

MERCURY RISING

The sale of polluted whale, dolphin
and porpoise meat in Japan



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- Protect the shared environment of man and wildlife

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Right: Whale meat in Tsukiji fish Market, Japan 2001



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Left: Dall's porpoise, hunted in their thousands around the coast of Japan.

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Introduction

In recent months, the United Nations has agreed that there is an urgent need to reduce global levels of mercury in order to protect the environment and human health, and that countries should take national action to identify and protect exposed populations. Whilst supporting this call to action, the Government of Japan has failed to take domestic action to protect Japanese consumers from severe pollution of seafood products, despite the growing concern among scientists, industry and the public. This report releases overwhelming evidence that contaminated cetacean (whale, dolphin and porpoise) products are widely available in Japan's retail outlets, and further, that the Government of Japan has been aware of this very real health risk for more than twenty years.

Each year Japan allows more than 22 000 small whales, dolphins and porpoises (small cetaceans) to be legally killed around the coast of Japan in unsustainable and unregulated hunts. In addition, Japan hunts four great whale species, killing over 600 whales annually, despite the moratorium on commercial whaling that was implemented in 1986.

Around one-third of products labelled as 'whale' found on Japanese supermarket shelves are likely to be dolphin, porpoise or small whale from the coastal hunts. These toothed cetaceans are almost inevitably highly contaminated with mercury and other pollutants, that they bioaccumulate from their diet which includes fish and squid. The widespread sale of Dall's porpoise

products is of particular concern, since this species is caught in high numbers and widely mislabelled and distributed as 'whalemeat'.

The effects of mercury on human health are well documented. Minamata Bay in southern Japan was the scene of the first major mercury poisoning event to receive world-wide attention. In the aftermath of the Minamata tragedy, which affected tens of thousands of Japanese people and remains unresolved to this day, one might expect the Government of Japan to have immediately prohibited the sale of food products contaminated with mercury. However, although some 'safety' levels for seafood products have been established, these levels have been largely ignored as far as cetacean products are concerned, and contaminated whale, dolphin and porpoise products are still widely available to the Japanese public. Although the focus of this report is mercury contamination, other pollutants also accumulate in cetacean tissues, sometimes at levels above recommended safe limits even where mercury limits are not exceeded.

In its desperation to expand the commercial whaling industry by vigorously promoting whale meat as a healthy food, the Government of Japan has not only blatantly misled the Japanese public, but has completely failed to protect people from the potentially serious effects of mercury intake that can result from the consumption of whale, dolphin or porpoise products.

Clare Perry, Senior Campaigner
June 2003

The Government of Japan has completely failed to protect people from the potentially serious effects of mercury



Global mercury levels in the environment have tripled since the industrial age as a direct result of anthropogenic releases

Mercury in the environment

Mercury, a highly toxic and persistent heavy metal, exists in the environment as a result of both natural and anthropogenic (human caused) releases.¹ Current estimates of both anthropogenic and natural releases range from 4000 to 7550 tonnes per year. The combustion of fossil fuels and incineration of waste materials accounts for around 70% of quantified atmospheric emissions.² A recent study suggests that human related activities have increased overall levels of mercury in the atmosphere roughly three-fold.³

Natural discharges of mercury include volcanoes, evaporation from soil and water surfaces, degradation of minerals and forest fires. Significant sources of anthropogenic releases include cement production, mining of gold, zinc, iron and steel, the manufacture of thermometers and electrical switches, use of dental amalgam fillings and releases from waste treatment.⁴ The single largest source of emissions worldwide, however, is coal-fired power plants.⁵ With coal consumption expected to double in the next two decades, it is predicted that mercury releases into the environment will dramatically increase in the future.^{6,7}

Top right: Forest fires are a natural source of mercury.

Below left: Mercury cycling in the environment.

Below right: Coal-fired power plants are the single largest source of mercury emissions worldwide.

