How the environment affects our health & our hormones

And, what you can do about it

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Why do we care?

- Threats to our children’s health have shifted radically
- Life-threatening infectious diseases – smallpox, polio, and cholera – have largely been conquered
- But our children are growing up in a world in which environmental toxins are prevalent
  - Measurable levels of hundreds of manmade chemicals are routinely found in the bodies of all Americans, including newborns
  - Infants are exposed to polychlorinated biphenyls, lead, and mercury in the womb and through breast milk
  - Baby bottles and toys have been found to contain phthalates, bisphenol A (BPA), and lead - all toxins that have been linked to reproductive and developmental disorders

Environmental Toxins Now Pose the Greatest Threat to Our Children
Air pollution and cigarette smoke contribute to asthma, the most common chronic disease of childhood

- Asthma has increased 160 percent in the past 15 years for children under age 5

- Cancer, which kills more children under age 15 than any other disease, is linked to solvents and pesticides

- Early exposure to lead, mercury, and certain pesticides are suspected to contribute to developmental conditions, which affect 5 to 10 percent of babies born each year

These conditions are now among the leading causes of childhood illness and death
So What Are Some of the Risk Factors?
Endocrine disruptors - chemicals that may interfere with the body’s endocrine system - include pharmaceuticals, dioxin and dioxin-like compounds, polychlorinated biphenyls, DDT and other pesticides, and plasticizers such as bisphenol A (BPA).

Endocrine disruptors may be found in many everyday products – including plastic bottles, metal food cans, detergents, flame retardants, food, toys, cosmetics, and pesticides

Can cause reproductive disorders, neurologic impairments, and immune dysfunction

- The NIEHS supports studies to determine whether exposure to endocrine disruptors may result in lowered fertility, increased incidence of endometriosis and some cancers
- Research shows that endocrine disruptors may pose the greatest risk during prenatal and early postnatal development when organ and neural systems are forming
Phthalates are a class of widely used industrial compounds known technically as dialkyl or alkyl aryl esters of 1,2-benzenedicarboxylic acid. Intentional uses of phthalates include softeners of plastics, oily substances in perfumes, additives to hairsprays, lubricants and wood finishers.

- That new car smell, is partly the pungent odor of phthalates volatilizing from a hot plastic dashboard.
- In the evening's cool they then condense out of the inside air of the car to form an oily coating on the inside of the windshield.

PBBs (Polybrominated Biphenyls) were once widely used as flame retardants in electrical appliances.

- In 1973, more than 4000 people in Michigan were exposed to (PBBs) because of accidental food contamination.
  - Girls exposed to relatively high levels in the womb began menstruating up to a year earlier than those with lower levels.
  - Perinatal exposure was also associated with earlier pubic hair development.
Research published more than a decade ago found American girls were beginning puberty at much younger ages, some as early as 7.

A new study suggests the average age at which puberty begins may still be falling for white and Latina girls:

- 25% of African American girls have reached a stage of breast development marking the onset of puberty by age 7, as had almost 15% of Latina girls and more than 10% of white girls.
- In 1997, the rate of girls who had begun puberty at age 7 was 5% for whites.

Some possible underlying causes of premature puberty are thought to be obesity, social factors, and environmental contamination.

Early development in girls is not inconsequential. Studies have linked it to risks including a poor body image, reduced self-esteem, higher rates of eating problems, depression and earlier onset of sexual activity.

Early maturation in a large population of girls may also affect future breast cancer rates. Studies have linked a younger age at the first menstrual period to a higher risk of breast cancer after menopause.
Scientists believe that the pesticide DDT is responsible for premature puberty in girls in developing countries.

Researchers found children who had emigrated from countries with high usage of DDT, such as India and Colombia were 80 times more likely to start puberty very early.

Three-quarters of these immigrant children with premature puberty had high levels of a chemical derivative of DDT in their blood.
Bisphenol A (BPA) – the “Everywhere Chemical” – is used in the production of polycarbonate plastics and epoxy resins.

