environmental investigation agency

# BRIEFING

## Global chemical pollution and the hunting of whales, dolphins and porpoises

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# Introduction

The pollution of the world's environment presents an increasing threat to marine species and to humans. While international agreements are being negotiated to reduce or eliminate some of the more notorious chemicals, scientific research is showing that newer-generation chemicals may pose an even greater threat to the marine environment.

The widespread global contamination by chemicals that are now banned or restricted and their continued impact on wildlife is a stark warning that there is no quick fix to the problem of global pollution, and that immediate and sustained action is needed at national, regional and international levels.

Cetaceans, particularly toothed cetaceans (many whales and all dolphins and porpoises), are significantly at risk from pollution as they are long-lived and slow breeding animals in the upper levels of the food web. Cetacean species worldwide carry a variety of contaminants in their tissues, some in extremely high concentrations. These contaminants, present in the meat, blubber and organs, have serious associated health risks for the people who consume cetacean products.

As the body responsible for the conservation and management of cetaceans, the International Whaling Commission (IWC) has a clear mandate to address this issue. The IWC's work to study and address the effects of contaminants in cetaceans must be substantially increased in order to identify and implement mitigating measures to protect cetaceans and the people that consume cetacean products.

Clare Perry,
Cetacean Campaign Manager, EIA
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**Below: Dolphins often carry high levels of chemical pollutants.**

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The Environmental Investigation Agency (EIA) is an independent, international campaigning organisation committed to investigating and exposing environmental crime. Since 1984, EIA has used pioneering investigative techniques all over the world to expose the impact of environmental crime and to seek lasting solutions. EIA's aims are to:

- Stop illegal trade in endangered species
- Gain lasting protection for species under threat
- Protect the shared environment of man and wildlife

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# Some chemicals of concern

## Mercury

Mercury is highly toxic and persistent. It bioaccumulates in marine organisms and can be transformed into methylmercury by the action of bacteria. Methylmercury is an organic form which is, in turn, more toxic and more readily bioaccumulated into internal organs, particularly the liver and muscle tissues.[1] Mercury results from both natural and anthropogenic release into the environment, the bulk of which comes from the combustion of fossil fuels and waste incineration. Industrial processes and manufactured goods such as thermometers, dental fillings and fluorescent lights also make a significant contribution.[2]

High levels of mercury may present a significant contributory factor to cetacean mortality, particularly in animals weakened by disease and therefore less able to detoxify organic mercury as efficiently as healthy animals.[3] In a study of stranded dead porpoises off the coast of England and Wales, scientists found higher levels of methylmercury in the livers of those that had died from infectious diseases than in those that had died from physical trauma.[4] Studies have also linked liver abnormalities in bottlenose dolphins with chronic accumulation of mercury.[5]

Methylmercury exposure in humans can cause irreversible neurological damage. Symptoms can include impaired vision, speech and hearing, loss of coordination, reproductive disorders, paralysis and cerebral palsy. Severe cases may result in coma or death.[6-8] The human foetus has an increased susceptibility to methylmercury toxicity, as it readily crosses the placenta and even small increases in maternal exposure have been associated with increased neo-natal neurological impairment.[9] A seven year study on 917 children born in the Faroe Islands found significant delays in neurological development in children whose mothers who had been exposed to methylmercury during pregnancy. The study also detected widespread effects on brain function at exposure levels that are currently considered safe.[10] Follow up studies that were conducted over the subsequent seven years were reported in 2004 and indicated that the harmful effects of pre-natal exposure to methylmercury may be irreversible. The study suggested that post-natal exposure to methylmercury can also cause children to suffer developmental problems, and that disruption is exacerbated by continued consumption of mercury-containing products.[11]

## PCBs and pesticides

Organochlorines such as PCBs (polychlorinated biphenyls) and many pesticides are man-made chemicals which are extremely persistent, tending to bioaccumulate in fatty tissues. Used in electrical equipment and the manufacture of many materials since the 1930's, PCBs have become widely distributed in the marine environment,[12] and can reach concentrations of up to 70 000 times higher in marine mammals than the background environmental levels.[13] DDT has been widely used as a pesticide since 1939, and although its use was banned in many Western countries by the mid 1970s, it is still used in some developing countries for pest and disease control.[14]