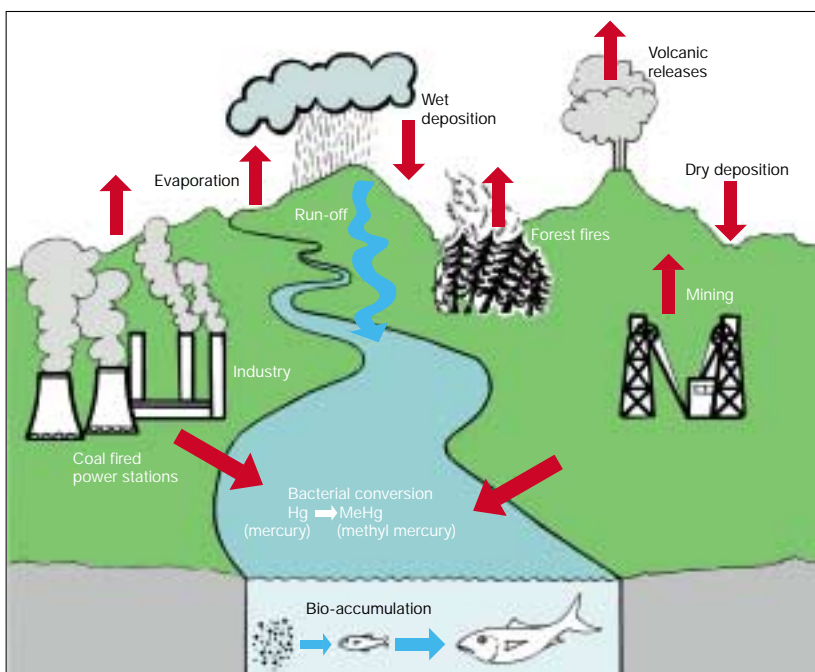
Mercury cycles in the marine environment

Approximately 98% of an estimated 5000 tonnes of mercury in the atmosphere is in elemental form.⁸ Mercury can travel airborne



© Dave Currey/EIA

for up to one and a half years on wind currents before accumulating in bodies of water. Bacteria in water cause mercury to transform to its organic and more toxic state – methylmercury – which is then accumulated by living organisms. Mercury and methylmercury concentrations increase during the life of an organism (bioaccumulation) and also increase up the food chain (biomagnification). Fish appear to bind



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methylmercury particularly strongly, resulting in selective enrichment of methylmercury at each successive trophic level. Levels of mercury and methylmercury in large predatory fish and marine mammals can be thousands or millions of times greater than those in the surrounding water.^{9,10}

The ease with which mercury can be transported means that no part of the earth is free from the possibility of contamination. Even remote areas free of mercury related human activities such as the Arctic are contaminated.¹¹ Due to the slow cycling of mercury between the atmosphere and the ocean, mercury from anthropogenic emissions continues to cycle in the environment long after direct releases cease.¹²

Effects of mercury on cetaceans

A high proportion of methylmercury can be found in the muscle tissue of marine mammals and it readily accumulates in internal organs with the liver acting as the main repository.¹³ Due to their position at the top of the food chain, toothed cetaceans tend to accumulate higher pollutant loads than baleen whales.¹⁴

Cetaceans have evolved a natural system of mercury detoxification through the binding of inorganic mercury to selenium in the liver.¹⁵ However, it is unclear whether this defence mechanism is able to cope with the greatly increased levels of mercury due to anthropogenic emissions. In a study of stranded dead porpoises on the coast of England and Wales, scientists found higher levels of methylmercury in the livers of those that had died from infectious disease than those that had died of physical trauma.¹⁶ The International Whaling Commission (IWC) has recognised the threat that pollutants pose to cetaceans and has developed a long-term multi-national research programme to study the effects of pollutants on cetaceans.¹⁷

Mercury and human health

There is now world-wide concern over the effects of mercury exposure on human health. Methylmercury poses a significant risk since it is absorbed and accumulated to a greater extent than other forms of mercury. The general population is exposed to methylmercury primarily through diet whereas inorganic mercury contamination depends on chronic exposure (e.g. daily contact through exposure at work).¹⁸



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Methylmercury poisoning can cause irreversible neurological damage. Symptoms can include impaired vision, speech and hearing, loss of coordination, reproductive disorders, paralysis and cerebral palsy. Severe cases can result in coma or death.¹⁹⁻²¹

The human foetus has an increased susceptibility to methylmercury toxicity, and the damage may not be apparent until the nervous system has reached a sufficient degree of maturity. Methylmercury readily crosses the placenta and even small increases in maternal exposure have been associated with increased neonatal neurological impairment.²²

Above: Cetaceans feeding at the top of the food chain accumulate high pollutant loads.



