Some VOCs are more toxic than others. Some of these chemicals can damage the liver, kidneys, or central nervous system or cause cancer. The health effects may depend on the amount and length of exposure.

Some common VOCs that can affect your health are listed below.

- Formaldehyde is a strong-smelling, colorless gas found in some building materials and household products. It can irritate your eyes and respiratory tract, cause nausea, and trigger allergic reactions or asthma attacks. Formaldehyde has also been shown to cause cancer in animals and may cause cancer in humans. Pressed-wood products — commonly used in paneling, shelving, furniture, and cabinets — are major sources of formaldehyde in homes. When these products are new, they release more formaldehyde into the air. Heat and humidity also increase emissions. Smoke from unvented, fuel-burning appliances and tobacco products may also contain formaldehyde.
- Methylene chloride (meth-ih-LEEN KLOR-eyed), found in paint and adhesive removers and aerosol spray paints, is known to cause cancer in animals. Exposure can also cause symptoms similar to carbon monoxide poisoning.
- Benzene (BEN-zeen) is found in secondhand smoke, stored fuels, paint supplies, and car emissions. It is a known carcinogen.
- Perchloroethylene (known as "perc"), used in dry cleaning, has been shown to cause cancer in animals and is likely to be a human carcinogen. It also causes reproductive effects and neurological damage and can harm a developing fetus.

Q: What can I do to reduce exposure to VOCs?

- When using cleaners, painting supplies, and other household chemicals, read the warnings on the label and follow the directions carefully.
- Use products outside or in well-ventilated areas.
- Gases may leak from products stored in closed containers. Store chemicals in well-ventilated areas, out of the reach of children.
- Dispose of old or unneeded products. Some chemicals can contaminate the

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environment. So it is important to dispose of chemicals properly. Follow the instructions on the label. Contact local government agencies, waste services, or community organizations to find out if there are programs to collect hazardous household chemicals in your area.

- Properly vent garages and fuel-burning appliances so that combustion products do not contaminate indoor air.
- Check the formaldehyde content of pressed-wood products before you buy them. You can also reduce formaldehyde in the air by increasing ventilation, keeping your house cool, and using a dehumidifier.
- Use a dry cleaner that uses alternative cleaners, or make sure your drycleaner properly dries your clothes before returning them. The clothes should not have a strong chemical odor.

Q: What are biological pollutants and how can I be exposed to them?

A: Biological pollutants include viruses, bacteria, animal dander, cockroach and rodent droppings, dust mites, mold, and mildew.

Q: What are the health effects from exposure to biological pollutants?

A: These pollutants are small enough to be inhaled and may trigger allergies, asthma, or flu-like symptoms.

Q: What can I do to reduce exposure to biological pollutants?

A: Many biological pollutants grow well in warm, moist areas. You can reduce moisture in your home by using ventilation fans and dehumidifiers to keep indoor humidity between 30 and 50 percent. Regularly empty and clean evaporation trays in dehumidifiers, refrigerators, and air conditioners. If carpets or building materials become water damaged, they should be thoroughly cleaned and dried or removed to get rid of mold.

You can also reduce biological pollutants by regularly cleaning to remove dust, pet dander, and other allergens.

Workplace Environment

Q: How does the environment at work affect my health?

A: Some occupations and industries involve the use or production of chemicals or substances that may be toxic or hazardous to unprotected workers. Some workers may also carry dangerous substances home on their hands or clothes. To find information about health hazards in the workplace and what you can do to protect yourself from dangerous exposures, visit the Occupational Safety and Health Administration's (OSHA) web site at http://www.osha.gov or call 1-800-321-6742.

Q: What is "sick building" syndrome?

A: "Sick building syndrome" describes a situation in which people spending time in a building experience a range of symptoms that they believe are related to that building. Poor indoor air quality may be the cause of these symptoms. But other factors such as lighting, noise, poorly designed workstations, and psychological and social factors may contribute to sick building syndrome.

