

# On Your HEALTH

NATIONAL FOUNDATION FOR CANCER RESEARCH



## SHOULD YOU BE WORRIED ABOUT DIOXIN?

“Dioxin” is an umbrella term for a group of about 75 toxic chemicals that share certain chemical structures and biological properties. The dioxin family includes chlorinated dibenzo-*p*-dioxins (CDDs), chlorinated dibenzofurans (CDFs), and certain polychlorinated biphenyls (PCBs). The term dioxin is also sometimes used to refer to one specific dioxin, 2,3,7,8-tetrachlorodibenzene-*p*-dioxin (TCDD).

### WHY ARE DIOXINS DANGEROUS?

Research has shown that exposure to dioxins may pose a serious health threat: they are known cancer-causing substances (carcinogens). In fact, TCDD is the most potent animal carcinogen ever studied, and has been linked to cancer in humans. For example, studies have found that workers exposed over long periods of time to high levels of dioxins at the workplace have an increased risk of cancer. In addition, some studies have suggested that dioxin promotes soft-tissue sarcomas (cancers of the fat and muscle) and lung cancer.

Though the toxicity of dioxins is not as high as tobacco smoke, some researchers estimate that its potency may be comparable to that of radon or second-hand smoke. Dioxins have a strong affinity for receptors in the nuclei of animal and human cells, where they can do serious damage to the cells' DNA. This damage can lead to cancer as well as adverse reproductive and developmental effects, birth defects, diabetes, immune system abnormalities, and endometriosis.

### WHERE DO DIOXINS COME FROM?

Dioxins are released into the air from combustion processes, such as waste incineration, and from burning fuels, such as wood, coal, or oil. They can also be produced during forest fires, chlorine bleaching of pulp and paper, the burning of household trash, and certain types of chemical manufacturing and processing.

### About the National Foundation for Cancer Research

The National Foundation for Cancer Research (NFCR) was formed in 1973 to support cancer research in the laboratory. NFCR sponsors research at both the cellular and molecular levels to better prevent, diagnose, treat, and eventually, cure cancer. By supporting the best ideas of the best minds and by facilitating collaboration among NFCR Project Directors, advances in one field contribute to discoveries in another. We call this approach our “laboratory without walls.”

NFCR is fully dedicated to advancing cancer research in the laboratory. For more than 25 years, NFCR has provided over \$170 million to more than 135 research projects in 20 countries around the world.

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After dioxin enters the air, people can breathe in the particles. Even worse, dioxin particles can fall into rivers and other bodies of water, where fish can ingest them. Likewise, dioxin can settle on grazing land, where it's ingested by cattle. The dioxin particles then accumulate in the fat tissue of these animals. As a result, over 90 percent of human exposure to dioxin comes from the foods we eat, particularly meat, fish, poultry, cheese, milk, butter, and other foods with animal fat.

### HOW TO MINIMIZE YOUR EXPOSURE TO DIOXIN

Most of the population has low-level exposure to dioxins. (Significantly greater exposures occur from food-contamination incidents, workplace exposures, and industrial accidents.) To keep everyday exposure to an absolute minimum, avoid foods high in animal fat, because dioxin resides in fat tissue. This means choosing leaner cuts of meat or poultry; trimming the fat and skin from meat, poultry, and fish; buying fat-free, low-fat, or skim versions of dairy products; and using egg whites or egg substitutes instead of whole eggs.

Over the past decade, the U.S. Environmental Protection Agency (EPA) has worked with industries that produce dioxins to dramatically reduce emissions. By 2002, dioxin emissions from municipal and medical waste incinerators and pulp and paper facilities will have been reduced 95 percent. That's the good news. The bad news is that dioxins are extremely persistent compounds, breaking down so slowly that they remain in the soil—and in our bodies—for many years. As a result, the benefits of reducing dioxin levels can take several years to realize. Despite this uphill battle, the latest data do show that dioxin levels in our bodies have declined in recent years and are continuing to drop.

*This information is not intended to replace medical advice obtained directly from a physician.*



#### The 7 warning signs of cancer

- Change in bowel or bladder habits
- A sore that does not heal
- Unusual bleeding or discharge
- Thickening or lumps in breasts or elsewhere
- Indigestion or difficulty in swallowing
- Obvious change in wart or mole
- Nagging cough or hoarseness

*If you have any of these symptoms, it does not necessarily mean you have cancer. Please consult your doctor for a thorough diagnosis.*

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