

# Environmental Toxins: Cause of Modern Illness (Part I)

Jake Paul Fratkin, OMD, LAc

Environmental toxins have created burdens on the human body that put demands beyond our evolutionary development. Modern diseases that historically did not exist to any great degree have been rising sharply in the last 40 years. These include autoimmune disease, diabetes, obesity, infertility and miscarriage, chronic fatigue, chemical sensitivities, irritable bowel, leaky gut, hypothyroid and adrenal fatigue.

Traditional Chinese herbal medicine concentrates on pathological etiologies that reflect a less toxic era. These include climactic exposure, infections by heat-toxins (bacteria, virus, parasites), overwork, emotional internalization, poor diet, injury, poisons, and consequences of other illnesses. TCM's method of promoting health and vitality still applies to the treatment of toxic burden by regulating the *zang-fu* organs and promoting the free flow of *qi* and blood.

In our modern era, functional and naturopathic medicine has been on the forefront of pointing out the physiological consequences of environmental toxic overload, and has defined key nutritional medicine strategies to counteract the ill effects. I think it is useful for TCM practitioners to understand the physiological effects of various environmental toxins, and to incorporate nutritional supplements that can aid in detoxification to the repertoire of TCM herbals formulas.

## The Present Crisis

The World Health Organization, back in 2006, stated that 25 percent of chronic illness in adults and 33 percent of illness in children under the age of five, is due to accumulation of environmental toxins. That number has gone up since then and may now approach 40 percent of chronic illness. That means that many of our patients' chronic conditions are due to accumulations of solvents, plastics and heavy metals, which damage the liver, kidney, lung, brain, lymphatic drainage system and gut lining.

Most of the toxic burden has been in the last 40 years. Currently, more than 80,000 different chemicals are used and released into the environment in the U.S. alone. At least 10 percent of these have been labeled carcinogenic. The reason only 10 percent are labeled carcinogens is because only 200 of the 80,000 chemicals have been tested by the EPA (Environmental Protection Agency). Only five chemicals have actually been prohibited.

The Toxicant and Disease Database links chemical contaminants to 180 human diseases and conditions, including most cancers, birth defects, asthma, organ failure, infertility, miscarriage, Parkinson's and Autism. Unborn fetuses are affected the most. The cord blood of the average baby in the U.S. contains 200 chemicals that shouldn't be there. The Center for Disease Control (CDC) in its Bio-Monitoring Study (2005), found accumulated toxins in all age groups. Plastics and solvents

comprised 48 percent of the toxic load, heavy metals 27 percent, phytoestrogens 14 percent and pesticides 11 percent.

Here are more facts to consider: leukemia, brain cancer and other childhood cancers have increased by more than 20 percent since 1975. Breast cancer went up by 40 percent between 1973 and 1998. Asthma prevalence approximately doubled between 1980 and 1995 and has stayed at the elevated rate. Difficulty in conceiving and maintaining a pregnancy affected 40 percent more women in 2002 than in 1982. The incidence of reported difficulty has almost doubled in younger women ages 18-25. Since the early 1990s, reported cases of autism spectrum disorder have increased tenfold.

In our patient load, we are going to see the consequences of environmental poisons causing infertility, liver disorders leading to rheumatic pain and headaches, asthma, chronic fatigue, autoimmune disease, diabetes, lowered immunity, cognitive disorders including ADHD, chemical sensitivity, obesity, and damage to the small intestine causing leaky gut syndrome.

I would like to offer some basic information about the main environmental toxins and their health consequences.

### Pesticides And Herbicides

Glyphosate is the main ingredient in Montezano's Round-Up. Its use in the U.S. has increased 6,500 times between 1991 and 2010, and is now being integrated into the seeds of GMO wheat, corn and soy. The use in GMO seeds negatively affects both beneficial bacteria surrounding the root of the plant and upsets the healthy biosis of our own guts, leading to impaired permeability, serotonin metabolism and obesity.

### Plastics

Polychlorinated biphenyls (PCBs) have been banned since 1979 as a carcinogen. Unfortunately, they are still found throughout the environment in discarded electrical transformers and motors, and have affected the ground water especially along the Hudson River and Great Lakes. It is neurotoxic, an endocrine disruptor, and disrupts intestine epithelial integrity. It is chemically similar to dioxin (Agent Orange).