Common indoor air pollutants (see Indoor Air Pollution) can affect air

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quality in the workplace, including biological contaminants such as mold and mildew and VOCs from cleaners, adhesives, office machines, furniture, or building materials.

Many office buildings built since the 1970s were designed to maximize energy efficiency by allowing very little outdoor air into the building through windows or ventilation systems. Poor ventilation and heat and air conditioning systems can lead to the buildup of indoor air pollution.

Symptoms of sick building syndrome may include irritation of the eyes, nose, or throat; dizziness; nausea; headaches; or fatigue. In some cases, the symptoms may appear when you enter the building and go away after you leave. In other cases, the symptoms may continue after exposure.

If you think indoor air pollution could be causing your health problems, report your concerns. Talk to the employee health nurse or safety officer on your job site. Also, talk with your doctor. The National Institute for Occupational Safety and Health (NIOSH) can give you information on how to have your office tested. Call 800-35NIOSH. You can also contact the Occupational Safety and Health Administration (OSHA) at 800-321-OSHA (6742).

UV Radiation

Q: What is UV radiation?

A: Sunlight contains ultraviolet (UV) rays, a type of radiation.

Q: What are the health effects of exposure to UV radiation?

A: Too much exposure to UV radiation can damage your skin and may lead to skin cancer. Sunburns during childhood may increase your chances of developing the most severe form of skin cancer, melanoma, later in life. Overexposure to UV rays can also cause cataracts and weaken your immune system.

Q: How does the ozone layer protect us from UV radiation?

A: The ozone layer is a naturally occurring concentration of ozone molecules in the upper atmosphere. Unlike ground-level ozone, ozone in the upper atmosphere is not a pollutant and does not damage human health. The ozone layer protects us from harmful UV rays.

The use of synthetic ozone depleting substances (ODS) has reduced ozone levels in the upper atmosphere. These are chemicals that were once used in refrigeration, fire extinguishers, and aerosols. Because the ozone layer is thinner than it used to be, more UV rays reach the Earth's surface, leading to higher rates of skin cancer.

The United States and other countries are working to phase out the use of ODS. Thanks to these efforts, the ozone layer has not become thinner since 1998 and has started to recover. Because ODS can remain in the atmosphere for 50–100 years, scientist predict that ozone will not return to pre-1980 levels until the second half of the 21st century.

Car and home air conditioners and refrigerators may contain ODS. You can help protect the ozone layer by making sure these systems are in good repair and do not leak. Have them serviced by an EPA-certified technician who can recover and recycle the refrigerant. When purchasing new appliances, make sure the refrigerants are not ODS.

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Q: What can I do to reduce exposure to UV radiation?

A: You can prevent overexposure to UV radiation.

- UV radiation levels are highest in the middle of the day. Limit your time outdoors between 10 a.m. and 4 p.m.
- A half hour before spending time outdoors, apply a sunscreen with a sun protection factor (SPF) of at least 15. Follow the package directions and reapply as needed. Even waterproof or water-resistant sunscreens should be reapplied after swimming or sweating.
- Protect your face and neck by wearing a wide-brimmed hat.
- Shield your skin from UV rays by wearing tightly woven, loose-fitting clothing.
- Protect your eyes by wearing sunglasses that block 100 percent of UV rays.
- Avoid sunlamps and tanning beds.

The UV index is a forecast of UV levels in your area. The higher the number, the greater your risk of overexposure to UV radiation. You should take extra precautions to protect yourself and your family when UV levels are very high. To learn more about the index or to find the UV forecast for your area, visit http://www.epa.gov/sunwise/uvindex.html.

Water Contamination

Q: What is water contamination and how can I be exposed to it?

A: Tap water, well water, and even bottled water may contain small amounts of contaminants such as:

- Bacteria and parasites
- Minerals and metals, such as lead (see section on lead below)
- Sources of radiation, such as radon
- Pesticides
- VOCs
- Disinfectants (cleaning products) and disinfectant byproducts

Q: What are the health effects from exposure to water contamination?

