



Healthy Homes & Gardens

Healthy Homes for Healthy Kids

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by Philip Dickey

Many new parents take measures to protect their children from well-known hazards such as burns, electric shocks, falls, and choking. There is another very real hazard that receives less attention: toxic chemicals.

Children are at high risk from exposures to toxic chemicals. Not only are they far more sensitive to chemicals than adults are, but they often have higher exposures. How can that be if they spend most of their time at home?

We think of homes as safe places where we can close the door on harmful chemicals. **But studies show that the air inside homes is usually more polluted than outdoor air. Dust in the carpet contains a surprising array of pollutants at levels often higher than in soil outdoors. Children receive higher exposures to these chemicals than adults because they play on the floor and put their hands in their mouths.**

Children are not just tiny adults. Because they have immature and developing body systems, children are less able to protect themselves from certain chemicals. Small children eat, drink, and breathe much larger quantities in proportion to their body size than adults do, so any toxic chemicals in food, air, or water will result in much higher doses. And children, when exposed, have much more time for delayed symptoms such as cancer to develop.

What is the result of these unique exposure risks? Scientists don't know for certain, but **there are some disturbing trends in children's health** that may be related:

- * Each year in the United States 8000 children are diagnosed with cancer.
- * Twenty-nine of 38 types of birth defects increased during the 1980s, while only two decreased.
- * Testicular cancer has increased two to four percent per year in men under 50 over the past 40 years. This cancer may be linked to problems during fetal development.
- * Young girls are entering puberty earlier.
- * Childhood asthma has increased 60% since 1980 and now affects 10 million children under age 16 in the United States. It is the leading cause of absence from school.

For all these reasons, it is important to make your home as safe as you can for your children. You can make a significant difference in the future health of your children. This fact sheet has many ideas that will reduce chemical exposures in your home. It is also important to support more stringent pollution laws and standards that will prevent pollution. You can make a difference.

Lead Paint

Exposure to lead causes reduced intelligence in children at levels below those that cause other symptoms. Lead exposure is usually assessed by measuring the level of lead in the bloodstream. Public health experts

worry when a child's blood lead is more than 10 micrograms per deciliter, but there is no safe level of lead exposure except zero.

Lead is a toxic metal that has become widespread in and around homes because of its former uses in paint and gasoline. Homes built before 1978 are likely to contain some lead-based paint, with higher risks in older homes. Peeling or flaking paint is especially dangerous, since children find the taste pleasant and some may eat a large amount of lead. The lead levels in such houses can skyrocket if paint is removed by sanding or pressure washing or if remodeling disturbs lead-based paint. **Children who crawl on the floor in such a house can ingest dangerous amounts of lead in house dust.**

Lead is tracked into the house on shoes and builds up in the dust in carpets and on upholstered furniture. Children ingest this lead when they play on the floor and put their hands into their mouths. High levels of lead are often found in soil near the foundation of homes, where paint has weathered and washed down. Levels are usually higher in cities, where vehicle exhaust adds to the lead levels.

Lead can also be present in some glazed pottery, solder, stained-glass windows, vinyl lunchboxes, and household products such as Grecian Formula hair color. High exposures can occur if food is eaten from or stored in pottery glazed with lead. Older water pipes and some plumbing fixtures contain lead and can contaminate drinking water. To be safe, follow the tips shown in the box at the right.

Accidental Poisonings

Each year nearly three million home poisoning incidents are reported to poison centers nationwide. More than half of these incidents involve children. The most frequently involved products include cleaning products and medicines because they are present in most homes and are often stored within reach of children.

The vast majority of incidents have no lasting effects, but many can be serious. Some of the products most likely to cause serious injury if ingested by a child include medications, drain cleaners, oven cleaners, toilet bowl cleaners, furniture and metal polishes, solvents such as spot removers, fuels, and pesticides.

Some hazardous products such as pills, capsules, and mothballs look much like food or candy to children. Many cleaning products look and smell like fruit juice. Be aware of possible mistakes.

The best solution is to avoid buying hazardous products and to keep all household chemical products out of reach of children. Cabinet locks are inexpensive and well worth the price. Don't rely on child-resistant caps to protect curious children. And just in case, always keep the telephone number of your local poison center close at hand (see right column below). If the victim has collapsed or is not breathing, call 911. It's also a good idea to keep some syrup of ipecac on hand in case you are instructed to induce vomiting.

Pesticides are Poisons

Pesticides include chemicals to kill pests such as insects, rodents, and weeds, and to control plant diseases in the home, lawn, and garden. Besides being potentially toxic to the user, pesticides can also hurt children. Pesticides used indoors can be inhaled by children or ingested after contact with treated surfaces or contaminated toys. Children can be exposed to lawn and garden pesticides by touching treated plants. In addition, pesticides are tracked indoors on the bottom of shoes. They lodge in carpet dust and are slow to break down inside the home.

Home exposure is only part of the picture, since children may also be exposed to pesticides at school or while walking to and from school.