In 2003-2004 CDC found detectable levels of BPA in 93% of urine samples from people six years and older.

More than 1 million pounds of BPA are released into the environment each year, according to the EPA.

Federal regulators have been ramping up their scrutiny as scientists say it can interfere with infant growth and development.

- The EPA said in a statement it will begin measuring levels of BPA in drinking and ground water.
- The EPA will also "look for ways to reduce unnecessary exposures, including assessing substitutes."

An estrogenic mode of action of BPA is confirmed by in-vitro experiments, which describe disruption of cell function.
The primary source of exposure to BPA for most people is through the diet. Bisphenol A can leach into food from the protective internal epoxy resin coatings of canned foods and from consumer products such as polycarbonate tableware, food storage containers, water bottles, and baby bottles. The degree to which BPA leaches from polycarbonate bottles into liquid may depend more on the temperature of the liquid or bottle, than the age of the container.
Cosmetics – Beauty or the Beast

- Too much estrogen is implicated in breast and uterine cancers, as well as PMS in women
- In men, estrogenic exposure is associated with erectile dysfunction and low sperm counts
- While digestive tracts have some capacity to break down or eliminate toxins, anything that is put on the skin goes straight into the bloodstream and has access to every part of your body very quickly
- In other words, it is safer to eat our toxins than to smear them on our skin.

The quick test – Read the Label. And if you would not eat the product, it is probably not healthy to put on your skin.
The personal care industry is very poorly regulated and very few ingredients have been thoroughly tested for safety.

Choosing "natural" or "organic" products is no guarantee either, as there is no regulation as to what those labels mean.

Read and Toss Exercise – If you see any of the chemicals listed in your products – toss the product in the garbage/recycling.
Minimize your exposure to bisphenol A (BPA) and bis(2-ethylhexyl) phthalate (DEHP) by:

- Purchasing fresh, unpackaged foods and
- Avoiding the use of plastic food processing and storage equipment

Studies of families on a fresh-food diet saw a reduction of the geometric mean concentration of BPA of 66%, and mean concentrations of DEHP by 53–56%.
Waste incinerators, manufacturing waste, and use of treated sewage sludge as an agricultural fertilizer are other common sources for toxic contamination of our drinking water.

Every year, approximately 150 million tons of solid waste are dumped into our nation’s 7,500 municipal landfills - eventually passing over into our drinking supply.

The U.S. Environmental Protection Agency (EPA) sets standards — and routinely monitors — over 80 different toxic substances commonly found in our drinking water.

More than 1,000 potentially toxic substances have been found in drinking water from water supplies throughout the United States.

- Some toxins, like the pesticide atrazine, are found in virtually all city and county-regulated water supplies.

Even Bottled has risks - In a recent study of 10 best-selling brands of bottled water, researchers found mixtures of 38 contaminants, including bacteria, fertilizer, and industrial chemicals -- all at levels similar to those found in tap water.
So What’s the Prescription?

10+ Steps You Can Take for Your Family
Making your home healthier doesn’t have to be expensive or overwhelming.
Just a few changes can improve the health of your home, everyone in it - and our planet.
Some of these are easy fixes. Others challenge us to re-examine a lifetime of habits.

Take some steps now, do more as you can.
House dust aggravates allergies. It also contains more hazardous chemicals than you might think, including lead, fire retardants, pesticides, and other chemicals.

The solutions:
- The best -- and most expensive -- option is to replace wall-to-wall carpeting (a collector for dust and allergens) with wood, cork, tile, or non-vinyl linoleum.
- But if that’s not economically or aesthetically feasible, vacuum frequently -- meticulously getting into corners, along the floorboards, and moving furniture to get those dust bunnies.
- Make sure your vacuum has strong suction and a HEPA filter so that dust and dirt go into the bag.
- Vacuum at least two times each week.
- Clean/change the filter regularly, so dust stays in the vacuum.
2. Kick nicotine addiction.