A: As long as levels of these contaminants are low enough to meet EPA standards, your water is safe to drink. People with weakened immune systems from HIV/AIDS, chemotherapy, or organ transplants may be more sensitive to microbes. Microbes are small organisms such as parasites. Infants and children are also more vulnerable to microbes and other types of water contamination.

Q: What can I do to reduce exposure to water contamination?

A: The EPA regulates contaminants in public water systems to make sure water is safe to drink. If you get your water from a public system, your water supplier is required to send you an annual report about the quality of your water. You can visit http://www.epa.gov/safewater/ccr/whereyoulive.html to find out if your water quality report is posted online.

If there is a problem with your drinking water, your water supplier is required to notify you by mail or through newspaper, radio, and television announcements. The supplier should tell you what steps to take to ensure your water is safe to drink.

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The EPA does not regulate well water. If you get your water from a private well, you should have your water tested at least once a year. To find more information about how to make sure well water is safe, visit http://www.epa.gov/safewater/privatewells.

If you are concerned about your water quality, talk to your doctor about whether you should take additional steps, such as:

- Boiling your water for one minute to kill any microbes
- Filtering your tap water
- Drinking bottled water that has been treated by distillation, reverse osmosis (os-MOHS-iss), UV light, or filtration with an absolute one-micron filter

Q: Should I drink bottled water instead of tap water?

A: Bottled water is required to meet the same standards as tap water. Both bottled water and tap water are safe to drink if they meet these standards. Bottled water is not necessarily safer than tap water, unless it has been specially treated to remove more contaminants.

If you have a weakened immune system and wish to drink bottled water instead of boiling or filtering your tap water, read bottled water labels or contact bottlers to find out how the water was treated. Look for water that has been treated in one of the following ways:

- Distillation
- Reverse osmosis
- UV light
- Micron filtration with a filter in which the holes are one micron or smaller (absolute one-micron filter)

Q: What are the health effects of fluoride in water?

A: Many public water systems add fluoride to water to help prevent cavities. According to the Centers for Disease Control and Prevention, water with 0.7–1.2 milligrams/Liter (mg/L) of fluoride is safe and effective.

Water may also contain natural fluoride. Some water sources contain more natural fluoride than others. Studies have shown that water with more than 2 mg/L of fluoride may pose health risks, including enamel fluorosis in children under the age of 8. This is staining and pitting of tooth enamel. Studies have also shown an increased risk of bone fractures in people who drink high-fluoride water all their lives.

Contact your water supplier to find out how much fluoride is in your water. Most bottled waters do not contain added fluoride.

Lead

Q: What is lead and how can I be exposed to it?

A: In the past, lead was commonly used in products such as gasoline and paint. By the 1980s, the use of lead in consumer products was limited or banned in the United States. Today, some common sources of lead are:

- Lead-based paint in houses built before 1978
- Soil and household dust, especially if it is contaminated by chips or dust from lead-based paints
- Water from pipes that contain lead or lead solder

Although the use of lead-based paints in toys was banned in the United

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States in 1978, other countries may still use paints that contain lead. Paint on imported toys and toys manufactured in the United States before 1978 may pose a risk to children. Lead is also used in some plastic toys. The U.S. Consumer Product Safety Commission issues recalls for toys that may expose children to lead. Visit http://www.cpsc.gov or call 800-638-2772 to find information about toys that have been recalled.

Q: What are the health effects from exposure to lead?

A: Lead is a toxic metal that can cause health effects in both adults and children. Infants and children under 6 years old are at the greatest risk of health problems due to lead poisoning. In children, lead can harm the brain and nervous system, causing learning problems and lowered intelligence quotients (IQs). Lead can also harm a developing fetus, so it is important for pregnant women to avoid lead exposure.

