
WASTE – Actions speak louder than words.

1. Unclog your mailbox! Stop unwanted mail and catalogs by logging onto www.catalogchoice.com to communicate your preferences.
2. Recycle everything possible according to your local guidelines. To find out how to recycle and dispose responsibly in Greenwich, refer to the “A–Z Handy Rules of Recycling” document found on the Town of Greenwich website at www.greenwichct.org/public-works/pwWasteDisposal.asp. For residents of other towns, contact your municipal waste site or the town’s website.
3. To recycle electronic waste: a) bring cellphones and old batteries to the collection boxes at GA or to the Municipal Waste Site (aka Holly Hill in Greenwich), b) for computers and other devices, contact the manufacturers (who often have programs to take back their own products) or visit www.epa.gov/epawaste/conserves/materials/recycling/donate.htm for more options.
4. To dispose of items that might be useful to others, visit www.nrc-recycle.org or www.stuffiadontwant.com.
5. Never pour chemicals or other hazardous substances down the drain. Refer to your town’s municipal waste site’s instructions for how and when to dispose responsibly. Store these items in a safe place in your garage, and twice a year take them to the Hazardous Waste collection site in your town.
6. Compost your family’s food scraps, and your garden will look glorious! For an easy solution, try the Solar Cone system which requires almost no maintenance – www.solarcone.com.
7. Precycle – Avoid buying products with excessive packaging. Ask store owners and manufacturers to minimize packaging, especially plastics. Just say “no thanks” when retailers offer you a bag for goods.
8. Be self-sufficient. Take your own reusable shopping bag when making purchases of food or anything else. It makes a statement!

INDOOR AIR QUALITY – Easy Steps to Better Health

1. Did you know that the air inside your home is probably more polluted than the air outside? Many commonly used home products emit Volatile Organic Compounds (VOCs) that compromise the air quality and can cause harmful reactions in humans. One of the leading sources of VOCs is paint (unless the label states “no-VOCs,” that “new paint” smell is caused by harmful gasses). Similarly that “new carpet smell” that comes from synthetic carpets actually is concentrated VOCs. Even after the smell is gone, the VOCs can still keep emitting for years. Spray cleaners, deodorizers, “fresheners,” scented candles and other household products often contain VOCs.
 2. Avoid anything treated with flame retardants. The chemicals used in the treatment process (called PBDEs) have been linked to cancer, learning disabilities and other health risks. Common household items that contain flame retardants include: mattresses, upholstery and children’s pajamas.
 3. Avoid stain-resistant materials since these are coated with harmful chemicals that find their way into the human bloodstream and stay there.
 4. Avoid PVC rubber and other petroleum-based flooring and opt for healthy alternatives (www.greenflooring.com). Avoid pressboard, MDF and anything made with formaldehyde-based glue. Green alternatives are readily available at Home Depot and www.greendepot.com.
 5. Avoid air fresheners and other products with synthetic fragrance. These are formulated with phthalates, a hormone disruptor. Any product that lists “Fragrance” as an ingredient most likely contains phthalates too. Fragrance derived from essential oils is safe.
 6. Switch to natural latex mattresses and organic cotton or wool pillows and bedding to avoid the off-gassing of VOCs from petroleum-based polyester and other synthetic materials. Choose wool mattress covers and pillows since wool is a natural flame retardant.
 7. Use a fan when cooking with gas to vent exhaust outside the home. Have a professional check your gas connections and hot water heater to prevent leakage of toxic vapors.
 8. Open the windows and let fresh air in!
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FOOD AND BEVERAGES (and their containers)