Bisphenol A (BPA) was originally developed as a synthetic estrogen in 1930, which explains why it is such a potent endocrine disruptor. Since the 1950s, it has been used as an additive in plastic production, and is found in baby and water bottles, thermal paper, CDs and DVDs. It is the plastic that coats the inside of cans. The FDA lists it as hazardous to fetus, infants and children. It reduces immune response and promotes inflammation, and negatively affects the glycogen/insulin balance. Its use has been linked to diabetes, obesity and infertility. It is one of the highest volume chemicals produced worldwide, with six billion pounds produced a year, and 100 tons released into the atmosphere. BPA has been found in 95 percent of urine samples tested.

Phthalates are used to soften plastics, and are found in plastic wrap, furniture stuffing, cosmetics, perfumes, and so on. They are found in food and the air. It is slowly being phased out because of carcinogenic evidence. High levels have been linked to asthma, eczema, estrogen receptor cancer, male infertility, insulin resistance, low thyroid, and so on. Polyvinyl Chloride (PVC), usually combined with up to 40 percent of phthalates, are ubiquitous - the third most widely produced plastic. It is easily breaks down into "micro-plastics" and is consumed in food and water. If burned, it releases dioxin

(Agent Orange) into the atmosphere. Styrenes, made from benzene, is used in Styrofoam, rubber, insulation, automobile parts. It has been found in every blood sample ever tested since 1970. It is non-biodegradable. If liver detoxification is compromised, it is carcinogenic. It negatively affects the gut lining, liver, kidney and pancreas.

### Preservatives

Parabens are similar to phthalates (above) in health and toxicity issues. It is an anti-microbial preservative, and is used in cosmetics, shampoo, deodorants, toothpaste, etc. It is a strong estrogen mimic, and has been found in breast cancer tumors. Formaldehyde (and its degraded form as formic acid) is used as a preservative in vaccinations and livestock feed. It is used in the making of many glues and resins, especially particleboard and furniture padding, and out-gases easily. It is also in cleansers, paints, automobile parts, etc. It is released into the atmosphere when burned. Formaldehyde is highly toxic.

Cosmetics including lipstick, body lotions, perfume, sunscreen, mascara and deodorant, contain phthalate plasticizers, parabens, and triclosan, a pesticide. Many of the chemicals are potent endocrine disruptors, and have been linked to breast and uterine cancers.

### Gasoline Additives, Solvents And Glues

Benzene and Toluene are gas additives that boost octane rating, and are also used as solvents. They are found in glues, paints, nail polish, furniture wax and detergents. Cigarette smoke accounts for 50 percent of exposure in the U.S. They have been linked to cancer, bone marrow failure and leukemia, and target the liver, kidney, lung, heart and the brain. Xylene is the leading cause of smog, and 600,000 tons are released into the atmosphere yearly. It can cause asthma, birth defects (especially cleft palate) and is a neurotoxin.

### Heavy Metals

These are probably the most toxic molecules in the environment, and include mercury, lead, aluminum, and cadmium, with mercury being the worse. Most mercury exposure is from coal burning plants in the U.S. and China, and in 2010, 6,500 tons of mercury was emitted into the air. Besides affecting the air that we breathe, coal mercury precipitates in cold air down into the ocean, lakes and streams, affecting the fish we eat.

Mercury concentrations in the upper 100 meters of the oceans have doubled in the past century. Top marine predators in the Arctic Ocean including polar bears, tuna and seals, contain up to 12 times more mercury than in pre-industrial times. The other main source of mercury comes from dental amalgams, with even one metal filling emitting toxic levels into the body. Anyone seeking to detoxify mercury from their bodies should first have their amalgams removed, otherwise, the therapies will leach mercury from the amalgams into the body.

How should this affect our clinical practice? Chinese herbal formulas are important to regulate and detoxify the liver and kidney, and to restore the gut lining's ability to maintain selective permeability. It is also helpful to use functional medicine labs to test for toxin and metal overload, as well as verify liver and kidney function. Equally important to Chinese herbal formulas are the nutritional supplements necessary to detoxify and support organ function.

In part two, we will look further at available diagnostic labs, and detail Chinese herbal formulas and supplements that can neutralize environmental toxin overload by promoting excretory health in the liver, kidney and colon.

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