Organochlorines can cause immuno-suppression, endocrine disruption, reproductive failure and developmental problems, as well as cancer.[15,16] Beluga whales in the St Laurence estuary have extremely high contaminant loads due to exposure to industrial pollutants including organochlorines and the population suffers from a high rate of cancer, accounting for 40% of reported cancer cases in cetaceans worldwide.[17]

Exposure to PCBs in humans has been found to increase rates of cancers, disrupt functioning of the immune and endocrine systems and to cause irreversible neurological damage to human foetuses.[18-21]

## Brominated flame retardants

Levels of newer-generation chemicals such as polybrominated flame retardants are generally rising in the environment and there is a current trend of increasing global production for some of these chemicals.[22] The toxic properties of flame retardant chemicals are similar to PCBs and are known to bioaccumulate and cause thyroid hormone disruption, neurodevelop-mental defects and in some cases cancer in animals. Concentrations of these chemicals in the blubber of harbour seals and beluga whales in Canada have increased significantly over the last decade[23] and high levels have also been found in long-finned pilot whales which are hunted in the Faroe Islands.[24] Little is known about the toxicological effects of these chemicals on humans.[25]

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***"Japan's advice ... ignores many species that are available on the market which typically carry very high pollutant levels".***

## Global action

The Convention on Long-range Transboundary Air Pollution (LRTAP) was the first international agreement to recognise the environmental and health problems caused by the flow of air pollutants across borders. It was signed in 1979 and now has 43 Parties among the 55 UN ECE (Economic Commission for Europe) member states. Protocols on persistent organic pollutants (POPs) and heavy metals were adopted and signed in June 1998.[27]

In 2003 the Governing Council of the United Nations Environment Programme (UNEP) concluded that there was "…sufficient evidence of significant global adverse impacts from mercury to warrant further international action to reduce the risks to humans and wildlife from the release of mercury to the environment." It further stated that all countries should identify exposed populations and ecosystems, and has initiated a series of regional awareness raising workshops under a new UNEP Mercury Programme.[28] Consideration will be given to the prospect of a global protocol on mercury (as well as other persistent heavy metals such as cadmium and lead) when the Council meets in 2005.[29]

On 17th May 2004, the Stockholm Convention on POPs entered into force after France became the 50th nation to ratify. Japan, Norway and Iceland are all Parties to the Convention. Twelve classes of chemicals, including PCBs, are initially targeted for global phase-out, and the addition of new chemicals will be considered next year.[30]

## Arctic Issues

A great deal of attention has focused on the state of the Arctic environment with respect to pollution. In 1991, the Arctic Monitoring and Assessment Programme (AMAP) was established to advise the governments of the eight Arctic countries on matters relating to threats to the Arctic region from pollution and associated issues, including human health. The Arctic is contaminated by POPs, metals and radionuclides, which biomagnify in Arctic food webs. This results in the contamination of traditional foods in the Arctic, particularly marine mammals and birds, at levels which are often in excess of contaminant levels in mid-latitudes. The highest exposure to some POPs and mercury are faced by Inuit populations in Greenland and Canada. Although AMAP recommends that Arctic people continue to eat traditional foods, it also advises the development of dietary advice for girls, women of child-bearing age and pregnant women to promote the use of less contaminated foods.[31]

## National health warnings

Japan, Norway, Iceland and the Faroe Islands have all issued pollution-related health warnings specifically regarding the consumption of whale products. The Faroes' advice recognises the threat to all consumers, while the advice from Japan, Norway and Iceland is directed only to pregnant and breastfeeding women. Japan's advice is woefully inadequate. It ignores many species that are available on the market which typically carry very high pollutant burdens. For example, Dall's porpoises, of which as many as 18 000 are caught in Japan's coastal waters each year, are not included.[32]

