

Dioxins and furans are some of the most toxic chemicals known to science. A draft report released for public comment in September 1994 by the US Environmental Protection Agency clearly describes dioxin as a serious public health threat. The public health impact of dioxin may rival the impact that DDT had on public health in the 1960's. According to the EPA report, not only does there appear to be no "safe" level of exposure to dioxin, but levels of dioxin and dioxin-like chemicals have been found in the general US population that are "at or near levels associated with adverse health effects."

Dioxin is a general term that describes a group of hundreds of chemicals that are highly persistent in the environment. The most toxic compound is 2,3,7,8-tetrachlorodibenzo-p-dioxin or TCDD. The toxicity of other dioxins and chemicals like PCBs that act like dioxin are measured in relation to TCDD. Dioxin is formed as an unintentional by-product of many industrial processes involving chlorine such as [waste incineration](#), chemical and pesticide manufacturing and pulp and paper bleaching. Dioxin was the primary toxic component of Agent Orange, was found at Love Canal in Niagara Falls, NY and was the basis for evacuations at Times Beach, MO and Seveso, Italy.

Dioxin is formed by burning chlorine-based chemical compounds with hydrocarbons. The major source of dioxin in the environment comes from waste-burning incinerators of various sorts and also from backyard [burn-barrels](#). Dioxin pollution is also affiliated with paper mills which use chlorine bleaching in their process and with the production of [Polyvinyl Chloride \(PVC\) plastics](#) and with the production of certain chlorinated chemicals (like many [pesticides](#)).

Does dioxin cause cancer?

Yes. The [EPA report](#) confirmed that dioxin is a cancer hazard to people. In 1997, the [International Agency for Research on Cancer \(IARC\)](#) -- part of the World Health Organization -- published their research into [dioxins and furans](#) and announced on February 14, 1997, that the most potent dioxin, 2,3,7,8-TCDD, is now considered a [Group 1](#) carcinogen, meaning a "known human carcinogen."

Also, in January 2001, the U.S. [National Toxicology Program](#) upgraded 2,3,7,8-TCDD from "Reasonably Anticipated to be a Human Carcinogen" to "Known to be a Human Carcinogen." See their reports on [dioxins](#) and [furans](#) from their most recent [11th Report on Carcinogens](#). Finally, a 2003 re-analysis of the cancer risk from dioxin reaffirmed that there is [no known "safe dose"](#) or "threshold" below which dioxin will not cause cancer.

A [July 2002 study](#) shows dioxin to be related to increased incidence of [breast cancer](#).

What other health problems are linked to dioxin exposure?

In addition to cancer, exposure to dioxin can also cause severe reproductive and developmental problems (at levels 100 times lower than those associated with its cancer

causing effects). Dioxin is well-known for its ability to damage the immune system and interfere with hormonal systems.

Dioxin exposure has been linked to birth defects, inability to maintain pregnancy, decreased fertility, reduced sperm counts, endometriosis, diabetes, learning disabilities, immune system suppression, lung problems, skin disorders, lowered testosterone levels and much more. For an detailed list of health problems related to dioxin, read the [People's Report on Dioxin](#).

How are we exposed to dioxin?

The major sources of dioxin are in our diet. Since dioxin is fat-soluble, it bioaccumulates, climbing up the food chain. **A North American eating a typical North American diet will receive 93% of their dioxin exposure from meat and dairy products** (23% is from milk and dairy alone; the other large sources of exposure are beef, fish, pork, poultry and eggs). In fish, these toxins bioaccumulate up the food chain so that dioxin levels in fish are 100,000 times that of the surrounding environment. **The best way to avoid dioxin exposure is to reduce or eliminate your consumption of meat and dairy products by adopting a [vegan diet](#).** According to a [May 2001 study of dioxin in foods](#), "The category with the lowest [dioxin] level was a simulated vegan diet, with 0.09 ppt.... Blood dioxin levels in pure vegans have also been found to be very low in comparison with the general population, indicating a lower contribution of these foods to human dioxin body burden."

In EPA's dioxin report, they refer to dioxin as *hydrophobic* (water-fearing) and *lipophilic* (fat-loving). This means that dioxin, when it settles on water bodies, will rapidly accumulate in fish rather than remain in the water. The same goes for other wildlife. Dioxin works its way to the top of the food chain.

Men have no ways to get rid of dioxin other than letting it break down according to its chemical half-lives. Women, on the other hand, have two ways which it can exit their bodies:

- It crosses the placenta... into the growing infant;
- It is present in the fatty breast milk, which is also a route of exposure which doses the infant, making breast-feeding for non-vegan/vegetarian mothers quite hazardous.

If you're eating the typical North American diet, this is where you are getting your dioxin from:

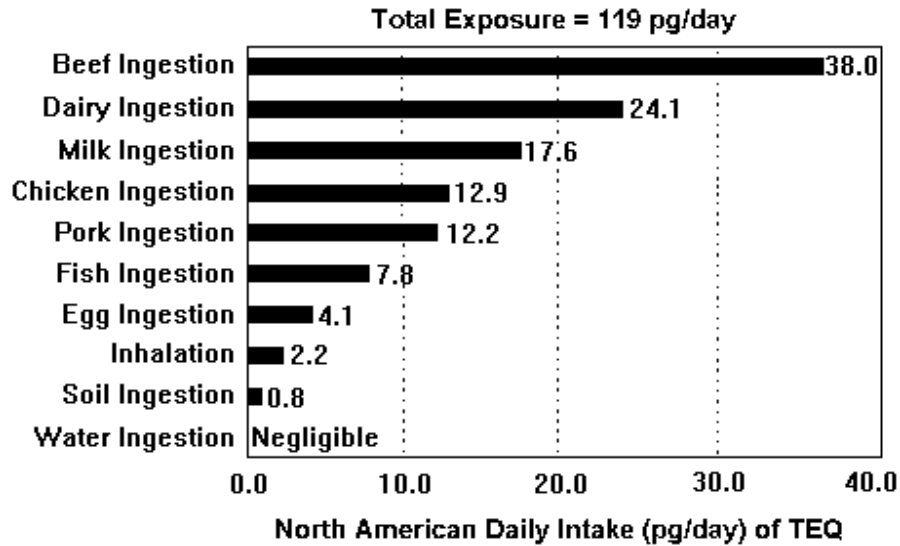


Chart from [EPA Dioxin Reassessment Summary 4/94 - Vol. 1, p. 37](#)
 (Figure II-5. Background TEQ exposures for North America by pathway)

[A TEQ is a dioxin Toxic Equivalent, calculated by looking at all toxic dioxins and furans and measuring them in terms of the most toxic form of dioxin, 2,3,7,8-TCDD. This means that some dioxins/furans might only count as half a TEQ if it's half as toxic as 2,3,7,8-TCDD.]

Levels of Dioxin in U.S. Food Supply (1995):

