

## TOXICITY OF GARBAGE SMOKE

By Bernadette Wyton

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Smoke from garbage burning is fine particulate matter typically laced with varying levels of arsenic, benzene, cadmium, carbon monoxide, chromium, formaldehyde, mercury, hydrochloric acid, lead, nitrogen oxide, polyaromatic hydrocarbons, sulfuric acid, and dioxins.....to name a few. The list is ever-burgeoning because of the ever-changing nature of trash. Things that used to be packaged in glass and paper containers are now packaged in plastic. Even the paper category has been drastically changed due to new chemical pulp and paper processes and due to the noxious inks and coatings used in printing process. The inundation of junk mail, plastic windowed envelopes, and glossy magazines packaged in plastic bags add to the toxic burden.

Although all of the chemicals listed above are poisonous to the environment and lead to all kinds of human disease and suffering, the culprit of greatest concern is dioxin. The term "dioxin" (or "dioxins") is a very loose one, referring to a family of complex but related chlorinated compounds with similar structures and biological activity. They are often denoted with a quick molecular sketch that looks like a series of numbers hovering around a piece of chicken wire. The family includes 210 different polychlorinated dibenzo-para-dioxins (PCDDs) and polychlorinated dibenzo-furans (PCDFs). The famously destructive PCBs, or polychlorinated biphenyls, are also related. Out of the three groups, there is a subset of 29 compounds that have been identified as having varying levels of "dioxin-like" toxicity. The dioxin TCDD tops the charts and is the most lethal human made poison next to radioactive waste. Tiny, tiny amounts can wreak havoc in biological systems.

Dioxin is a potent human carcinogen. It has also been linked to cardiovascular disease, diabetes, compromised immune system, endometriosis, disruption of the endocrine system (including the hypothalamus, pituitary, thyroid, parathyroid, adrenal, and reproductive glands).

Dioxin is a persistent, bioaccumulative toxin, which means it isn't broken down into safer chemicals, and it is concentrated in the food chain (with humans typically at the top). It is produced in obnoxious amounts when garbage is burned, especially plastic garbage. The invisible poison has a tendency to take to the air and can ride the winds as far as our remote polar regions. Decades ago, scientists who were trying to find humans who might be uncontaminated, were horrified to discover that Inuit people had far greater concentrations of these chemicals in their fat than we do - a testament to their amazing drift potential. This fact alone outweighs the convenience of having garbage 'disappear' by burning it.

After the shocking finding that simple, backyard burning is the leading contributor of dioxins in North America the federal governments of both the United States and Canada are scrambling to educate their citizens and help them kick the burning habit. It's taken decades to build up the needless, gross amounts of packaging, plastic and other synthetic materials that are now a daily part of our lives, our homes, and our waste. We need to apply ourselves in thoughtful, careful and creative ways to fix the mess we find ourselves in. A simple start, with immediate results, is to reduce the amount of packaging we bring into our homes. For example, in the food category,

why buy three colorful bell peppers neatly lined up on a Styrofoam tray and wrapped in plastic? Do you need your baked goods presented to you that way? What about meat? Butchers wrap fresh cuts in simple paper - a packaging choice far ahead of the Styrofoam, polyethylene wrap and bloody 'diapers' that aging cuts need to be swaddled in.

The hardest work ahead will be stemming the flow of would-be garbage at the source. There are many initiatives that can be put in place to make manufacturers and retailers more responsible in that way. Diligent, consistent pressure for improvements will get us there. In the meantime, we need to work harder at improving the garbage management systems that we do have and at reducing, reusing, composting, and recycling. Remember, garbage comes with many high costs that whining won't take away. We have to help each other buckle under and do our part to deal with it - and burning it outside or in a wood stove is no longer an option.