- If you're still a smoker, it's time to kick the habit.
- An estimated 40% of America's children are exposed to secondhand smoke at home -- and it's the biggest trigger of asthma in those children.
- A doctor, nurse, or mental health professional can help you tailor an approach to quitting smoking that best suits your needs.

Set a quit date and stick to it.
Both lead paint and radon are serious hazards you can't afford to ignore.

Lead testing - Lead poisoning is known to cause brain damage in a developing fetus and in young children if not treated.

The main source of lead is old paint and dust that forms when paint chips and erodes.

- Lead paint can be a problem in any home built before 1978, when lead paint was banned.

Check with your local health department about lead paint testing. A lab test of a paint chip runs from $20 to $50 per sample. You can also hire a certified professional to test your home, which will cost more.

The Consumer Product Safety Commission has a safety alert on its website about lead-based paint testing. It offers guidelines on reducing your exposure -- like covering walls with gypsum wallboard.
3. Get your home tested (cont’d).

- **Radon Testing** - Radon is a cancer-causing radioactive gas.
- Colorless and odorless, radon gas comes from the natural breakdown of the soil and rock underneath your home.
- Any home can have a radon gas problem -- whether it's old or new, well-sealed or drafty, whether it has a basement or not.
- **Radon is the second leading cause of lung cancer, after smoking.**
  - If you smoke and your home has high radon levels, your risk of lung cancer is especially high.
- You can buy a $20 home radon test kit at most hardware and home stores.
- For more information, check the EPA's web site for "A Citizen's Guide to Radon."
4. Ditch pesticides.

- Pesticides kill roaches, mice, ants, and lawn pests.
- But overexposure and chronic small exposures may put children at risk of a range of health problems, including asthma, learning disabilities, and problems with brain development.
- The problem is you don't see the damage the chemicals are doing - it's silent, but nevertheless real.
- These chemicals are expensive, too.
Save money and promote health by focusing on prevention. Simple steps can keep roaches away -- like washing dishes very carefully, cleaning up all food residue, keeping food packages and containers tightly closed, and sealing any cracks that are a point of entry into your home.

Instead of spraying herbicides on your lawn, your time is better spent burning calories -- pulling weeds.

You can learn about non-chemical, commonsense ways of reducing indoor and lawn/garden pests -- a concept called Integrated Pest Management.


http://www.thedailygreen.com/green-homes/latest/tips-for-gardening?click=nav
5. Be careful with plastic bottles and canned foods

- Look for safer water or baby bottles -- either tempered glass bottles or plastic bottles made of cloudy plastics like polyethylene or polypropylene (recycling symbols 2, 4 or 5) are generally safe. 1 is ok for single use. Avoid those marked with a "7" or "PC."

- Don't microwave plastic food containers. Heat can break down plastic fibers.

- Don't microwave with cling wraps. Put food in a glass or ceramic dish and then cover with waxed paper or paper towels

- Eat fewer canned foods.

- Use glass and ceramic containers to store or microwave foods.
6. Filter your tap water.

- Tap water is regulated by the EPA, which requires yearly public reports identifying the contaminants. But bottled water is regulated by the FDA, which has no such requirement.
- Therefore filtered tap water may be a better choice of drinking water than bottled water.
- But even if you live in a place where drinking water is considered good, there can still be trace amounts of harmful chemicals -- including lead, chlorine, E. coli, pesticides.
- Simply filtering your tap water can remove lots of these pollutants.
  - A solid-block carbon filter (especially the kind that can be installed under the sink) or a Reverse osmosis filter is an excellent way to achieve high-quality drinking water.
  - A simple pitcher-type water filter may be all you need for very drinkable water.
- When it comes to bottled water, choose natural mineral and spring waters (especially those bottled in glass rather than plastic). Mineral waters can provide minerals like calcium and magnesium that we often have difficulty optimizing in our diet.
Perfluorinated (PFCs) chemicals used to make these nonstick coatings are listed as a "likely human carcinogen."

