What are some simple steps to reduce exposure to dioxins and furans?

- Reduce your waste size to the minimum: reuse, repair, recycle, compost and never set your discards on fire.
- Work with your household and community members in promoting Zero Waste resource management and ensuring full compliance to the ban on open burning and open dumping.
- Check how hospitals and clinics in your neighborhood are dealing with their discards, ensuring that infectious and pathological wastes are treated using non-burn technologies.
- Learn about other potential sources of dioxins and furans in your community and encourage preventive measures to avoid and cut emissions.
- Avoid products made of PVC plastic, and patronize safe and healthy products in minimal and ecological packaging.
- Nourish your child with breastmilk, the most complete and first Zero Waste food, but pay extra attention to your diet and lifestyle when pregnant or breastfeeding.
- Reduce consumption of meat and dairy products, particularly fat. Make sure you eat a balanced diet to avoid excessive exposure to dioxins from a single source. Go the extra mile for extra health and adopt a meat-free diet.
- Keep yourself informed about national and local policies and programs on POPs, ensuring that the government, industry and citizenry remain committed to achieving the goal of the Stockholm Convention of protecting the public health and the environment from POPs.

Dioxins & Furans

"The most toxic substance known to science."[1,2,3]

They are toxic waste products formed when materials containing chlorine are burned, or when products containing chlorine such as polyvinyl chloride (PVC) plastics are manufactured. The Stockholm Convention lists the following as major source categories for dioxins and furans: waste incinerators, cement kilns firing hazardous waste, pulp production using elemental chlorine, and thermal processes in the metallurgical industry.[1,2,3]

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Dioxin & Furans

DIOXINS & FURANS

Eco Waste Coalition

Chemical Safety: Protecting Filipino Consumers from Toxic Harm

What are Dioxins & Furans?

Dioxins (polychlorinated dibenzo-p-dioxins) and furans (polychlorinated dibenzo furans) refer to a family of more than 400 super toxic chemicals that the international community, including the Philippines, has agreed to minimize and where feasible eliminate under the Stockholm Convention on Persistent Organic Pollutants (POPs). Of all the dioxins and furans, the 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD), a cancer-causing agent, is deemed the most notorious and has been described as "the most toxic substance known to science."[1,2,3]

Where do dioxins and furans come from?

Photo: Gigie Cruz-Sy

Dioxins are not deliberately produced for any specific purpose and thus they are called unintentional-POPs (U-POPs). They are toxic waste products formed when materials containing chlorine are burned, or when products containing chlorine such as polyvinyl chloride (PVC) plastics are manufactured. The Stockholm Convention lists the following as major source categories for dioxins and furans: waste incinerators, cement kilns firing hazardous waste, pulp production using elemental chlorine, and thermal processes in the metallurgical industry.[1,2,3]

The National Inventory of Dioxins and Furans names uncontrolled combustion processes of agricultural wastes, power generation and cooking, the production of chemicals and consumer goods, garbage disposal and landfilling, and waste incineration as the top five contributors to the formation and release of these toxic chemicals in the Philippines.

Why are they a concern?

Dioxins and furans belong to the initial "dirty dozen" POPs being targeted for eradication. Like other POPs, these chemicals can travel for a long time, resisting breakdown or degradation. They can contaminate vegetation, be consumed by animals and humans, build up in fatty tissues and turn into chemical body burdens. These toxic chemicals have the potential to harm the health of humans, wildlife and other organisms even at very low concentrations.

In 2003, the Department of Health and the World Health Organization commissioned stack emission testing for three Austrian-supplied incinerators for healthcare waste, the results of which only reinforced concern over dioxin emission from burning hospital discards. The dioxin emission from the Dr. Paulino Garcia Memorial Hospital waste burner in Cabanatuan City, for instance, exceeded the dioxin and furan limit under the Clean Air Act by a whopping 870 times.

Another study conducted in 2004 found dioxins much higher than the limit set by the World Health Organization in breastmilk of Filipino women who live in Malate and in the Payatas dumpsite.[4]

In 2005, the Cavite Green Coalition, EcoWaste Coalition, Global Alliance for Incinerator Alternatives, Greenpeace, Health Care Without Harm and the Lasallian Community Development Center took part in a global egg biomonitoring project sponsored by the International POPs Elimination Network. The study showed that eggs of free-range chickens near a medical waste incinerator in Trece Martirez City in Cavite have ten times over the "safe" limit of dioxins as set by the European Union.[3]

What are their effects on our health?

