



ENVIRONMENTAL TOXINS

by Joar Opheim, CEO of Nordic Naturals

Environmental toxins include a large number of different substances. Some are designed to be toxic (e.g., pesticides, herbicides), while others are used for industrial purposes. Most toxins can be categorized into the following groups.

1. Dioxins and Furans

Dioxins and Furans are chlorinated chemicals that originate from various sources, including waste incinerators, waste water from paper industry, and by-products from general industry.

The term Dioxins include 75 polychlorinated dibenzo-p-dioxin (PCDD) and 135 polychlorinated dibenzo furan (PCDF) substances. Of these, 17 are toxic in very small amounts. Dioxins are often expressed as Toxic Equivalents (TEQ) in order to properly account for their different toxicities.

2. PCBs (Polychlorinated biphenyls)

PCBs were used for many years in transformers, capacitors and certain building materials. Although PCBs are not produced today, they are still found in the environment from the disposal of products containing PCBs.

3. HCB (hexachlorobenzene)

HCB is a by-product from chlorine gas and pesticide production.

4. Pesticides

Pesticides include DDT (insecticide), toxaphene, chlordane, lindane and HCH.

5. Heavy Metals

The most common heavy metals disposed of by industry are Mercury, Lead, Chromium, and Arsenic. Heavy metals are also found naturally in the environment.

Transfer To The Environment

Environmental toxins are released into air and water, which transport them around the globe. As toxins break down slowly (long half-life), they are incorporated into soil and water, and eventually into animal fat. In the oceans, small fish low on the food chain transfer toxins to larger predators, a process known as biomagnification.

Health risks from environmental toxins

Numerous studies have shown that exposure to high levels of environmental toxins can have negative effects on human health. The negative effects are mainly related to weakened immune systems, damaged reproductive organs, and the onset of various types of cancer. The magnitude of the effect depends on many factors, including toxin quantity, length and frequency of the exposure, and age.

Which foods contain environmental toxins?

Environmental toxins are mostly found in animal fats, including fish. Small amounts of these substances can be ingested from milk, meat, fish and oils. All humans have been exposed to environmental toxins at some level. One way of monitoring exposure is to measure the environmental toxin levels in breast milk. Recent studies have shown that the levels in breast milk are declining, suggesting that our exposure to dioxins is decreasing.

Fish oils and environmental toxins

Unrefined fish oils contain environmental toxins at some level. A key factor in minimizing dioxins in unrefined fish oil is to utilize small fish low on the food chain, feeding in relatively unpolluted waters. Leading edge refining techniques can reduce toxins in fish oils to virtually undetectable amounts.

A triple analytical testing process (TriGar™) is recommended, where the raw material, refined oil, and finished product tested to confirm the absence of environmental toxins in the oil.

Is fish oil healthy for all of us?

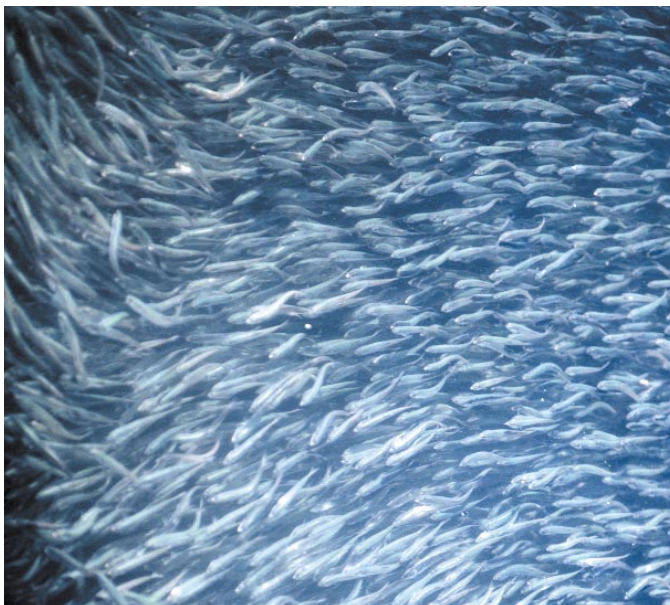
Taking pure fish oil may be one of the healthiest things we can do for our mind and body. Fish oil's many health benefits include cardiovascular health, mental health, and normal infant and early childhood development. Based on strong research, many institutions (including the American Heart Association and the White House) recommend that we increase our intake of the beneficial fatty acids EPA and DHA found in fish and fish oil. This recommendation is also supported by acknowledged medical professionals and researchers worldwide.

Fish versus Fish Oil

A study published in the journal, *Science* in December 2003 showed that farmed salmon contains higher levels of PCBs than wild salmon.

The study showed that one serving of wild salmon could have up to 0.3 micrograms of PCBs. As several government health agencies recommend eating fish up to 3 times per week, the accumulation of PCBs over time can be significant.

Nordic Naturals fish oils are tested three times (TriGar™) during manufacturing, where dioxins are undetected at 0.4 ppt (particles per trillion). While the equipment does not analyze amounts below 0.4 ppt, the analysis shows that one capsule of Nordic Naturals fish oils is at least 750 times purer than fish.



Nordic Naturals Manufacturing

Nordic Naturals manages the fish oil manufacturing from the ocean to the finished product. We recognize that fish oil production is complex and scientifically demanding, hence our focus is exclusively to develop ultra pure and fresh fish oil products.

1. Raw Material

It is crucial to start with a raw material that is naturally high in Omega 3 fatty acids and low on the food chain, in order to maximize oil quality and minimize the potential for toxins. Nordic Naturals uses exclusively 100% Arctic Cod for all its Cod Liver Oil supplements. Other products may contain seite and haddock oils, as they are legal substitutes for cod liver oil based on the EU (European Pharmacopia Standard), to minimize cost and supply issues.

Exclusively small fish from the herring family (sardines, anchovies, and mackerel) are used for our fish body oil products.

2. Manufacturing

Nordic Naturals manufacturing process includes proprietary filtration steps and leading edge molecular distillation technology. The distillation process utilizes ultra low residence time under low vacuum, effectively removing potential toxins and heavy metals while minimizing exposure to heat.

3. Testing

Nordic Naturals finished product has been tested 3 times for impurities (TriGar™), as raw material, refined oil and finished product.

Nordic Naturals test limits exceed all national and international pharmaceutical standards for purity and freshness.

While the European Pharmacopoeia standard for dioxins in fish oil is 2.0 ppt, Nordic Naturals is testing down to 0.4 ppt without detection.

The Norwegian Medicinal Standard for PCBs and HCBs is 3.0 ppt, while Nordic Naturals is testing down to 0.4 ppt without detection. There is no European Union (EU) or United States (US) standard for PCBs or HCBs in fish oil.

The EU standard for heavy metals in fish oil is 1000 ppb, while Nordic Naturals is testing down to 10 without detection.

4. Freshness

While freshness is not part of a dioxin discussion, it is important to note that oxidated oils cannot be absorbed by the human body. Oxidated oils produce free radicals. Oils with a peroxide value (meq/kg) above 10 may not be used for human consumption.

Nordic Naturals patented manufacturing process utilizes a nitrogen environment and high vacuum to minimize heat. As a result, Nordic Naturals fish oils average a freshness value of 1.07 (where less is better) compared to an industry average of 18.62 based on the analysis of 8 other fish oil products on the market.