1. Never heat anything in plastic or Styrofoam containers or serve hot liquids or foods from such containers. Never put these products in the dishwasher. Heat causes the release of phthalates and BPA's. Phthalates, an estrogenic compound, disrupts the production of testosterone and cause a variety of serious health problems. Several phthalates already have been banned in Europe. The good news is that phthalates have a short shelf life and are quickly eliminated from the human body. However, because we are continually exposed to them (as they are prevalent in our products), they impact our health through chronic exposure. The challenge is to reduce exposure wherever possible.
2. Use plastic food or drink containers only when labeled "BPA-free," "lead-free" or "PVC-free." Avoid all plastic containers labeled #'s 3, 6 or 7. Plastics labeled #3 may contain phthalates. Plastics #6 are Styrofoam, made from styrene, a neurotoxin. Plastics #7 may contain BPA. Instead, choose plastics labeled #'s 1, 2, 4 and 5 (but even these should not be heated). Though long-term studies on humans have not been done, a study from Yale shows that BPA interferes with brain development in infant monkeys (www.children-environment.org). Other studies have linked BPA to reproductive disorders, precocious puberty and neurodevelopmental disorders. Studies on animals have shown a connection between BPA and breast cancer as well as prostate cancer. Children under the age of 11 are at highest risk.
3. Use steel or ceramic containers for liquids and glass or steel containers for food storage.
4. Choose fresh, local and organic foods whenever possible.
5. Avoid the "dirty dozen" – conventional produce that contains the highest levels of pesticides: apples, grapes, cherries, strawberries, peppers, lettuce, pears, spinach, peaches, celery, nectarines and potatoes.
For a Shopper's Guide to Pesticides, log on to www.foodnews.org.
6. Avoid Teflon-coated or "non-stick" products such as pots, pans, utensils and fabrics. Use stainless steel or cast iron pots and pans instead. Choose cooking utensils made from wood or steel rather than "non-stick" plastic. Heating plastic releases the BPA and phthalates contained therein.

cycles to achieve same results with less energy. Most of the energy consumed in a home is used to heat water for these purposes. Use less hot water and you have conserved that energy.

6. Get your home energy certified (www.resnet.us can lead you to an evaluator in your area) and make the suggested improvements to reduce energy consumption.
7. Offset your home's drain on the energy grid by supporting renewable sources such as wind and solar. Buy renewable energy credits at www.green-e.org.
8. Help yourself and help the nation reduce our dependence on oil. Switch to a hybrid car or simply use your car less. Carpool, walk or use public transportation.
9. Choose products made with recycled content whenever possible – such as paper towels, paper napkins and computer paper. It all adds up!

WATER – It is a precious resource.

1. Install low-flow showerheads and low-flush toilets. Simply installing a regulator (a tiny disk inserted inside the valve of a shower) can reduce water flow by more than half. Rainwater and other oversize shower heads consume excessive amounts of water. Restricting the flow can still result in a pleasant shower experience, and as with everything else, expectations quickly adjust to new circumstances.
 2. Take shorter showers. Without a flow restrictor, showers can consume 8 – 10 gallons of water per minute. A flow restrictor can reduce this amount to 2.5 gallons per minute. Taking a Power Shower (under 5 minutes) will give you the added bonus of more free time!
 3. Consider installing a point-of-use water heater that delivers hot water on demand so you won't have to wait while water heats up. This can save thousands of gallons of water per household per year.
 4. If you have a pool, stop using chlorine and install a salt-based system instead (which converts to natural chlorine and does not irritate skin or eyes). Commercial chlorine has been linked to cancer and other diseases and is a known skin and eye irritant.
 5. Water lawns only as needed and in the early morning hours. Consider replacing lawn with a vegetable or flower garden using native plant materials.
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GREEN LIVING & REDUCING OUR ENVIRONMENTAL IMPACT

- **Think about the life cycle of everything you consume.**
- **Where did it come from? What was used to make it?**
- **Package it? Transport it? Will it decompose over time, be added to landfill or leach into our groundwater?**
- **Becoming aware of the life cycle of products is the first step toward living green – making informed decisions that promote your family’s health as well as the wellbeing of the planet for future generations.**

ENERGY – Save Money and Conserve Natural Resources.