Adults exposed to lead may experience health effects such as reproductive problems, high blood pressure, artherosclerosis (ah-thuh-roh-skluh-ROH-suhss), muscle and joint pain, problems with memory or concentration, and decreased cognitive function. Lead is stored in the body in bone. Osteoporosis (oss-tee-oh-puh-RO-sis) causes bones to break down, releasing lead into the blood. After menopause, women are more likely to lose bone mass, increasing the risk of lead exposure. Women who were exposed to high levels of lead earlier in their lives are especially at risk.

Lead is dangerous when it is inhaled or ingested. When lead-based paint is disturbed or removed, it may release fine dust that is dangerous if inhaled. Small children have a high risk of lead exposure because they put so many things in their mouths. Children's lead levels are often highest at age 2.

Q: How can I find out if my children or I have been exposed to lead?

A: Talk to your doctor about testing you or your children for lead. Children with blood lead levels higher than 10 micrograms per deciliter (µg/dL) are considered to have excess lead exposure. However, studies have shown that lower blood lead levels can affect children's IQs and learning abilities. No level of lead is considered safe for children.

Q: How is lead poisoning treated?

A: There are medicines that can reduce high levels of lead in the blood. But treatments cannot reverse damage caused by lead poisoning. This is why it is important to prevent exposure to lead.

Q: What can I do to reduce exposure to lead?

A: You can have your home tested for lead. This is especially important if your home was built before 1978 and if the paint is flaking, chipping, or cracking. If lead-based paint is in good condition, it may not be hazardous. If you plan to remove lead paint or perform other renovations, hire a contractor specially trained to deal with lead paint. You should leave the house until renovations are completed and the house is cleaned to remove any lead dust. The National Lead Information Center at 800-424-LEAD (5323) can provide information about professionals in your area who are trained in lead testing and removal.

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Lead may be present in the water service lines or plumbing of older homes. Contact your local health department to find out if you should be concerned about lead in your drinking water. Boiling water will not remove lead. However, you can take steps to reduce the amount of lead in your drinking water.

- Never use hot water from the faucet to make baby formula or for cooking.
- Run cold water for at least a minute before using it.
- Use a water filter certified by NSF International to remove lead. For more information visit http://www.nsf.com/consumer/drinking_water/dw_treatment.asp?program=WaterTre.

You can take other steps to prevent you or your children from being exposed to lead:

- Keep areas where children play as dust-free and clean as you can.
- Mop floors and wipe window ledges and frames weekly.
- Wash children's hands and things children put in their mouths — bottles, pacifiers, and toys — often.
- Prevent children from eating dirt or paint chips and from chewing on painted surfaces such as windowsills.
- Serve meals high in iron and calcium; these nutrients block the absorption of lead.

Mercury

Q: What is mercury and how can I be exposed to it?

A: Mercury (MERK-yoor-ee) is a toxic metal found in many types of rock, including coal. When coal is burned, mercury is released into the air. Coal-fired power plants are a major source of mercury emissions in the United States. This mercury makes its way into lakes, rivers, and oceans, where microorganisms convert it into methylmercury (meth-ihl MERK-yoor-ee). Microorganisms are very small and can only be seen with a microscope. Fish eat these microorganisms, and the methylmercury becomes concentrated in the bodies of fish and shellfish. Eating fish and shellfish is the main way humans are exposed to this toxin.

Q: What are the health effects from exposure to mercury?

A: Children, infants, and unborn babies are most sensitive to mercury. High levels can damage the developing nervous system. In both children and adults, high levels of mercury may affect the brain, heart, kidneys, lungs, and immune system.

Q: Is it safe to eat fish?

A: Fish and shellfish contain protein, omega-3 fatty acids, and other nutrients that have important health benefits. However, small amounts of mercury are found in most types of fish and shellfish. Different kinds of fish contain different amounts, depending on how long they live and what they eat. Choosing fish low in mercury can help you limit your mercury exposure. This is especially important for pregnant women and young children.