- DuPont and other companies have agreed, in response to government pressure, to eliminate use of PFOA by 2015.

- If you've got pots and pans with Teflon coating -- or other nonstick cookware -- make sure you use them wisely.

- In the meantime, you can switch to other cookware now: stainless steel, anodized aluminum, copper-coated pans, cast iron, or enamel-coated iron.

- Silicone baking molds are also safe to use.

- If you can’t do without your nonstick cookware -- or if it’s too expensive to replace right away -- Don’t preheat pans on high, and use the lowest temperature you can to cook food.
7. Temper the Teflon.

- Two other places you'll find PFCs – in grease-resistant food packaging and as a stain-protection treatment.
- Reducing greasy packaged foods and fast foods in your diet (like microwave popcorn, French fries, and pizza) not only lowers your exposure, it’s also good for your heart.

If it's time to replace a big-ticket item like a sofa, say no to stain-protection treatments.
8. Wash your hands.

- Frequent hand-washing keeps germs from getting passed around
- But for young children, hand-washing is a good habit that can keep them from ingesting toxins like fire retardants in house dust
- Another tip: Skip antibacterial soap, because some researchers believe that the quest for hyper-cleanliness may have led to weakened immune systems, and possibly to more cases of asthma and allergies.
  - It’s also been speculated that these products may contribute to bacteria-resistant "super germs."
- In fact, new research has also shown that triclosan -- the main ingredient in antibacterial soap, deodorants, toothpaste, mouthwash, cosmetics, fabrics and plastic kitchenware -- has the potential to affect sex hormones and interfere with the nervous system.
- And studies show regular soap and water works just as well for killing germs.

It’s about the process, not the product. Make sure everybody is in the habit of washing hands when they come inside.
9. Use non-toxic cleaning products.

- The conventional cleaning supplies under your sink -- with their "warning" and "poison" labels -- contain a potent mix of chemicals.
- These chemicals have a very powerful effect on kids with asthma. You're polluting the indoor air when you don't need to. When washed down the drain, they also pollute rivers and lakes.
- Look for "green" cleaners that don't contain chlorine or ammonia. Choose ones that say "petroleum-free," "biodegradable," or "phosphate-free."
- Or make a cleaner yourself.
  - Use vinegar instead of bleach, baking soda to scrub your tiles, and hydrogen peroxide to remove stains.
  - Vinegar also removes grease and soap buildup.
  - Need a window cleaner? Try diluted lemon juice or vinegar. Use borax to inhibit mold growth, boost the cleaning power of soap or detergent, remove stains -- even kill cockroaches, when sugar is mixed in.
When you eat organic food, you ingest fewer pesticides. You’re also helping protect the environment.

More pluses: Research shows that some organic food is more nutritious – organic fruits and vegetables have 25% higher levels of many nutrients than conventional produce.

However, organic produce can be 20% more expensive than conventional. Organic meats and dairy products might be three times the cost of conventional items.

Cut the cost of eating organic foods by:

- Buying in-season produce, which is plentiful and often cheaper at your local farmer's market.

- Selectively buying the produce that absorbs the most pesticide if not organic -- like berries, which soak up more pesticides than other fruit. You don't really need organic bananas, since they're protected by a peel.

- Buy organic for the foods you eat most often.
If you’re pregnant or breastfeeding, aim for good health in the kitchen:

- Getting plenty of omega-3 fats – like those from fatty fish and walnuts -- when breastfeeding seems to protect the fetus' brain development from toxins
  - Note: Some fish are high in contaminants like mercury or PCBs that can harm child development.
  - Select safer seafoods, such as shrimp, canned light tuna, and salmon
11. “Read and Toss”

- If you see the ingredients on the following pages in your cosmetic product, toss the product into your garbage can:
  - Parabens - highly estrogenic endocrine disruptors
    - methyl paraben
    - ethyl paraben
    - propyl paraben
    - butyl paraben
    - isobutyl paraben
    - E216
  - Phthalates - potent endocrine disruptors especially effecting babies and children
    - DBP (dibutyl phthalate)
    - DEP (diethyl phthalate)
    - PVC (polyvinyl chloride)
Aluminum salts - estrogenic and toxic, often found in deodorants/antiperspirants.