Minamata disease

One of the most significant cases of human exposure to mercury occurred in southern Japan. From 1932 to 1968, the Chisso Corporation pumped tonnes of mercury compounds into Minamata Bay. More than 900 people died, babies were born with severe physical abnormalities and many thousands of people suffered neurological symptoms. After years of alleged cover-ups and suppression of evidence, it was established that methylmercury had led to neurological illness in thousands of the local population, many of whom were dependent on local fishing for their livelihood and sustenance. Locally caught fish showed mercury levels up to 100 times higher than the current safety limits set by the Japanese government. A series of lawsuits has resulted in some payments of compensation by the Chisso Corporation. In 1982 the Japanese government, Kumamoto prefectural government and Chisso Corporation were sued by a group of Minamata disease victims and found guilty of failing to prevent the spread of the disease. The national

and prefectural governments appealed the case to the Japanese Supreme Court in 2001 and the case is not yet resolved.^{23,24}

The Faroese pilot whale hunt

The Faroe Islands have become a focal point for studies of prolonged exposure to mercury in the environment through the consumption of contaminated pilot whale meat. Around 1000-1500 short-finned pilot whales and other dolphins are killed each year and the meat distributed around the island. Studies have shown that an evenly distributed catch would make the average Faroese daily intake of mercury exceed the allowable level recommended by the World Health Organisation (WHO).²⁵ A seven year study on 917 children born in the Faroe Islands found significant delays in neurological development in children born to 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.²⁶

Right: More than 11 000 pilot whales have been killed and distributed for food in the Faroe Islands since 1990.



© Richard Smith

Preventative actions

In 2001, the United Nations Environment Programme (UNEP) and the Inter-Organisation Programme for the Sound Management of Chemicals (IOMC) jointly undertook a two-year Global Mercury Assessment, which was presented to the UNEP Governing Council in February 2003. The report concluded that

mercury had caused "... a variety of documented, significant adverse impacts on human health and the environment throughout the world."²⁷

The Governing Council (of which Japan is a member) accepted the key findings of the assessment in Decision 22/4V on 7th February 2003, agreeing that "... there is sufficient evidence of significant global adverse impacts



Left: The US government has released public warnings over the consumption of tuna and other predatory fish because of high levels of mercury.

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from mercury and its compounds to warrant further international action to reduce the risks to human health and the environment . . . ”. ²⁸ It further stated that “. . . national, regional and global actions, both immediate and long-term, should be initiated as soon as possible to protect human health and the environment through measures that will reduce or eliminate releases of mercury and its compounds to the environment.” The Council also urged all countries to identify exposed populations and ecosystems. ²⁹ Japan also indicated its support for global measures to reduce mercury pollution at the 54th meeting of the IWC in May 2002. ³⁰

Health advice and guidelines

The threat posed by consumption of large predatory fish species is widely recognised. In the United Kingdom (UK), the Food Standards Agency has advised pregnant women, women who intend to become pregnant, infants and children to avoid eating any shark, swordfish and marlin. ³¹ The US Food and Drug Administration (FDA) has also released public warnings over the consumption of shark, tile fish, king mackerel, tuna and swordfish, which carry average mercury levels of between 0.76 and 1.45ppm. ³² Table 1 outlines various guidelines for mercury and methylmercury in seafood.

Table 1: Examples of maximum allowed or recommended levels of mercury (Hg) and methylmercury (MeHg) in fish. ³³

Country/ Organisation	Food type	Max allowed level of mercury (Hg)	Max allowed levels of methylmercury (MeHg)
Australia	Predatory fish Other fish	1.0 ppm 0.5 ppm	
Canada	Fish (with exceptions)	0.5 ppm	
	Limit for those consuming large amounts of fish	0.2 ppm	
Japan	Fish and Shellfish (with exceptions)	0.4 ppm	0.3 ppm
Philippines	Predatory fish Other fish		1 ppm 0.5 ppm
Thailand	Seafood	0.5 ppm	
UK	Fish	0.3 ppm	
US	Fish, shellfish and other aquatic animals		0.5 - 1 ppm
WHO/FAO	Predatory fish Other fish		1 ppm 0.5 ppm



Right: Pilot whales often have high mercury levels, leading the Faroe Islands Health Authority to issue advice limiting consumption.