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### Japan

Following an investigation in 2001, Japan's Ministry of Health, Labour and Welfare (JMHLW) released public health advice regarding the consumption of whale and dolphin products for the first time in June 2003. Rather than implement a thorough investigation to determine consumption levels in different regions, the government analysis assumed the annual consumption of cetacean products was evenly spread throughout the entire Japanese population, although it is common knowledge that many Japanese people rarely or never eat whale products. Based on this error it was thus determined that there is little or no risk to the Japanese population.[33]

The specific recommendations are that those who are pregnant, or think they may be pregnant, should limit consumption of bottlenose dolphin to no more than a single portion of 60 to 80g in a two month period and Baird's beaked whale, short-finned pilot whale, sperm whale and shark (muscle) to no more than a single portion of 60 to 80g in a week.[34]




## Norway

Following chemical analyses of whales caught in the 2003 commercial hunt of North Atlantic minke whales, Norway's food authority (SNT) recommended that pregnant and breastfeeding women refrain from eating whale meat as it may contain high doses of mercury.[35]



## Iceland

On 13 October 2003, Iceland's Directorate of Health advised pregnant and breastfeeding women to limit their consumption of minke whale meat to twice a week or less, due to high levels of mercury and PCBs.[36]



## Faroes

Around 1000-1500 long-finned pilot whales and other dolphins are killed each year in the Faroe Islands and distributed around the island for human consumption. Whale meat consumed in the Faroes typically contains mercury at levels of around 1.6ppm (parts per million) and blubber of pilot whales contains high levels of PCBs.[37]

In 1989 the health authorities recommended that pilot whales should not be eaten for dinner more than once every two weeks, that no more than 100-200g blubber should be eaten on a monthly basis and that pregnant women should eat "much less" of these items.[38] The recommendations were revised by the government in 1998: Adults should refrain from having more than one or two meals of whale meat or blubber per month. To protect unborn children, girls and women should not eat blubber at all until they have given birth to their children. Women who intend to get pregnant within a three month period, women who are pregnant, or those who are breastfeeding, should abstain from eating pilot whale meat. Livers and kidneys of whale should not be eaten at all.

The reduction in consumption of pilot whale in response to the initial health advisory has resulted in a considerable decline in levels of mercury in Faroese adults over the last nine years. Similar declines have not been seen in PCB levels, which is attributed to the greater persistence of these chemicals.[39]

# Polluted cetacean products in Japan

The JMHLW sets provisional regulatory limits for seafood in the Food Sanitation Law at 0.4ppm mercury, 0.3ppm methylmercury and 0.5ppm PCBs.[40] The meat of toothed cetaceans sold in Japan almost always exceeds the provisions for mercury and methylmercury, while the blubber products typically exceed the PCBs limit. As dolphins and porpoises are often sold falsely as 'whale', consumers are unable to determine which species they are purchasing.[41]

The Government of Japan also sets a provisional tolerable weekly intake (PTWI) of 170 micrograms methylmercury in a 50kg person per week.[42] Chemical analysis of bottlenose dolphin meat purchased in Okayama in 2001 by EIA revealed a methylmercury level of 10.88ppm. Consumption of just 16g of this product would exceed one 50kg person's 'safe' weekly intake limit for methylmercury. More alarming is the fact that the Japanese PTWI is more than two times higher than the level recently recommended by the Joint Food and Agricultural Organisation (FAO)/World Health Organisation (WHO) Expert Committee on Food Additives.[43] It is clear that the only realistic way to protect consumer health in Japan is to ban outright the sale of all toothed cetacean products.

## EIA investigations

Independent analysis of 58 products purchased by EIA from Japanese supermarkets during the period March 2001 to February 2003 detected, on average, levels of mercury that were more than five times higher than the maximum limit set by Japanese law. One sample had a concentration of mercury more than 17 times higher than the legal limit.[44]

A further analysis of 46 products purchased mainly in Fukuoka in October 2003 revealed average mercury concentrations of 0.97ppm and average methylmercury levels of 0.48ppm. More than half of the products exceeded the Japanese permitted levels for mercury and 46% of the products exceeded the methylmercury limit of 0.3ppm.