Sodium laureth / (Sodium) lauryl sulfate - skin irritant, potential carcinogen
  ✓ SLS, SLES

Diethanolamine (DEA) - skin irritant, potential carcinogen
  ✓ Cocamide DEA or Cocamide MEA
  ✓ DEA-Cetyl Phosphate
  ✓ DEA Oleth-3 Phosphate
  ✓ Lauramide DEA
  ✓ Linoleamide MEA
  ✓ Myristamide DEA
  ✓ Oleamide DEA
  ✓ Stearamide MEA
  ✓ TEA-Lauryl Sulfate
  ✓ Triethanolamine
11. “Read and Toss” (Contd.)

- Triethanolamine
- Hexachlorophene - highly toxic and banned in many jurisdictions
- Triclosan - Thyroid endocrine disruptor, toxin that bioaccumulates
- Formaldehyde - carcinogen
Experts believe that one-third to one-half of all cancers can be prevented. That's because there are certain things about our lifestyles-our daily habits-that can make us more likely to get cancer. Here are some steps you can take today to help prevent cancer:

- Quit smoking.
- Eat well.
- Stay at a healthy weight.
- Stay active.
- Protect your skin.
- Drink alcohol wisely.
- Practice safe sex.
- Get regular checkups and screenings.
- Avoid toxins and other poisons at work and at home.
Resources and Final Thoughts
National Children’s Study (NCS), which was appropriated in 2009 for two-thirds of its $300 million budget. The largest study of children’s health in U.S. history, NCS will track 100,000 children from before birth through age 21 to determine the environmental and genetic factors that influence health and development. The data we collect will allow us to develop a national blueprint for prevention.

The Kid Safe Chemical Act (KSCA) is another measure that deserves support. During the past 50 years, more than 80,000 synthetic chemicals have been invented, and each year hundreds more are added to consumer goods, including cosmetics, motor fuels, and food packaging. Most are not tested for toxicity. Introduced into Congress in 2005 and 2008, KSCA would mandate that all new chemicals be tested and found safe for children before being brought to market. It would require that 62,000 untested chemicals currently in use be proven safe or be banned. Similar legislation exists in Europe.
President's Cancer Panel

- Appointed to three-year terms by President Bush, focused its efforts on environmental cancer risk. The panel held four hearings in which it consulted experts from environmental groups, industry, academic researchers, and cancer advocacy groups.

- In addition to recommending sweeping changes in federal legislation and regulation, the panel also made a number of recommendations for how individuals can reduce their risk of cancer from environmental exposures in several areas.

- There is scientific disagreement over many of the panel's findings. These recommendations therefore do not necessarily represent scientific consensus.
Parents should realize that children may be particularly sensitive to environmental carcinogens and should make choices to minimize a child's exposure to toxins.

- Both parents should avoid exposure to chemicals prior to a child's conception and throughout pregnancy.
- Remove shoes before entering the house.
- Wash work clothes separately from the rest of the family laundry.
- Filter home tap or well water. Prefer filtered water to commercially bottled water.
- Store and carry water in stainless steel, glass, or BPA- and phthalate-free containers.
- Microwave food in ceramic or glass containers instead of plastic.
- Try to choose foods grown without pesticides or chemical fertilizers.
- Eat free-range meat raised without antibiotics, growth hormones, or exposure to toxic runoff from livestock feed lots.
Properly dispose of medications, household chemicals, paints, and other toxic materials that can contaminate the water or soil.