There have been few public warnings about the dangers involved in consuming cetaceans, which are often far more contaminated with mercury than are fish. In 1998 the Faroe Island Health Authority issued specific advice to the public regarding the consumption of pilot whale: adults were advised to limit meat and blubber to one or two meals per month; women planning to have children were advised not to eat blubber; pregnant or nursing women and those within three months of pregnancy were advised to avoid meat; and liver and kidney products should not be eaten at all.³⁴

The Government of Japan has issued no formal public advice on the consumption of whale products. The Japanese Ministry of Health, Labour and Welfare (JMHW) sets provisional regulatory values in seafood of 0.4ppm for mercury and 0.3ppm for methylmercury in the Food Sanitation Law, although these do not apply to tuna fish and swordfish and it is unclear if they apply to cetacean products.³⁵ The JMHW also sets a Provisional Tolerable Weekly Intake (PTWI) for methylmercury of 170µg per person per week. Research has concluded that even existing safe limits may not offer enough protection for people who frequently eat seafood meals.³⁶

Food Sanitation Law of Japan

(Law no.233, December 24, 1947, last amended December 2002)

Article 12

"No person shall falsely declare or exaggeratedly label or advertise any food, additive, apparatus, or container/package in a manner which may injure public health."

Article 4

"No person shall sell, or handle, manufacture, import, process, use prepare, store or display with intent to sell any food or additive given below:

(2) Those which contain or bear toxic or injurious substances; provided, however that this provision does not apply to the cases which are prescribed by the Minister of Health, Labour and Welfare as not injurious to human health."

Japan sets quotas for more than 22 000 small cetaceans each year



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Japan's cetacean hunting

After the IWC implemented the global moratorium on commercial whaling in 1986, Japan continued whaling under the guise of scientific research, initially targeting minke whales in the Antarctic. In 1994 this 'research' was expanded to North Pacific minke whales, and Japan has since added Bryde's, sei and sperm whales to the catch.³⁷ Thousands of smaller whales, dolphins and porpoises (collectively known as small cetaceans) are also hunted in Japan's coastal waters. The Government of Japan sets quotas for more than 22 000 small cetaceans each year, even though some of the targeted populations are rare or endangered, and others are threatened or in decline from overhunting.³⁸ More than 400 000 small cetaceans have been killed by Japanese hunters in the last two decades.³⁹

The Dall's porpoise hand harpoon hunt in northern Japan is the largest directed cetacean catch in the world, with an annual quota of 17 700 animals set by the Government of Japan.⁴⁰ This hunt has been repeatedly criticised by the IWC and its Scientific Committee since 1990.⁴¹

The Japanese government has spent millions of dollars attempting to boost the demand for, and consumption of, whale products. Whale is



marketed as a 'healthy' food, and distributed for school lunches, public benefits and even for medical benefit, in addition to direct commercial use.⁴² Most Japanese people are unaware that dolphins and porpoises are killed in large numbers, and that the meat and blubber are sold alongside meat from whales caught in 'scientific' hunts. Small cetaceans were historically consumed in only a few local areas, but when the 1986 moratorium reduced the supply of large whales the catches of Dall's porpoise dramatically increased to supplement the whale catch. Dall's porpoise products are now often sold as 'whale'.⁴³

The estimated volume of small cetacean products produced from coastal whaling, drive and hand harpoon hunts was 1715 tonnes in 2000.⁴⁴ Japan's scientific whaling has been supplying 1000-2000 tonnes of product from minke whales annually over the last decade,⁴⁵ and this increased to just under 2400 tonnes in 2000 with the addition of Bryde's whales to the catch.⁴⁶ The addition of sei whales to the catch in 2002 is expected to increase the amount of meat and blubber produced by around 580 tonnes.⁴⁷ Although it is not known if all small cetacean products are sold for human consumption, it is clear that they constitute a substantial proportion of the 'whale' market in Japan today.