1. Adjust the thermostat in your home during sleeping hours and off-peak times to conserve energy used for heating and cooling. A setting of 68 degrees during winter days and 65 degrees at night is desirable. Higher settings during warm months (75 degrees) are recommended. Your family will adjust their clothing accordingly, perhaps stay healthier (since cooler evening temperatures are thought to be beneficial), and you should notice a considerable difference in your utility bills.
2. Unplug appliances, including computers and chargers, when not in use. Use dryer balls in your laundry machine to reduce drying time by 25 percent and eliminate the need for fabric softener. (www.gaiam.com)
3. Install CFLs (Compact Fluorescent Light bulbs) or LED (Low Emission Diodes) to replace conventional light bulbs. CFLs are readily available in supermarkets and hardware stores. If every U.S. household replaced just one conventional bulb with a CFL, the energy saved could power 7,000,000 homes. That one bulb (in every household) would be the equivalent of taking 1.3 million cars off the roads. This small change has a major impact!
4. Turn off lights whenever area is not in use. Rely on natural lighting from windows or task lighting where needed.
5. Run your dishwasher and laundry machines with Full Loads Only. Use cold water to wash clothes and “cold” rinse and short washing

COSMETICS, SOAPS AND PERSONAL CARE PRODUCTS – You are what you wear.

1. Over 80,000 chemicals are being used in U.S. consumer products, and only a small percentage of those have undergone safety testing. Manufacturers are not required to test for the effects of chronic low-level exposure, nor does the government generally undertake this sort of testing. Should we feel safe using chemicals that are presumed safe until definitively proven harmful?
2. Avoid products described as “anti-bacterial” and “anti-microbial.” These generally contain Triclosan, which can cause liver and thyroid damage. It is a ubiquitous ingredient in hand sanitizers, wipes, toothbrushes, cutting boards, deodorants, plastic food containers, sponges, shower curtains, etc. The American Medical Association recommends that Triclosan not be used in the home because it can encourage bacterial resistance, thus paving the way for superbugs. Washing hands with warm water and soap works best. Natural products can effectively clean your hands and home, and will not cause harmful side effects.
3. Find out what is really in your makeup. Cosmetic products and ingredients are not subject to FDA premarket approval. The cosmetics industry regulates itself through the self-appointed Cosmetic Ingredient Review Panel, which has tested less than 12 percent of known ingredients. An independent study of 23,000 cosmetic products showed that many contained prohibited ingredients and nearly all contained ingredients that had never been tested for safety. How does a consumer navigate this situation? Go to www.cosmeticdatabase.com to find out how your cosmetics ranked in the analysis. The website can also help you identify products that received “safe” scores.
4. Avoid antiperspirants containing aluminum. Antiperspirants work by using aluminum compounds to enter pores and block sweat glands. Aluminum is a health hazard. Try natural deodorants instead which mask the odor of perspiration and do not pose risks to human health. Many choices are available at Whole Foods and other natural supplies stores.
5. Shampoos and conditioners are generally formulated with a variety of petrochemicals. Sodium lauryl sulfates and sodium laureth sulfates are common ingredients in shampoo and are known to cause severe skin damage in lab mice. Shampoos can also contain parabens, which are suspected hormone disruptors, as well as formaldehyde, which is a suspected human carcinogen. Natural products made without petrochemicals are a safer choice.

6. Phthalates are chemicals used to stabilize fragrances and create flexibility and strength in everything from plastics to nail polish. Because of the danger phthalates pose to human health, the European Union has banned several commonly used forms. Choose "phthalate-free" nail polish and avoid all products with synthetic fragrances.
7. Toothpaste and mouthwash may contain potentially harmful chemicals such as sodium lauryl sulfate and triclosan in addition to alcohol, artificial sweeteners and preservatives. Choose products with all natural ingredients.
8. Choose biodegradable laundry detergent made without petrochemicals and synthetic fragrances. Avoid fabric softener as it is generally made with toluene and styrene, which are acknowledged neurotoxins. There are several widely available brands including Ecover and Seventh Generation, which are safe for your family, safe for the environment and completely effective at cleaning your laundry.