Turn off lights and electrical devices when not in use.

Drive fuel-efficient cars; find alternatives to driving.

Quit smoking and eliminate secondhand smoke in the home, car, and public places.

Avoid Radiation:

- Cut exposure to electromagnetic energy by wearing a headset when using a cell phone, texting instead of calling, and keeping calls brief.
- Periodically check home radon levels.
- Reduce exposure to medical imaging devices by discussing the need for medical tests with health care providers.
- Avoid overexposure to UV light by wearing protective clothing and sunscreen when outside, and by avoiding sun exposure when sunlight is most intense.
Plastics By The Numbers

- **Plastic #1**: This is polyethylene terephtalate, also known as PETE or PET. Most disposable soda and water bottles are made of #1 plastic, and it’s usually clear. **This plastic is considered generally safe for one time use.**

- **Plastic #2**: This is high density polyethylene, or HDPE. Most milk jugs, detergent bottles, juice bottles, butter tubs, and toiletries bottles are made of this. It is usually opaque. **This plastic is considered safe and has low risk of leaching. It is also picked up by most recycling programs.**

- **Plastic #3**: This is polyvinyl chloride, or PVC. It is used to make food wrap, bottles for cooking oil, and plumbing pipes. **PVC is a tough plastic but it is not considered safe to cook food near it.** There are phthalates in this material—softening chemicals that interfere with hormonal development. You should minimize use of #3 plastic around food as much as possible. Never cook using food wrap, especially in a microwave oven. If the wrap is listed as microwave-safe then I would still not let it touch the food while using it in the microwave. #3 plastic is rarely accepted by recycling programs.
Plastics By The Numbers

- **Plastic #4**: This is low density polyethylene (LDPE). It is used to make grocery bags, some food wraps, squeezable bottles, and bread bags. **This plastic is considered safe**, but is unfortunately not often accepted by curbside recycling programs.

- **Plastic #5**: this is polypropylene. Yogurt cups and similar wide-necked containers are often made from it, as well as water bottles with a cloudy finish. You’ll also find it in medicine bottles, ketchup and syrup bottles, and straws. **This plastic is also considered safe**, and is increasingly being accepted by curbside recycling programs.

- **Plastic #6**: this is polystyrene, or Styrofoam, from which disposable containers and packaging are made. You’ll also find it in disposable plates and cups. **Evidence is increasingly suggesting that this type of plastic leaches potentially toxic chemicals, especially when heated.** I suggest avoiding the use of #6 plastic as much as possible. It is difficult to recycle and most recycling programs won’t accept it.
Plastic #7: This number basically means “everything else.” It’s a mixed bag, composed of plastics which were invented after 1987. Polycarbonate falls into this category, including the dreaded BPA. So do modern plastics used in anything from iPods to computer cases. It also includes some baby bottles and food storage containers which resist staining. Use of #7 plastic is at your own risk, since you don’t know what could be in it. You should dispose of any food or drink related product, especially for children, that is known to contain BPA. I personally also view any other food or drink container made from #7 plastic with a good deal of suspicion. It is difficult to recycle #7 plastic and most curbside recycling programs won’t accept it.
Providers of Environmentally-Friendly Cleaning Supplies

- 1. Seventh Generation
- 2. Greener Choice OxiBrite
- 3. Ecover
- 4. Mrs. Meyer’s Clean Day
- 5. J. R. Watkins
- 6. Nature Clean
- 7. Method
- 8. Simple Green Naturals
- 9. Shaklee
- 10. ECOS – Earth Friendly Products
Resources

- http://ehp03.niehs.nih.gov/home.action Environmental Health Perspectives
- http://e.hormone.tulane.edu/
- EPA.gov
- Consumer reports
- http://www.ourstolenfuture.org/index.htm
- Webmd
- Mayo Clinic
- http://www.ewg.org/skindeep/
Questions