We recommend that parents and others avoid using pesticides in and around the home. Non-chemical methods are available for controlling many home pests such as rodents, slugs, garden weeds and insects, fleas, and cockroaches. These methods include traps, barriers, mechanical removal techniques, and preventative strategies. Parents can also work with schools to reduce their use of pesticides. For more information on least-toxic controls for common household pests, contact us at our toll-free hotline: 800-844-SAFE or visit our website at www.watoxics.org.

Solvents

Many household products such as paints, paint strippers, adhesives, automotive products, fuels, and art supplies contain solvents. Solvents are chemicals that dissolve something. Most solvents are made from various petroleum-based chemicals. Generally, solvents evaporate rapidly into the air, where they can then be inhaled. Many commonly used solvents can be toxic if ingested, inhaled, or absorbed through the skin.

Some solvent-based products can be replaced with water-based products that are less hazardous. Latex paint is safer than oil-based paint and requires no paint thinner for cleanup. Water-based paint removers are also available. Some adhesives such as contact cement can be found in water-based or latex formulations. There are generally no safer alternatives for fuels and automotive products, but relying less on the machines that need these products will reduce their impacts. Using a push mower, for example, avoids both the air pollution and the need to store gasoline. Leaving auto maintenance to professional shops keeps many products out of the basement or garage where children may find them. Be sure to store hazardous solvents safely, where children cannot reach them, and use with lots of ventilation, outdoors whenever possible.

Art and Hobby Supplies

Some art supplies used by children may contain hazardous chemicals. Solvent-based marker pens, rubber cement, and oil-based paints are products parents should keep away from small children. They can have just as much fun with safer water-based products. For more information on art supplies for children, see our fact sheet on art and hobby products.

Avoiding Pollutants in Food

Fruits and vegetables treated with pesticides may contain residues of these chemicals. Washing produce well can reduce part of the surface residue on some products, but will not remove any pesticides taken up inside. “Organically grown” fruits and vegetables are produced without synthetic pesticides or fertilizers. By buying organic, you can protect your family’s health while supporting growers who use sustainable farming practices. If you have the space, putting in your own food garden is an inexpensive way to get organic produce. City dwellers may want to test the soil for lead first, especially near the house. Avoid planting food crops right next to the house.

Many of the most toxic and long-lived pollutants, such as dioxins, tend to accumulate in fatty foods like meat and dairy products. Mercury is especially prevalent in some kinds of fish. These pollutants also build up in the food chain as animals eat other animals. So a diet high in vegetables, grains, and fruits—in other words, low in the food chain—and low in fatty foods is doubly important.

Another food-related issue concerns food wrap and containers. Some plastic wraps and containers contain harmful chemicals that can leach into food stored or wrapped in them. Experts disagree on how much risk these chemical residues pose, and it is difficult to know what kind of chemicals are used in the array of plastic products on the market. The safest policy is to avoid storing food in plastic as much as possible. Also:

1. Never microwave food in any container not specifically designed for that purpose.
2. Do not microwave food while it is wrapped in plastic.
3. Consumer Reports suggests polyethylene products such as Glad Crystal Clear Polyethylene Wrap to avoid migration of potentially harmful chemicals into food.
4. As much as possible, keep leftovers in glass or stainless steel containers.
5. Buy fresh food rather than highly processed foods.

Recent publicity about food-borne illnesses has raised awareness about bacterial contamination. Advertising might lead parents to think that home disinfectants are the answer. Although selective use of disinfectants can sometimes be helpful, safe food handling is more important. Use separate cutting boards and knives for meat and raw produce and clean them thoroughly. Avoid contaminating raw produce via hands, sponges, or towels that have contacted raw meat. Be sure that meats are adequately cooked and that leftovers are returned promptly to the refrigerator. Using disinfectants in the kitchen is an option, but it is

not necessary if proper food handling techniques are strictly followed. Excess use of some disinfectants may cause germs to become resistant.

Indoor Air Quality

Most people spend more than 90% of their time indoors. Studies have shown that the air inside homes is usually more polluted than outdoor air. This pollution can come from the materials homes are made of, products used inside the home, fireplaces and other combustion appliances, and moisture problems. In this section, we'll focus on combustion appliances and sources of moisture.

Furnaces, stoves, fireplaces, and wood stoves all produce carbon monoxide and other toxic gases. These devices are safe if operating properly and well vented. However, combustion gases can get into the home via a cracked firebox in the furnace or a gas stove operated without a ceiling hood. Backdrafting is another common problem in which smoke is sucked back down the chimney into the home. Carbon monoxide is a deadly and completely odorless gas found in vapors from all combustion appliances. Make sure all combustion appliances are in good working order. It is also a good idea to install a carbon monoxide detector in the home as well. Never cook with charcoal indoors; it produces lethal amounts of carbon monoxide.

Too much moisture in a home can cause the growth of molds and mildew. These are most often seen on bathroom ceilings or between tiles. They can also be found around windows that fog up or "weep" on cold days, or on the walls or ceilings of rooms, especially closets, located on exterior walls. Water leaks from faulty plumbing or gutters can also cause mold to grow. Molds are living fungi that can produce toxins. These toxins can cause or exacerbate allergies and asthma, and some can cause other illnesses.