Dioxins, a proven human carcinogen according to the International Agency for Research in Cancer, can cause cancer of several types in humans, including cancers of the lungs, stomach, liver and soft and connective tissues, and non-Hodgkins lymphoma. There is no known safe dose or threshold below which dioxins will not cause cancer. Dioxins have already been implicated in the increased incidence of breast cancer.[2]

- **Male Reproductive Effects:** reduced size of genitals, reduced sperm counts, abnormal testis, lower testosterone levels, fewer male births.
- **Female Reproductive Effects:** decreased fertility, ovarian dysfunction, endometriosis, hormone disruption.
- **Developmental Effects:** birth defects, alteration in reproductive systems, learning disabilities.
- **Other Effects:** increased susceptibility to bacterial, viral and parasitic diseases, altered fat metabolism, chloracne, diabetes, hirsutism, hyperpigmentation, immune system suppression, impairment of the nervous system, and damage to liver, spleen, thymus and bone marrow.

What are their effects on the environment?

Dioxins are highly persistent in the environment and can take more than 15 years to degrade to half of its original concentration.[3] Since they are hydrophobic (water-fearing) and lipophilic (fat-loving), they are immediately absorbed by aquatic life or deposited into the sediments when released into the water, and can easily accumulate its way up the food chain.[2,3] On land, there are very low levels of dioxins found in plants, water and air, however, they have a high concentration in soil and bioaccumulate in meat, fish, and shellfish.[1]

How might I be exposed to dioxins and furans?

The major source of dioxin exposure is in our food, particularly milk and dairy products, beef, fish, pork, poultry and eggs. When mothers are heavily exposed, their unborn children are already affected as they pass on dioxins through breastmilk or through the placenta.[2] But, as pointed out by the World Alliance for Breastfeeding Action (WABA), the presence of chemical residues in breastmilk should not deter women from breastfeeding, which can, in fact, help limit the damage caused by fetal exposure. According to WABA, breastmilk contains substances that can help the child develop a stronger immune system against environmental pollutants and pathogens.

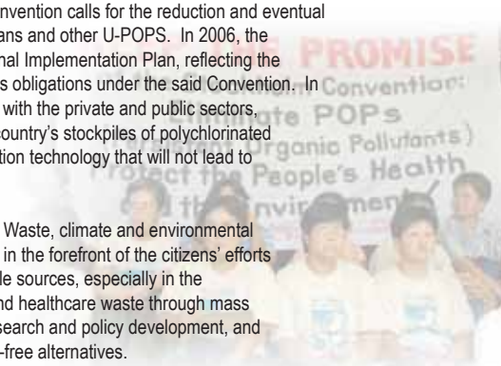
Those working in or living near dioxin-producing industries, incineration plants and hazardous waste sites are also at greater risk from chronic exposure.[1]

What are ongoing efforts to protect the public from these toxic chemicals?

The Philippines is the first country in the world to impose a national ban on incineration under the Clean Air Act of 1999, following concerns about dioxin pollution and related health hazards. This was strengthened by the Ecological Solid Waste Management Act of 2000, requiring "the adoption of the best environmental practices in ecological waste management excluding incineration." The Act also prohibits open burning and open dumping of waste.

In 2001, the Philippines signed the Stockholm Convention on POPs that was subsequently ratified by the Senate in 2004. The Convention calls for the reduction and eventual elimination where viable of dioxins, furans and other U-POPS. In 2006, the Philippines adopted the required National Implementation Plan, reflecting the country's commitment to comply with its obligations under the said Convention. In 2008, the government, in collaboration with the private and public sectors, initiated a project that will destroy the country's stockpiles of polychlorinated biphenyls (PCBs) using a non-combustion technology that will not lead to dioxin formation and release.

Public interest groups working on Zero Waste, climate and environmental justice, and chemical safety issues are in the forefront of the citizens' efforts to cut dioxin emissions from preventable sources, especially in the management of municipal, industrial and healthcare waste through mass information, education and training, research and policy development, and actual demonstration projects of POPs-free alternatives.



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