AT SCHOOL – Never Stop Learning and Improving.

1. Avoid products with triclosan such as hand sanitizers and other "antibacterial" cleansers.
2. Replace industrial cleaners with "green" alternatives, similar to what New York State has mandated for its public and private schools.
3. Replace plastic and Styrofoam food and drink containers with phthalate-free metal, glass or biodegradable plastic whenever possible.
4. Stop the use of pesticides and use a preventative plan instead. Choose organic milk and foods whenever possible.
5. Avoid VOCs wherever possible – in paints, flooring, carpeting and fabrics as well as glues, markers, and some art supplies.
6. Use recycling bins for metal, glass, plastic and paper. Add signs where needed to clarify exactly what should be thrown where. For instance, bottle tops (even if plastic) are generally not to be included in recycle bins.
7. Institute a no-idling policy in the pick-up lines. Display signs prominently so drivers are reminded that "Children are Breathing Here!"

Use cleaners and other products that are truly "green" and all natural.

Why use products that contain chemicals whose safety over long-term exposure has not been proven? Eliminating phthalates, petrochemicals and organophosphates is a significant step in making your home healthier for your family and the environment. Excellent safe products for laundry, home cleaning and personal care are available. Look for labels that say "biodegradable" or "Green Seal Approved." Avoid products with "fragrance" as an ingredient. Choose products scented only with essential oils. Opt for natural antibacterial ingredients such as tea tree oil and lavender. Explore your options and break the habit of chemical dependency!

Stop using pesticides.

They are neurotoxins that can be extremely dangerous to humans (especially children) and pets. The smaller the creature, the stronger the impact. Switch to organic lawn care and avoid spraying for pests in and around your home. (www.safelawns.org and www.greenwich.audubon.org/Programs/AAH)

Avoid conventional dry cleaning.

The chemicals used in the process (PERCs) are known carcinogens. Try a "green" dry cleaner that uses a water-based or liquid carbon dioxide process. At a minimum, air out your cleaning (by removing plastic wrap and keeping items in a ventilated area for a few days) before use.

Reduce exposure to car exhaust.

Never leave your car running in the garage. Keep garage doors open or exhaust fans on even after the car is off. The goal is to vent the traces of exhaust so they do not enter your home. Install a carbon monoxide detector in living areas that are above or near an attached garage.

Be conscious of the foods you and your family consume.

Choose local and organic products to the extent possible. To find sources for such items, visit www.ctnofa.org, the site for the Northeast Organic Farming Association of Connecticut. Organic products are becoming increasingly available and affordable in supermarkets nationwide. They may be more expensive, but not if you view the added cost as an investment in your family's long-term health.

crumb rubber playgrounds. Mercury exposure generally occurs by consuming fish with high concentrations of the metal. Outside the home, exposures to toxins often occur through exhaust from idling vehicles and pesticides used in agriculture as well as private homes. Being aware of these toxins and conscientiously avoiding them is the best insurance policy for protecting our families.

II.

SIMPLE STEPS TO PROTECT YOUR FAMILY'S HEALTH

Reduce your use of plastics.

Many plastics leach bisphenol-A ("BPA"), a hormone disruptor that can damage developing brains and organs. Avoid plastic plates, cups, bottles, eating utensils and bags. Use only biodegradable plastics when necessary (www.ecoproducts.com); otherwise choose china and silverware that can be washed and reused. For food storage, use glass, steel or ceramic containers. Never heat foods or liquids in plastic cups or containers or with plastic wrap around them.

Reduce your family's exposure to chemicals wherever possible.

American babies are born with nearly 300 synthetic chemicals already present in their bloodstream. Changing to all-natural products and becoming aware of chemical exposures can prevent potential disease and damage in the bodies of developing children. (www.ewg.org/kidsafe, www.greeningourchildren.com)

Replace bottled water with filtered tap water carried in metal canteens.

