

Sensitive Populations and Chemical Exposure

Everyone comes into contact with chemicals every day.

Chemicals are in the air we breathe, water we drink, and food we eat. Coming into contact with chemicals is called "exposure." Most of the time, the amount we are exposed to is far less than the amount that can cause health problems. Some people cannot tolerate chemical exposure as well as others. We call these groups of people sensitive populations. They can include pregnant and nursing women, children, and older adults.¹ This booklet discusses what chemical exposure means for these populations.

¹ People whose immune systems are weak are also a sensitive population and should speak to their doctors about special precautions.



Pregnant and Nursing Women

Many factors play a part in whether you may get sick from a chemical exposure. They are

- The kind of chemical you were exposed to,
- How much of it you came into contact with,
- How it entered your body,
- How long you were exposed,
- How many times you were exposed, and
- Your health and how your body reacts to the exposure.

Remember: Just because you have been exposed to a chemical doesn't mean you will get sick.



Pregnant and nursing women are especially sensitive to chemicals because

- During pregnancy, a woman's immune system has to work harder to protect both the mother and the baby.
- Exposure can affect the health of the unborn baby. Anything the mother eats, drinks, or absorbs into her body while pregnant may affect her baby's development and growth.
- If breastfeeding, a mother can pass substances to her baby through her breast milk.

Ways Pregnant Women Can Reduce Their Exposure

Be aware of what you eat

- Fish and shellfish are an important part of a healthy diet. Eat up to two servings a week of different kinds of fish and shellfish that are lower in mercury. Fish and shellfish that are lower in mercury include shrimp, trout, tilapia, catfish, crab, calamari (squid), and wild Alaska salmon. When eating locally caught fish, know the local fish advisories for your area and follow those recommendations.
- Wash fruits and vegetables before you eat them; they can have pesticides and other contaminants on their surface.

Wear gloves when gardening

- When you wear gloves, you avoid contact with pesticides, herbicides, and fertilizers.
- When you are finished gardening, wash your hands with warm water and soap. Washing will help prevent the transfer of any chemicals on your hands to other surfaces in your home or to the food you may eat.

Be aware of your environment

- Avoid areas where the soil, water, or air is known to be contaminated or polluted.

Avoid painting

- Have someone else paint the nursery. If you do it yourself, limit the amount of time you spend on the project each day.
 - » Buy no-volatile organic compound (VOC) paint. Even low concentrations of VOCs can be harmful. You may need to wear a respirator.
 - » Keep the windows open to reduce exposure and avoid inhaling fumes.
 - » Wear protective clothing to avoid getting paint on your skin. Paint contains many chemicals, and they can be absorbed through the skin.

Avoid using pesticides

- If you have to apply bug repellent, spray it on your clothing rather than your skin.
- If you have to use a pesticide in your home,
 - » Have someone else apply it;
 - » Open the windows and allow the house to ventilate with fresh air;
 - » Leave, and wait for a few hours to return to allow the air to clear and the pesticide to weaken;
 - » Remove any food or food preparation items before the pesticide is applied; and
 - » After the pesticide is used, wash the food-prep areas in your kitchen before working on them. Washing removes the chemicals from the surface area you use to prepare food.



Children are more sensitive than adults to chemical exposure because

- They are more likely to breathe dust and some vapors because they are closer to the ground;
- They are more likely to put their hands in their mouths; sometimes, they might eat dirt;
- Infants and toddlers have a limited diet, so they may have more exposure to contaminants that are only in certain foods;
- Chemicals may pass to a child when breast-feeding; and
- During the teenage years, the body is creating new tissue, particularly in the reproductive system. These tissues are especially sensitive to exposure to chemical substances.

Ways Parents Can Protect Their Children

- Teach your children to wash their hands often. Hand washing is one of the most important things you and your children can do.
- Wash toys, bottles, and pacifiers often. Besides their hands, children often put these things into their mouths.
- If you need to use pesticides and other potentially harmful chemicals, keep children, toys, and pets away when using them.
- Store and use pesticides, cleaning products, and other chemicals where children can't reach them.
- Know where your children play.
 - » Children may play in mud, splash in creeks, crawl on the floor, and roll in dirt that might contain contaminants.
 - » Be aware of areas that may have physical or chemical hazards.

How to wash your hands

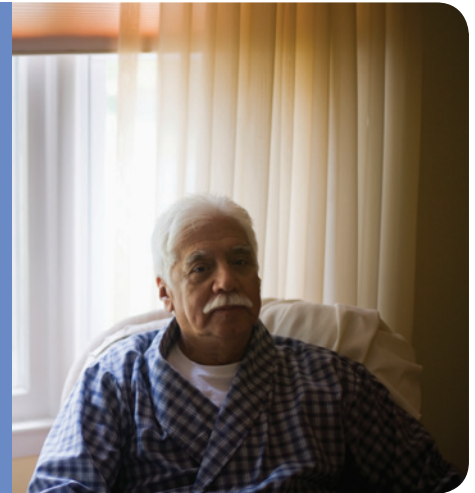
1. Wet your hands with warm water.
2. Apply a generous amount of soap.
3. Rub your hands together for 20 seconds.
4. Rinse your hands.
5. Dry your hands with a paper towel.
6. Use the paper towel to turn off the faucet and open the door.



Older Adults

Older adults may be sensitive to chemical exposure because

- Their immune systems are often weaker,
- They tend to have more sensitive lungs, making fighting off health effects from breathing contaminants harder,
- They may socialize less and, therefore, be less aware of environmental emergencies,
- They may have trouble moving to a safer place if a spill or chemical release happens, and
- They may suffer from poor nutrition, due to lack of appetite or less interest in cooking, which can impact the immune system.



Ways Older Adults or Their Caregivers Can Reduce Exposure

- Create clear, large-print labels. Put them on all chemical products such as bleach, cleaning agents, or disinfectants stored in the home.
- Do not store any chemical products in containers that were used to store food, and do not store food in containers that once held chemicals.
- Stay aware of any environmental concerns in your neighborhood.
 - » If you live near an industry known to have chemical spills or releases, be sure people know to contact you if/when a spill or release happens. Form a telephone tree.

For more information about exposure or other environmental health topics, visit the Agency for Toxic Substances and Disease Registry's Web site at <http://www.atsdr.cdc.gov>.

Sources:

Conant J, Fadem P. *A community guide to environmental health*. Berkeley, CA: Hesperian; 2008.

World Health Organization. *Hazardous chemicals in human and environmental health*. Geneva: World Health Organization; 2000.

Fish advisories obtained from the Natural Resources Defense Council: <http://www.nrdc.org>.

The Agency for Toxic Substances and Disease Registry (ATSDR), based in Atlanta, Georgia, is a federal public health agency of the U.S. Department of Health and Human Services. ATSDR partners with communities across the nation to increase knowledge about toxic substances, reduce the health effects of toxic exposures, and protect the public health.