

Environmental hormone disruptors and what we can do to protect ourselves

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This past half-century has seen the advent of the large-scale production, use, and disposal of man-made chemicals into our environment. Most of these chemicals, which are made in the U.S., have not been adequately tested to determine their long-term health effects in humans. Studies show that human exposure to chemicals in our environment such as pesticides, solvents, herbicides, insecticides, plastics and manufacturing by-products, can cause adverse health effects. Since these products interfere with our internal hormonal environment, we call them hormone disrupting compounds.

A hormone disruptor is any substance that alters normal hormone levels or activity in the body. [1] Synthetic chemicals can disturb the normal activity of estrogens, androgens, thyroid and other hormones.[1] They do so by binding directly to hormone receptors, activating it and causing the chain of events as if the hormone itself were binding to the receptor.[1,2,3] The toxic chemical may also bind and occupy the receptor blocking normal hormonal activity, or it may interfere with proteins that regulate the activity of hormones.[1,2,3,4,5] The effects of these toxic chemicals may be associated with the development of breast cancer, fibroids, endometriosis, ovarian cysts, chronic fatigue, hypothyroidism, and fibromyalgia, just to name a few. [6,7,8,13]

We are exposed to hormone disrupting compounds in our everyday life, often without knowing we are being exposed. Pesticide residues can be found on fruits and vegetables sitting in the store to be sold.[9] Animal products are tainted with dioxins and dioxin-like compounds and often have hormones and antibiotics added to them. [9] Certain fish have high levels of mercury and pesticides. [9,14] The plastic containers that food and condiments are stored in can leach out harmful chemicals. [10] Hormone disrupting compounds can be found in both well water and city water providing yet another means of exposure. [9] Toxic compounds are also inhaled or absorbed through the skin by contact with most household cleaning products, cosmetics, perfumes, dry cleaning, carpet, vinyl floors, copy machines, furniture glues, air fresheners, mattresses, shampoos, and the list goes on. [11,12]

The most common hormone disrupting compounds are dioxins, polychlorinated biphenyls, bisphenol-A, phthalates, pesticides, and formaldehyde. All have been shown to cause adverse health effects. [2,3,15] Dioxins are a byproduct produced by industrial incineration and combustion. They are produced by manufacturing of chlorine containing products such as pesticides, wood preservatives and the bleaching of paper. Dioxins persist in the environment for years and accumulate in the fat of farm animals that eat contaminated feed or water. Dioxins decrease thyroid hormones, testosterone and have both estrogenic and anti-estrogenic effects. [26] Dioxins are linked to endometriosis in women. [16,17, 18,19,20,21]

Polychlorinated biphenyls (PCB's) are used as coolants, lubricants, and insulation for electrical equipment, in paints, plastics, dyes, wood and rubber. PCB's accumulate in human fat, the food chain, and found in rivers and lakes. PCB's weaken the immune system, affect neurological development and behave like estrogen. [22,23] Biphenol-A is a compound found in plastics. It is used in the manufacturing of compact disks, plastic bottles, the lining of metal food cans, and dental sealants. It leaches out of plastics and

into food and the environment. Bisphenol-A has estrogen like effects on estrogen receptor positive breast cancer cells, decreases sperm count and increases prostate size. [24,25]

Phthalates are additives to plastics to make them strong, soft, and flexible. It is used in carpet backing, paints, glues, insect repellants, hair spray, and nail polish. Phthalates have hormone disrupting effects and can suppress ovulation, estradiol production and contribute to a condition called polycystic ovarian syndrome. [27,28,10] Harmful pesticides such as DDT and its metabolite DDE have been banned in this country but their effect still linger in our environment. DDT was an insecticide used in agriculture and for mosquitoes. It has estrogen effects and anti-androgen effects as well as effectson cognition. DDT still persists in the environment, accumulated in adipose tissue and in the food chain. [29,9,30,31,32]

Formaldehyde is another common compound originally used in homes in the 1970's as a form of insulation. The fumes caused depression, fatigue, poor memory, headaches, asthma, cough, skin rashes, and much more. [12] Formaldehyde is no longer used in insulation but is found in shampoo, conditioners, cosmetics, construction materials, cleaning supplies, carpet, paper products, plastics, and the list goes on. [12,33] It has been linked to reduced fertility, spontaneous abortion, and endometriosis. [21,34,35]

It is easy to get into a state of fear in regards to the amount of toxins we are exposed to each day. One might want to panic and live in a bubble. The best thing to do is educate others and ourselves in ways to minimize our exposure to these compounds and how to support or body the in metabolism and elimination of toxins. Avoiding hormone disrupting compounds begins simply with the choices we make at home and the store. By educating ourselves and purchasing different products at the marketplace it will decrease the demand for products that may be harmful and increase the demand for safer alternatives.

1. Buy organic fruits and vegetables grown without pesticides, herbicides, synthetic fertilizer or hormones.
2. Buy fresh/frozen fruits and vegetables when possible, avoiding canned foods.
3. Buy organic hormone free meats, eggs, and dairy products and avoid eating the fat of the animal.
4. Buy grass fed and lower fat animal products.
5. Eat fish low in mercury and fat since toxins accumulate in the fat of fish. Avoid: tilefish, tuna, swordfish, shark, king mackerel, red snapper, orange roughy, moonfish, bass, marlin, and trout.
6. Drink filtered water out of glass jars or cups instead of plastic bottles.
7. Buy natural chemical free soaps, detergents, and cleaning supplies.
8. Use natural pest control instead of pesticides and instead of herbicides for your lawn change you mind on what looks beautiful.
9. When remodeling look into earth friendly or 'green' building supplies.
10. Remove your shoes when you enter your home.
11. Avoid plastics as much as possible.
 - a. Store food in glass or ceramic containers.

- b. Do not heat food in plastic containers or with plastic wrap over the top.
- c. Buy condiments in glass containers instead of plastic.
- d. Use an organic fiber shower curtain instead of plastic.
- e. Carry cloth bags in your car for groceries instead of plastic bags.
- f. Replace vinyl miniblinds with linen curtains
- g. Use metal hangers instead of plastic.

Normally our bodies are equipped to metabolize and eliminate toxins. This is called detoxification. However, since we are bombarded with so many chemicals each day from various means of exposure our body becomes overburdened with these toxins. There are some simple ways to assist our body in the metabolism of toxins and support natural hormone balance. The first is through diet. Certain foods support liver metabolism and detoxification. The cruciferous family vegetables, such as broccoli, brussels sprouts, cabbage, kale, collards, and cauliflower, contain liver detoxifying nutrients. Flax seeds and psyllium husk powder are sources of fiber that bind and support the bowel in elimination of toxins. [36]

There are various herbs that support the liver, such as milk thistle, dandelion root, burdock root, beet root, fenugreek, greater celandine, juniper, and fringe tree. There are many commercially available products such as 'Detox' teas combining many of these herbs. [37]

Amino acids, which are the basic building blocks of proteins and come from eating plants or animals, are necessary for liver detoxification. The most important amino acids are glutathione, cysteine, glycine, glutamine, taurine, and methionine. Whey protein powder is a convenient source of glutathione. Many soy and rice protein powders have amino acids added to them, check the labels. Selenium, vitamin-C, and vitamin-E and alpha-lipoic are antioxidants that protect us from toxic overload. A good multiple vitamin/mineral is an important supplement since it provides necessary cofactors for liver detoxification. [12,9]

Naturopathic doctors offer testing for exposure to many hormone disrupting chemicals and treatment is individualized utilizing more complex methods. Individuals who are experiencing chronic health problems or conditions related to hormone disruptors should seek the advice and expertise of a naturopathic doctor who specializes in environmental medicine.

The evidence is building every day of the adverse health effects hormone disrupting compounds have in humans. It is almost impossible to completely eliminate these toxic compounds from our lives. However we now know of ways to avoid exposure and protect against toxic overload. It is also imperative to get involved and educate others to make our planet a safer place for everyone.

Recommended reading

1. *Tired or Toxic* and *The E.I. Syndrome* by Sherry Rogers
2. *Our Stolen Future* by Theo Colburn
3. *Living Healthy in a Toxic World* by David Steinman
4. *Living Downstream* and *Having Faith* by Sandra Steingraber
5. *Healthy Living in a Toxic World* by Cynthia Fincher

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