A recent report revealed that bottled water (unless from a natural spring) is often just tap water sold at a huge markup. When a random testing of major supermarket brands was done, samples revealed some surprising trace ingredients including fertilizers and drugs. In contrast, municipal tap water is highly regulated and tested frequently. To eliminate the chlorine and odors from your tap water, install an activated charcoal filter or a reverse osmosis system. A single filtration system installed at the point of entry (where municipal water enters your home) can cost far less than you might imagine. With a whole-house system, all water used to wash clothes, shower and bathe your family as well the water used for cooking and drinking will be clean and pure. If you eliminate bottled water from your household expenses, the filtration system will soon pay for itself. Contact www.filterwater.com or Foleys at 203-792-2236 for more information.

- Control building temperatures by lowering thermostats significantly at night and elevating them back to comfortable levels in the morning.
- Consider installing alternative sources of energy such as PVs (photovoltaic panels).
- Investigate the safety of artificial turf fields and rubber crumb playgrounds to ensure these materials are not being inhaled or absorbed into the bodies of children. Test these surfaces for lead content and other hazardous chemical ingredients.
- Consult www.healthyschools.org for further advice.

IV.

EMPOWER YOUR CHILDREN: Talk to Them, Learn from Them

- Appoint your children official guardians of your home's power. Make them "light patrollers," responsible for managing turning off all unnecessary lights.
 - Water Patrol: Teach all family members to turn off water when not in use (while brushing teeth, for example) and take shorter showers. Congratulate them when they succeed.
 - Recycle Patrol: Anything that can be recycled should be. Reward participation!
 - Avoid plastic baby toys and eating utensils. These products may be tainted with lead or BPAs. Exposure to products containing lead can cause brain damage in infants and young children. To test toys for lead visit www.leadtesttoys.com or purchase lead test kits from your local hardware store.
 - Ask children to read ingredients on food labels and then decide for themselves whether they really want to eat the contents. Awareness of unpronounceable ingredients used to chemically preserve "freshness" or alter the color and texture of foods is a great way to teach children how to make their own healthy choices!
 - Children often know more about environmental responsibility than we do – engage them in dialogue and learn from them!
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V.

SUGGESTED READING

1. www.childenvironment.org website for Children's Environmental Health Center at Mt. Sinai Hospital, New York, New York.
2. Landrigan, Dr. Philip. *Raising Healthy Children in a Toxic World* (Rodale, 2001).
3. Gavigan, Christopher. *Healthy Child, Healthy World* (Dutton, 2008).
4. McKay, Kim and Jenny Bonnin, *True Green* (National Geographic, 2006).
5. Savedge, Jenn. *The Green Parent* (Kedzie Press, 2008).
6. Horn, Greg. *Living Green* (Freedom Press, 2006).
7. Berthold-Bond, Annie. *Clean & Green* (Ceres Press, 1994).
8. Rogers, Elizabeth and Thomas M. Kostigen. *The Green Book* (Three Rivers Press, 2007).
9. Barnett, Sloan. *Green Goes with Everything: Simple Steps to a Healthier Life and a Cleaner Planet* (Atria Books, 2008).
10. Taylor, Nancy. *Go Green: How to Build an Earth-Friendly Community* (Gibbs Smith, 2008).
11. Rider, Kimberly. *The Healthy Home Workbook* (Chronicle Books, 2006).
12. Loux, Renee. *Easy Green Living* (Rodale, 2008).

risen dramatically. The major diseases American children face today include: 1) Cancer, the leading cause of death, after injuries, for children; 2) Leukemia and Brain Cancer, which has risen by 40 percent over the past 30 years; 3) Developmental Disabilities, which now afflict one in six children; 4) Autism, which affects one in 150 children; 5) Obesity, which has quadrupled in the past ten years; and 6) Type II Diabetes, previously unknown, this disease is now classified as an epidemic. Medical research has begun to uncover connections between these diseases and exposure to environmental toxins. More research is needed but preliminary findings indicate a strong causal link between environmental toxins and deleterious health effects.

Some toxic substances have been conclusively proven to cause harm while others still are being subjected to testing and analysis. Lead, mercury and other heavy metals are known to cause neuro-cognitive dysfunction and death with greater exposure. Asbestos can cause lung disease, and cancer and pesticides are neurotoxins and carcinogens. However, the newest generation of toxins is more elusive in that these substances cause harm through chronic low-level exposures, which can take years to track. For instance, BPA and phthalates are hormone disruptors that mimic estrogen. They are present in thousands of products and can cause precocious puberty, reproductive disorders, genital deformation, increased body size and, possibly, breast and testicular cancer. It is estimated that 93 percent of our population has BPA in their bodies and babies are born with it already in their bloodstream. Exposure to VOCs occurs through inhalation of chemical vapors and can result in everything from headaches and skin irritation to damage of the central nervous system. Enough evidence exists to raise a cloud of doubt over all these substances, and avoiding them wherever possible is the best way to stay safe.

Where Are We Exposed to Environmental Toxins?

The surprising truth is that most exposures take place in our own homes. BPAs are found in hard plastics (such as tableware, food containers and some water bottles), vinyl products (such as shower curtains and baby toys) and the lining of cans. Phthalates are found in all products with "fragrance" listed as an ingredient. These include everything from shampoo, body lotion and soaps to air fresheners, candles, cleaning products and other common household items. VOCs are emitted by glues, paints, synthetic carpets and PVC flooring, as well as building materials (especially those made with formaldehyde, sealants and adhesives). Other common sources of toxins include flame-retardant and stain-resistant materials as well as dry cleaning chemicals and Teflon-coated products. Lead exposure can occur through contact with lead paint as well as some toys, metal products and artificial turf and

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- **Environmental toxins are substances that are present around us, which are known to be harmful to humans. This guide attempts to educate about common environmental toxins, the ways in which we are exposed to them and how they can affect our health and, in particular, our children's health.**
 - **It also offers suggestions on the large and small changes we can make in our daily lives to protect our family's health and reduce our impact on the environment.**

I.

INTRODUCTION TO TOXINS AND THEIR IMPACT ON HUMAN HEALTH

What Are Environmental Toxins?

Environmental toxins generally derive from chemicals. Nearly 80,000 chemicals exist, and most of these have never been tested for their effects on human health. The Toxic Substances Control Act of 1976 grandfathered over 60,000 chemicals, exempting them from any form of safety testing. Since 1976, 20,000 additional chemicals have been introduced, and fewer than 20 percent of these have been tested for toxicity or the effects of long-term exposure. Untested chemicals are widely used in consumer products, cleaning supplies, personal care products, toys, home furnishings, carpeting and electronics. Environmental toxins are ubiquitous.

Well-known environmental toxins include, but are not limited to, air pollutants, lead, asbestos, mercury, hormone disruptors such as Bisphenol-A (BPA), phthalates, pesticides and Volatile Organic Compounds (VOCs). We are exposed to these toxins by eating them, breathing them and absorbing them through direct skin contact. Children are disproportionately susceptible for several reasons. Relative to their body mass, they inhale more air and consume more water and food than adults. They are more likely to come in contact with ground surfaces and put their fingers in their mouths. Children have less ability to metabolize and eliminate toxins in the early years of life when their systems are still developing. Limiting exposure to toxins is especially important for children because toxins can alter development of organs and systems, as well as set the stage for disease later in life.

How Do Environmental Toxins Impact Our Health?

While many life-threatening childhood diseases have been eradicated (in large part due to immunizations), new diseases and disorders have



Manual for Green Living

By Alexandra Bergstein and Nirmal Patel, MD, MPH

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