Table 2: Reported catches of cetaceans by Japan in 2001.^{48,49}

Species	Number reported killed in 2001
Southern minke whale (2000/2001 season)	440
Northern minke whale	100
Bryde's whale	50
Sperm whale	8
Dall's porpoise	16 650
Striped dolphin	484
Spotted dolphin	10
Bottlenose dolphin	247
Risso's dolphin	474
Short-finned pilot whale (northern form)	47
(southern form)	342
False killer whale	26
Baird's beaked whale	62
TOTAL	18 940



Above: The Government of Japan sets catch quotas of 17 700 Dall's porpoises every year.



Above: Hundreds of pilot whales are killed every year in Japan's coastal waters.



Above: The Dall's porpoise hunt has been repeatedly criticised by the IWC and its Scientific Committee.

© Pierre Gleizes/EIA

© Pierre Gleizes/EIA



Mercury levels in cetacean products on sale in Japan

Due to high levels of industrial and agricultural activity in Japan, the adjacent coastal areas and local marine food chains are heavily contaminated with pollutants.⁵⁰ Cetacean products commonly found in Japan's retail outlets often carry levels of mercury and methylmercury far higher than the permitted levels set by the Government of Japan.

Sixty-one whale meat products purchased by Japanese researchers from retail outlets across Japan in 1999 were analysed by an international group of scientists for species and chemical composition. The research revealed a wide range of baleen and toothed cetaceans, including minke whale, Bryde's whale, Dall's porpoise, striped dolphin, bottlenose dolphin, Risso's dolphin, pilot whale, Baird's beaked whale and sperm whale. The average total

Below: Map of Japan



mercury level was 4.17ppm, more than 10 times the allowable level under Japan's Food Sanitation Law.⁵¹ A further study concentrating on internal organ products found levels of mercury in one sample of dolphin liver to be more than 5000 times greater than levels allowed under Japan's Food Sanitation Law. The consumption of just 0.15g of that product would have exceeded the PTWI for a 60kg person, suggesting that a consumer could suffer acute mercury poisoning after just one meal.⁵² The results were said to shock even veteran researchers from the National Institute for Minamata Disease.⁵³

Concerns over pollution levels led the Japanese Ministry of Health, Labour and Welfare to carry out its own cetacean product surveys, the results of which were released in 2002. Whilst finding similar levels of mercury and methylmercury in cetacean products, the Ministry concluded that there was no serious risk to human health, based on their assessment of consumption patterns in Japan.⁵⁴ Their conclusions, however, were based on the ludicrous assumption that cetacean meat and blubber are consumed in equal quantities throughout the entire population of Japan. By dividing the total volume of cetacean product by the total population in Japan, the Ministry calculated an annual consumption of around 30g of cetacean meat or blubber per person. If one considers that just one meal would probably constitute around 100g of meat, it is clear that the Ministry's assumption of 30g per person per year is completely unrealistic. As most Japanese people are aware, many people in Japan never eat cetacean products, whilst some regularly eat whale and/or dolphin meals. According to an Asahi Shimbun survey in 2002, 41% of those aged 30 to 34 and 53% of people aged 20 to 24 said they did not eat whale meat. Yet whilst consumption is generally more prevalent among the older generation, a third of people aged 60 or over said they never consumed whale.⁵⁵

EIA's surveys of leading supermarket chains in Japan have indicated that small cetacean products are commonly found on sale in the Kyushu, Kansai and Tohoku regions of Japan.⁵⁶ People from coastal villages and towns with a tradition of whaling are likely to consume a higher than average amount of cetacean products. For example, residents of Ayukawa generally ate whalemeat every day prior to the IWC moratorium on commercial whaling, and still have regular whale meals. Based on consumption patterns today (two to three meals



Table 3: Pollutant levels in cetacean products purchased in Japan by EIA.