Q: What can I do to reduce exposure to mercury?

A: You can limit the amount of mercury consumed from fish. The EPA and the U.S. Food and Drug Administration (FDA) recommend that women who

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may become pregnant, women who are pregnant or nursing, and young children follow these guidelines:

- Don't eat shark, swordfish, king mackerel, or tilefish. These fish are high in mercury.
- Limit your consumption of fish low in mercury to 12 ounces — or about 2 meals — each week. Fish that are low in mercury include shrimp, canned light tuna, salmon, pollock, and catfish.
- Limit your consumption of albacore (white) tuna to 6 ounces or 1 meal each week. Albacore tuna contains higher levels of mercury than canned light tuna.
- Before eating fish caught in your area, check local fish safety advisories. If you can't find information about the safety of local fish, eat no more than 6 ounces a week and do not eat any other fish that week.

Pesticides

Q: What are pesticides and how can I be exposed to them?

A: Pesticides (PESS-tih-syds) are chemicals used to kill pests such as insects, rodents, weeds, mold, and bacteria. Yet these chemicals can also cause health problems in people.

Q: What are the health effects from exposure to pesticides?

A: Health effects will depend on the type of pesticide, the amount of exposure, and the frequency of exposure. These health effects may include birth defects, nerve damage, and cancer. Health problems might not appear until many years after exposure.

Pesticides pose greater health risks for children than adults because children's organs are still developing, they eat more food relative to their body weight, and they are more likely to put contaminated objects in their mouths.

Q: What can I do to reduce exposure to pesticides?

A: First, the EPA limits the amount of pesticides that may be used to grow food and may remain on food sold to consumers.

You can also take steps to limit your exposure to pesticides from food.

- Reduce the pesticides on your fruits and vegetables by washing and scrubbing them under running water, peeling off the skin, and trimming outer leaves.
- In meat, pesticide chemicals may be stored in fat. Trimming the fat can reduce your exposure.
- You can choose organic foods, which are grown without the use of synthetic pesticides. You can find more information about organic foods at the National Organic Program Web site, http://www.ams.usda.gov/nop/indexNet.htm.
- Eating a variety of foods can prevent high levels of exposure to a single pesticide.

It is important to use care when using pesticides in and around your home.

- Be sure to read all labels and warnings before using a pesticide. Follow the instructions carefully.
- Only use the recommended amount.
- Store and dispose of unused pesticides safely.
- Before using pesticides, remove children and pets from the area.

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- Keep pesticides out of reach of children, preferably in cabinets or sheds with locks or child-proof latches.
- If someone is exposed to pesticides and still conscious, having trouble breathing, or having convulsions, contact the National Poison Control Center at 800-222-1112. In case of emergency, call 911 or your local emergency service first.

You can also reduce your pesticide use by preventing pest infestations and controlling pests with methods other than pesticides.

- Take steps to prevent infestations inside and outside. This includes removing water or food that may attract pests, destroying areas where pests may hide or breed, and sealing entry holes.
- Use biological methods to control pests, such as attracting birds and bats to eat insects.
- Use manual pest control methods, like pulling weeds or setting traps.
- Consider natural pesticides that do not contain synthetic chemicals.

If you hire a pest control company, make sure they inspect your home, let you know which chemicals they will use, and address your safety concerns before you sign a contract.

Environmental hormones

Q: What are environmental hormones and how can I be exposed to them?

A: Environmental hormones are also called endocrine disruptors. These are chemicals that can act like or interfere with natural hormones in the human body.

Q: What are the health effects from exposure to environmental hormones?

A: These chemicals can reduce fertility. They may also play a role in the development of cancers and reproductive disorders like endometriosis. In infants and fetuses, environmental hormones can also affect the developing reproductive and nervous systems and organs.