In February 2004, a range of products was purchased through the internet from the Japanese company Ishinomaki Suisan and analysed in Japan for contaminants. Five whale products labelled as minke had relatively low levels of pollutants. However, three samples of canned whale yamatoni (stew) contained an average of 1.10ppm mercury and 0.67ppm methylmercury – some 2.75 times higher than government limits for mercury and more than twice as high as the limit for methylmercury. A previous analysis of the same canned product purchased in 2003 in Shizuoka contained 6.90ppm mercury and 3.10ppm methylmercury. The product is advertised on the manufacturer's website with the following text: "*Whale meat is a very precious source of protein for people who have allergies. It has many nutrients which keep body and mind healthy – so make sure you eat plenty of it!*"[45]

Another product from the same company, 'whale curry', one of the company's top recommendations, also contained high levels of mercury (1.51ppm mercury and 1.21ppm methylmercury). Ishinomaki Suisan products are distributed throughout Japan by large wholesalers and are found in major supermarkets, such as Ito-Yokado and its subsidiary stores, York-Benimaru.

According to the Government of Japan's Institute of Cetacean Research (ICR) report on Japan's North Pacific 'scientific' whaling, the problem of contaminants is not just restricted to toothed small cetaceans. The average PCB level in the blubber of 17 North Pacific minke whales was 1.8ppm, more than three times higher than Japan's provisional limit of 0.5ppm. Sperm whales revealed similar levels of PCB polluted blubber, but also had high levels of mercury in their muscle; every animal tested contained more than double the provisional limit of 0.4ppm.[46] The mercury level in the sperm whales was high enough for the Fisheries Agency of Japan to prevent the distribution of sperm whales in the market. However in August 2003, a Japanese newspaper reported that the ICR was now considering selling the sperm whale meat.[47]

The Government of Japan continues to ignore the fact that certain Japanese communities are at risk of serious health effects due to the consumption of cetacean products. Many of these communities are in coastal regions, and are likely to consume high levels of other seafood in addition to whales and dolphins, adding to the overall burden of mercury and other toxins.


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**Right:**
**This canned whale stew purchased in Shizuoka contained 6.9ppm mercury, more than 17 times higher than the Japanese government limits.**

# Recommendations

- All countries where cetacean products are consumed should institute comprehensive studies to determine consumption levels of, and pollution levels in, all cetacean products.
- The Government of Japan must prohibit the commercial distribution and sale of toothed cetacean products.
- The Government of Japan must issue health warnings to alert the Japanese public, especially those most vulnerable – women who are pregnant, nursing or plan to become pregnant, and children – to refrain from consuming whale, dolphin or porpoise products.
- Commercial retail outlets in Japan should cease selling cetacean products in their stores.
- IWC member governments should fully fund Pollution 2000+ as an initial step in the development of a long-term programme of non-lethal, interdisciplinary research to monitor and mitigate the impact of chemical pollutants on cetaceans.
- The IWC should promote bilateral cooperation and exchange of information with international initiatives that address pollution issues.
- All member countries should ratify the Stockholm Convention on Persistent Organic Pollutants (POPs) and the protocols on POPs and heavy metals in the UNECE Convention on Long-range Transboundary Air Pollution (LRTAP), and support the UNEP Mercury Programme.
- All member governments should strengthen national efforts to control the production, use, and emissions to the environment of POPs and heavy metals. IWC member nations are urged to support a prohibition on the production and sale of mercury and products containing mercury.

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EIA's chemical analyses were carried out at the Daiichi College of Pharmaceutical Sciences in Fukuoka, Japan.


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**EIA UK**
**62-63 Upper Street**
**London N1 0NY**
**United Kingdom**
**ukinfo@eia-international.org**
**Tel +44 (0)20 7354 7960**
**Fax +44 (0)20 7354 7961**

**EIA US**
**P.O. Box 53343**
**Washington DC 20009**
**United States of America**
**usinfo@eia-international.org**
**Tel +1 202 483 6621**
**Fax +1 202 986 8626**

**www.eia-international.org**