Values in red indicate those in excess of Japan's permitted levels according to the Food Sanitation Law (Hg: 0.4ppm, MeHg: 0.3ppm)

Date purchased	Cetacean product on sale	Species according to DNA analysis	Sampling location	Weight (grams)	Price (yen)	Total Hg (ppm, whole basis)	Me-Hg (ppm, whole basis)
Apr-01	Antarctic whale for one/red meat	Antarctic minke	Miyagi	N/K	480	0.11	0.02
	Dolphin from Sanriku/red meat	Mixed dolphin product	Shizuoka	321	347	1.51	0.64
	Blubber from small whale	N/K	Shizuoka	80	N/K	0.43	0.20
	Salted whale meat	Pilot whale	Wakayama	90	342	9.38	4.16
	Whale internal organs	N/K	Wakayama	166	428	11.86	8.96
	Dolphin from Maehama/meat with skin	Delphinid	Wakayama	130	335	2.17	2.02
	Tin of grilled whale meat	SH minke whale	Osaka	55	N/K	0.05	0.01
	Raw whale meat from N Pacific	Bryde's whale	Osaka	92	717	0.09	0.02
	Whale meat for sashimi	Dall's porpoise	Osaka	N/K	500	1.24	1.22
	Whale meat for sashimi	SH minke whale	Osaka	169	1318	0.04	0.01
	Antarctic minke whale skin	N/K	Hyogo	65	598	0.02	0.01
	Raw whale from Iwate/red meat	Delphinid	Okayama	79	235	2.28	2.25
	Raw whale from Wakayama/red meat	Delphinid	Okayama	121	360	2.24	2.16
	Raw whale from Iwate/red meat	Mixed dolphin product	Okayama	422	413	1.13	0.98
	Raw whale from Wakayama/red meat	Bottlenose dolphin	Okayama	135	402	22.50	10.88
	Raw whale from Iwate/red meat	Mixed dolphin product	Okayama	109	248	1.34	1.08
	Salted whale blubber/skin	N/K	Wakayama	170	398	0.60	0.02
	Boiled blubber (sarashi)	Delphinid	Wakayama	70	398	0.65	0.06
	Meat, blubber, white skin	Delphinid	Wakayama	223	575	1.54	1.26
	Cooked meat (honehagi)	Pilot whale	Wakayama	150	398	7.49	4.48
	Internal organs	Risso's dolphin	Wakayama	117	325	4.93	1.32
	Red meat	Delphinid	Wakayama	129	513	2.19	1.72
	Red meat for sashimi	Antarctic minke	Iwate	128	870	0.07	0.02
Minke whale meat	Antarctic minke	Tokyo	N/K	N/K	0.04	0.01	
Oct-01	Red meat/skin- dolphin	STD dolphin	Wakayama	100	129	1.90	1.76
	Red meat, Pacific whale	Porpoise	Osaka	100	698	0.69	0.51
	Whale blubber, dried & salted	N/K	Aichi	100	438	0.49	0.34
	Dolphin meat & blubber	STD dolphin	Shizuoka	100	168	0.98	0.70
May-02	Whale blubber, dried & salted	SH minke whale	Yokohama	N/K	398	0.09	0.03
	Red meat from North Pacific	N/K	Nagasaki	none	480	0.872	0.582
	Pilot whale	N/K	Nagasaki	80	398	0.810	0.596
	Salted meat minke whale	N/K	Nagasaki	90	398	0.020	0.010
	Pilot whale	N/K	Saga	80	398	0.482	0.212
	Salted skin Bryde's whale	N/K	Saga	200	780	0.082	0.055
	Boiled skin from Antarctic	N/K	Saga	100	398	0.277	0.138
	Salted skin Antarctic	N/K	Nagasaki	none	480	0.027	0.011
Feb-03	Baird's beaked whale	N/K	Hokkaido	N/K	N/K	0.871	0.389
	Fresh meat	N/K	Iwate	N/K	398	0.29	0.07
	Porpoise meat (head)	N/K	Iwate	N/K	598	6.93	1.88
	Whale sausage	N/K	Miyagi	200	468	0.82	0.32
	Whale meat (salted)	N/K	Miyagi	200	1000	1.78	0.40
	Whale bacon	N/K	Miyagi	N/K	698	3.89	1.07
	Whale blubber	N/K	Miyagi	N/K	2000	0.33	0.18
	Red meat (minke whale)	N/K	Miyagi	400	2700	0.79	0.29
	Cooked meat (minke whale)	N/K	Miyagi	100	1000	0.33	0.11
	Soup of whale meat	N/K	Miyagi	250	350	0.13	0.07
	Porpoise meat (from Otsuchi)	N/K	Iwate	N/K	580	2.17	1.69
	Porpoise meat (from Iwate)	N/K	Shizuoka	262	335	3.32	2.45
	Porpoise meat	N/K	Shizuoka	N/K	450	2.79	2.48
	Porpoise meat	N/K	Shizuoka	N/K	800	3.15	1.12
	Whale meat	N/K	Shizuoka	N/K	850	0.14	0.11
	Red meat (canned, seasoned)	N/K	Iwate	N/K	348	0.21	0.08
	Red meat (baleen whale, canned, seasoned)	N/K	Miyagi	N/K	448	0.22	0.07
	Red meat (whale sukiyaki from Antarctic)	N/K	Iwate	N/K	298	0.20	0.14
	Red meat (baleen whale, Sunoko, canned, seasoned)	N/K	Iwate	N/K	980	0.17	0.11
	Red meat (canned, Yamato-ni)	N/K	Iwate	N/K	498	0.31	0.07
Red meat (canned, Yamato-ni)	N/K	Shizuoka	N/K	580	6.90	3.10	
Bone of porpoise	N/K	Shizuoka	506	398	2.55	0.76	
Average of all samples						2.05	1.13