Some common environmental hormones known to affect human health are:

- Dichloro-diphenyl-trichloroethane (DDT), a pesticide now banned in the United States, and some other pesticides.
- Polychlorinated biphenyls (PCBs), chemicals that are banned for most uses in the United States but remain in soil and water.
- Diethylstilbestrol (DES), a drug used to prevent miscarriages until it was banned in the 1970s. Some daughters of women who took DES have developed reproductive problems and vaginal and cervical cancer.
- Phthalates (THAL-ayts) and bisphenol A (BPA), endocrine disruptors commonly used in plastics. Research suggests these chemicals may affect fetal development. Scientists are still studying these substances in order to understand their impacts on human health.

Q: What can I do to reduce exposure to environmental hormones?

A: Researchers are studying the health effects of known and suspected environmental hormones. They are devel-

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oping ways to prevent too much exposure to these chemicals. The following steps may reduce your exposure to environmental hormones:

- Take steps to minimize your exposure to pesticides.
- Public water systems are required to test water for PCBs and notify you if dangerous levels are present in your water. If you have a private well, have your water tested (see Water Contamination).
- Boiling, microwaving, or using the dishwasher to clean hard plastic plates, bottles, or other food containers may cause BPA to be released, increasing your risk of exposure. Discard any item that has small cracks on its surface.
- Because infants are most likely to be sensitive to BPA, parents can take steps such as using:
  - BPA-free plastic bottles and training cups
  - Glass bottles
  - Bottles with BPA-free plastic liners
  - Microwave-safe glass or paper dishes covered with paper towels in the microwave
- Some plastic medical devices may expose people to phthalates. The FDA recommends that phthalate-free equipment be used in certain medical procedures, when possible. Animal studies suggest that phthalates may affect the development of the male reproductive system, so this is especially important for women who are pregnant or breastfeeding, male infants, and male children who are near the age of puberty.
- Since 1999, U.S. manufacturers have not used phthalates in toys infants put in their mouths, such as pacifiers and teethers. The State of California banned the sale of toys and baby products containing phthalates, starting in 2009. ■

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For more information

For more information on the environment and women's health, please call womenshealth.gov at 1-800-994-9662 or contact the following organizations:

Agency for Toxic Substances and Disease Registry (ATSDR), OPHS, HHS
Phone: (800) 232-4636
Internet Address: http://www.atsdr.cdc.gov

EPA Headquarters Information Resources Center
Phone: (202) 272-0167
Internet Address: http://www.epa.gov

Indoor Air Quality (IAQ) Information Clearinghouse, EPA
Phone: (202) 343-9370
Internet Address: http://www.epa.gov/iaq

National Center for Environmental Health (NCEH), CDC, HHS
Phone: (888) 232-4636
Internet Address: http://www.cdc.gov/nceh

National Institute of Environmental Health Sciences (NIEHS), NIH, HHS
Phone: (919) 541-3345
Internet Address: http://www.niehs.nih.gov

National Institute for Occupational Safety and Health (NIOSH), CDC, HHS
Phone: (800) 232-4636, (404) 639-3311
Internet Address: http://www.cdc.gov/niosh

National Lead Information Center (NLIC), EPA
Phone: (800) 424-LEAD
Internet Address: http://www.epa.gov/lead

Occupational Safety and Health Administration (OSHA), DOL
Phone: (800) 321-6742
Internet Address: http://www.osha.gov

U.S. Department of Housing and Urban Development (HUD), Healthy Homes and Lead Hazard Control
Phone: (202) 708-1112
Internet Address: http://www.hud.gov/offices/lead/hhi/

DES Action USA
Phone: (800) 337-9288
Internet Address: http://www.desaction.org

National Poison Control Hotline
Phone: (800) 222-1222
Internet Address: http://www.poison.org

National Radon Hotline
Phone: (800) 557-2366
Internet Address: http://www.nsc.org/ehc/radon.htm

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Reviewed by:
Rebecca C. Brown, M.P.H., M.E.M.
Health Scientist
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency