

## **Toxin Primer**

Toxic substances pollute our air, soil and water and poison all forms of life. 80,000 new chemical compounds have been introduced to the environment since WWII, and the number rises daily.

Chemicals in the marketplace today often make their way into our homes without being fully tested for their effects on the most vulnerable members of society – our children (Judy Mann, April 6, 2001, Washington Post). Children are at highest risk as their systems are developing and are more susceptible to damage from chemicals. Children's exposure to toxins starts as early as at conception and can have lifelong effects.

There is growing evidence that there are over 100 diseases and health problems in which chemical exposures are either directly or indirectly linked to. The list includes asthma, allergies, sore throats, migraine, insomnia, autism, many cancers, learning disabilities, infertility, Parkinson's disease, and much more. Scientists are beginning to understand that all human beings carry hundreds of persistent bio-accumulative toxins in their bodies (chemicals that build up in our bodies over time). Similarly, scientists have begun to establish that low levels of these chemicals in our bodies, once thought to be safe, can have significant health effects (Surviving the Great Dying by Michael Lerner, YES Magazine, Spring 2003).

## **Ecological Illness**

Wildlife, people, and entire ecosystems throughout the world are threatened by toxic chemicals that can alter sexual, neurological, and behavioral development; impair reproduction; and undermine immune systems (WWF DETOX Campaign, "Causes for Concern: Chemicals and Wildlife).

There has been much publicity about the affects of acid rain on the earth's forests. Toxic metals such as lead, zinc, copper, chromium and aluminum are deposited in the forest from the atmosphere. The acid rain releases these metals and they stunt the growth of trees and other plants as well as that of mosses, algae, nitrogen-fixing bacteria and fungi needed for forest growth.

Both aquatic vertebrates and invertebrates are particularly susceptible to chemical pollution. Polybrominated Flame Retardants (BFRs) have been found in sperm whales, ringed seals and harbor seals and several kinds of fish.

Phenols, used in polycarbonate plastics, are suspected to be the cause of sex-reversals in alligators in South America, and reproductive malformations in quail and chicken embryos. Many toxins cross cell membranes and can be found in eggs. Male fish downstream from a wastewater treatment plant in the river Aire in England were found with egg-producing cells in their testes and malformed genitals.

Because of temperature and circulation patterns in the atmosphere and oceans, many chemicals tend to concentrate at the poles. PCNs (polychlorinated naphthalenes) have been found in penguins, polar bears and Weddell seals.

In our own highly industrialized Great Lakes system, Beluga whales are subjected to multiple and severe chemical threats and have been found with tumors and cancer, which generally are very rare in cetaceans.

Humans are not exempt from the effects of chemical pollution suffered by our fellow life-forms. The number of chemicals introduced into the environment has increased in such a short time that our bodies and immune systems have not had time to adapt to these new environmental influences. In addition, we do not fully understand the effects these substances have on our bodies. Different groups of individuals are affected by toxic pollution in different ways. Some individuals are much more sensitive to pollutants than others. The extent to which an individual is harmed by air pollution usually depends on the total exposure to the damaging chemicals, i.e., the duration of exposure, the concentration of the chemicals and the particular chemical compound must be taken into account.

Unlike allergies, which are usually a result of your immune system overreacting to normally benign substances like pollen or seafood, chemical sensitivities are often an adverse reaction to toxins by an overloaded immune system and/or by a weakened immune system. This chemical hypersensitivity is referred to as Ecological Illness (EI) or Multiple Chemical Sensitivity (MCS).

## **Indoor Air Pollution**

When people think about air pollution, they usually think about smog, acid rain, CFC's, and other forms of outdoor air pollution. Yet indoor air pollution has been found to account for 50% of all illness in the United States (Massachusetts Special Legislative Commission, April 1989). The average American spends about 90% of his time indoors. Air pollution in the average American home, as measured by the EPA, is usually 2 to 5 times worse than outdoors.

The cause lies in two major housing trends. First, our increasing reliance on synthetic and petrochemical ingredients in building materials, furnishings, cleaning products and personal items, which can have negative impacts on the air we breathe. Second, homes are being made tighter to increase energy efficiency, yet without the ventilation systems to bring in fresh air.

One of the major sources of indoor pollution is fragranced products. About 35% of the raw fragrance materials produced annually are used in detergents, soaps, and cleaning products. 95% of chemicals used in fragrances are synthetic compounds derived from petroleum - many of the ingredients in perfume are the exact same ingredients found in gasoline. These compounds are released both into the air and onto furniture, carpets, and household furnishings. The fragrance in these products accumulates not only from present use, but also from days, weeks, even months ago.

Products such as cleaners and laundry items also end up going down the drain and potentially contaminate waterways and aquatic wildlife (Fragranced Products Information Network, <http://www.ameliaww.com/fpin>). As a result of the combined effects of this pollution, it is important to be aware of the chemicals that we use to clean our homes.

## **Making a Healthy Choice**

Most Americans are still not aware of the potential dangers lurking within their own home environments. However we all have the ability to choose to be less at risk. We can choose to mitigate the negative impacts of chemical toxins by avoiding the use of these substances whenever possible at work and at home.

“One of the best ways to protect yourself from toxic products is to read labels and pay particular attention to ‘signal words.’ They are placed on products by order of the federal government, with the primary purpose of protecting you, but sometimes to tell you about the products’ potential impact on the environment. POISON/DANGER means something very toxic; only a few drops could kill you. WARNING means moderately toxic; as little as a teaspoonful can kill. CAUTION denotes a product that is less toxic; two tablespoons to a cup could kill you. There are a few others, such as STRONG SENSITIZER, which means the product can cause multiple allergies.”

From “Read a Label’s Signal Words - How To” by Annie Berthold-Bond, Care2.com Producer, Green Living Channels.

A major way to keep your home and workplace healthy is to use less-toxic, low-odor cleaning products. Finger Lakes Buy Green has provided you with a selection available locally. And when you’re ready for that next step – try our [DIY Recipes](#). We’ve tried them. They work!