Hg-mercury; MeHg-methylmercury. SH minke whale – Southern Hemisphere minke; Delphinid – oceanic dolphin; STD dolphin – Stenella, Tursiops or Delphinus species; Mixed product – DNA from more than one species present; N/K – not known



Top right: EIA investigators were told this Dall's porpoise meat was rare and special. The total mercury level was 6.93ppm, more than 17 times higher than the maximum level allowed in Japan.

Below right: This canned red 'whale' meat contained 6.9ppm of mercury.

each week of 50-100g of meat), scientists have estimated that people in these circumstances eat approximately 36g of meat per day.⁵⁷ There are also seasonal increases in whale meat consumption, such as New Year's Eve and the spring equinox.⁵⁸

EIA investigations

EIA carried out four surveys of Japanese supermarkets during the period March 2001 to February 2003. Although looking for small cetacean products, investigators were directed to purchase samples from all products on sale. A variety of products were purchased, including skin, blubber, meat and internal organs. A number of products were also purchased from fish markets in Hokkaido, Iwate, Shizuoka and Tokyo. In total, 58 samples were purchased from retail outlets across Japan, with the survey covering 13 prefectures. Chemical analyses were carried out at the Daiichi College of Pharmaceutical Sciences in Fukuoka.

Chemical analysis revealed that government permitted levels for mercury were exceeded in 36 of the products (62%) whilst methylmercury levels in excess of government guidelines were found in 31 products (53%). The average level of mercury was 2.05ppm, more than five times the maximum allowable levels, whilst the average concentration of methylmercury was 1.13ppm, nearly four times the maximum allowable levels. All known small cetacean products (i.e. those that had been identified by DNA analysis) exceeded government guidelines for mercury or methylmercury contamination.⁵⁹

The levels of mercury in Dall's porpoise meat are of particular concern given the volume of meat and blubber from this species that is available on the market, estimated at around 800 tonnes each year.⁶⁰ Six products purchased in February 2003 were identified by sellers as Dall's porpoise and two products previously purchased have been identified as Dall's porpoise by DNA analysis. The average mercury and methylmercury levels in these products were 2.86ppm and 1.51ppm respectively.

The Japanese Ministry sets a PTWI of 170µg methylmercury per person each week. This would be exceeded by consumption of less than 151g per week of a cetacean product with the average level of methylmercury found in EIA's samples (1.13ppm). EIA's surveys have found the most polluted products on sale in Okayama, Wakayama and Shizuoka. Bottlenose dolphin meat sold in Okayama had a



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methylmercury concentration of 10.88ppm, a staggering 36 times higher than allowable levels. Consumption of just 16g of this meat would exceed the PTWI for methylmercury, and a diet of 36g per day, estimated to be representative for those living in certain coastal areas of Japan, would result in a weekly methylmercury intake of 2742µg, more than 16 times higher than the tolerable weekly intake.



© David Sims/EIA

Above: This cooked pilot whale meat had a methylmercury concentration of 4.48ppm. Consumption of this portion of meat would yield 672µg of methylmercury, nearly four times more than the weekly tolerable intake set by the Government of Japan.