Mold and mildew can be seen or sometimes smelled as a musty odor. The best solution for mold in the bathroom is to install a ventilating fan. A fan in the kitchen is also a good idea, especially if you have a gas stove. (Combustion also produces water vapor.) Mold on walls of bedrooms or closets may indicate leaks, cold walls, or rooms that need to be heated more. Visible mold should be cleaned; disinfection is not generally necessary if moisture source is addressed. Find and correct the source of the problem and try to maintain indoor relative humidity between 30 and 50 percent.

Cleaning the Home

Frequent, thorough cleaning of the home is important for the family's health, especially if small children are crawling on the floor. Vacuuming, dusting, and damp mopping can remove many chemical pollutants, allergens, and dust mites.

Vacuum rugs or carpets weekly using a vacuum cleaner with motor-powered brushes. Bare floors are much easier to keep clean, requiring only a quick vacuuming and occasional damp mopping. Lightly dust shelves, tables, and other flat surfaces with a slightly damp rag. You can greatly reduce the amount of dust in your home by installing large, commercial-style door mats at every entrance. Even better, establish a no-shoes policy for family and guests. Set up convenient shoe removal stations at the front and back doors.

What cleaning products should you use? Avoid a toxic array of toilet, oven, and tile cleaners. Every home should have a good all-purpose cleaner and a scouring powder. Use liquid castile soap or a mild detergent for most surfaces, and a gentle scouring powder like Bon Ami or baking soda for the sink, toilet, and tub. Good cleaning is much more important than disinfecting. You can't maintain a sterile, germ-free house. It's much better to focus on frequent washing of hands, especially before eating and after using the bathroom, to prevent disease.

For more detailed information on cleaning products and disinfectants, see our companion fact sheets on those subjects..

Get Involved

The steps outlined in this chapter and the others in this book are important, but they are not enough. Some widespread pollutants in air, water, and food are impossible to prevent by lifestyle choices alone. We need stronger pollution policies based on prevention, including bans of the worst pollutants. Join the

Washington Toxics Coalition and become active in our programs to protect childrens' health.

THESE ARE THE SIDEBARS AND OTHER ITEMS FOR THIS PAGE:

Children are Vulnerable

Because of:

- * **Small body size**
- * **Early developmental stage**
- * **Playing on the floor**
- * **Putting objects in their mouth**
- * **Exploratory behavior**

Compared to an Adult (pound for pound):

- * A child under age 1 drinks 2.5 times as much water
- * **A child under age 1 breathes 1.7 times as much air**
- * A child age 2 drinks 9 times as much cow's milk

Source: Debdas Mukerjee, Assessment of Risk from Multimedia Exposures of Children to Environmental Chemicals, J Air & Waste Management Assoc 48: 483-501, 1998.

Action Tips for Lead

- * If your home was built before 1978, be alert for peeling or flaking paint
- * Children and pregnant women should not live in an older home during remodeling
- * Before remodeling an older home, be sure workers are trained in lead hazards and cleanup.
- * Remove shoes at the door or install high-quality door mats
- * Vacuum carpets weekly with a powered-brush vacuum cleaner
- * Use cold water for drinking or cooking since lead is more likely to leach into warm or hot water
- * Have questionable pottery tested for lead if it will be used for food
- * Make sure children wash their hands after playing outside and before eating or going to bed
- * For more information, contact EPA at 800-424-LEAD.
- * Also read our companion fact sheet:: Reducing Exposure to Lead in Older Homes.

**Poison Center
Emergency Number**

800-222-1222 (Anywhere in the United States)

Avoid solvent-based paints whenever possible. Latex or other water-based paints are safer and can be thinned with water. For more information, order our fact sheet on paints, solvents, and wood preservatives.

Fresh fruits and vegetables are important for a healthy diet. Buy organic or grow your own to avoid

pesticide residues.

The Kid-Safe House

Easy things you can do to make a difference

- * Be lead-safe. Follow the action tips for lead on page 30.
- * Reduce track-in with door mats; better yet, leave shoes at the door (see page 30 for details).
- * **Keep your home clean. Use a powered-brush vacuum weekly and dust frequently.**
- * If you repaint or remodel an older home, get more information about lead.
- * Avoid pesticides indoors and outside.
- * Use water-based products and low toxicity products.
- * Keep all chemical products out of reach of children.
- * Give children only non-toxic, water-based art supplies, no scented markers.
- * Eat low on the food chain.
- * Buy organic produce or grow your own.
- * Avoid reheating food in plastic containers, especially those not designed for the purpose.
- * Maintain relative humidity between 30-50 percent.
- * Solve moisture problems promptly.
- * Install ventilating fans in bathroom and kitchen.
- * Avoid laying carpets on concrete.
- * Have combustion appliances checked for proper operation.
- * Mount a carbon monoxide detector along with smoke detectors.
- * Support Washington Toxics Coalition and our work for strong pollution policies.

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