Government of Japan's failure to warn consumers

Although Japanese scientists presented data on mercury levels in toothed whales to the IWC as early as 1979, the Government of Japan has taken no action to warn members of the public who may consume these products.⁶¹

In 2000, Japan extended its scientific whaling programme to include sperm whales, which feed on squid and fish and tend to accumulate high levels of pollutants. According to press articles, the Institute of Cetacean Research (ICR) did not release the meat for human consumption since mercury levels were on average more than three times higher (1.47ppm) than the permitted level of 0.4ppm.⁶² This suggests that the Government of Japan does apply the Food Sanitation Law to some cetacean products, but does not explain why it continues to allow the sale of meat from thousands of small cetaceans which it knows to be dangerously polluted.

Mislabelling

Although baleen whale products tend to have lower mercury concentrations than toothed cetaceans, it is currently impossible for consumers to distinguish between the different types of cetacean products on sale. EIA investigations have repeatedly demonstrated that the fraudulent selling of dolphin and porpoise as whale is widespread in Japan, despite a 2001 amendment to the Law Concerning Standardisation and Proper Labelling of Agricultural and Forestry Products (Japan's JAS Law) which requires dolphin meat to be labelled as such.⁶³

In 2001, EIA investigators purchased 17 'whale' products from supermarkets in Japan, of which only five were shown by DNA analysis to be baleen whales. The remaining samples were small cetaceans from Japan's coastal hunts, such as Dall's porpoise, pilot whale and bottlenose dolphin.

Japanese government surveys have also demonstrated widespread mislabelling of cetacean products. Of 980 products purchased by the ICR from 400 retail outlets, only 24% were correctly labelled. Ninety products were falsely labelled, which included dolphin meat sold as minke whale.⁶⁴

With no political will to take polluted cetacean products off the supermarket shelves,



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Left: Porpoise meat, on sale in Japan, labelled as whale meat.

some supermarket chains have taken matters into their own hands. Leading supermarket chain, AEON, has implemented a complete ban on the sale of all small cetacean and coastal cetacean products, after internal testing led to concerns over levels of mercury and other pollutants. Whilst it is hoped that other leading supermarket chains will follow suit, it is likely that large quantities of cetacean products are sold in local stores, fish markets and speciality restaurants, which may be unaware of the potentially high levels of mercury and unable to carry out the necessary chemical tests to evaluate the safety of their products.

Below: Sperm whale.



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Conclusions and recommendations

The pollution levels found in cetacean products on sale in Japan present a real and potent danger to the health of Japanese people that consume them, and the Government of Japan has been aware of this for more than twenty years. Products labelled as 'whale' in supermarkets and restaurants may actually be small cetaceans hunted in coastal waters, and are most likely to carry high mercury and methylmercury levels.

Despite Japan's Food Sanitation Law and amendments to Japan's labelling laws, the public cannot assume that whalemeat on sale in Japan is safe to eat. The Government of Japan has actively promoted the market for cetacean products, and has made no effort to remove polluted products from retail outlets. As long as cetaceans are hunted in Japan's coastal waters, their meat and blubber will be available to the public, most of whom will be unaware of what they are eating and the fact that it may be contaminated with mercury and a range of other pollutants. Even existing safe limits may not offer enough protection for populations who frequently eat seafood meals.

Globally, more than one billion people rely on fish and other seafood as their primary source of protein. However, cetaceans are not an essential part of the Japanese diet, and the consumption of these contaminated products exposes Japanese people to unnecessary risk.

The Environmental Investigation Agency urges the Government of Japan to:

- Immediately ban the sale of contaminated cetacean products;
- Immediately issue public health warnings recommending that pregnant and breastfeeding women (or women of childbearing age) and children refrain from eating any cetacean products;
- Confirm that the Food Sanitation Law does apply to all seafood products, establish penalties for non-compliance, and ensure that retail outlets are aware of these measures;
- Implement a complete ban on the hunting of coastal cetaceans.

EIA strongly urges the Japanese public to:

- Refrain from consuming any cetacean products;
- Urge Japanese retail outlets to follow the example of AEON and immediately halt the sale of contaminated cetacean products;
- Put pressure on the Government of Japan to fully implement the Food Sanitation Law.

EIA also urges all governments to:

- Take the necessary national and international action to reduce mercury emissions;
- Establish and enforce measures to protect people from the effects of mercury pollution in seafood.

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