Istituto Zooprofilattico Sperimentale delle Venezie

I principali pericoli sanitari legati al consumo dei prodotti ittici

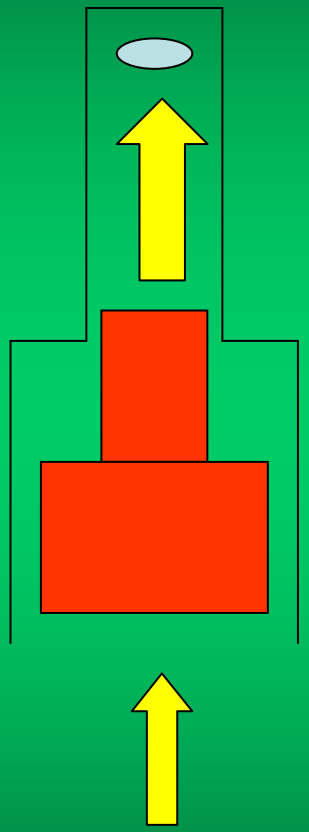
LEZIONE N. 3

Giuseppe Arcangeli

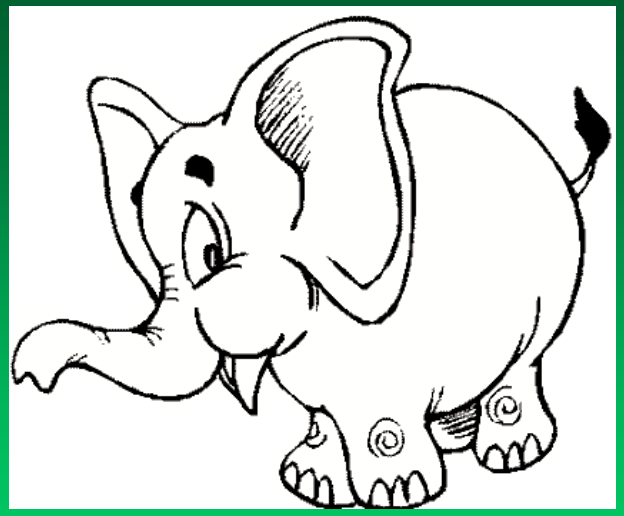
Ferrara – 29 ottobre 2009

Hydrostatic High pressure vs. HAV

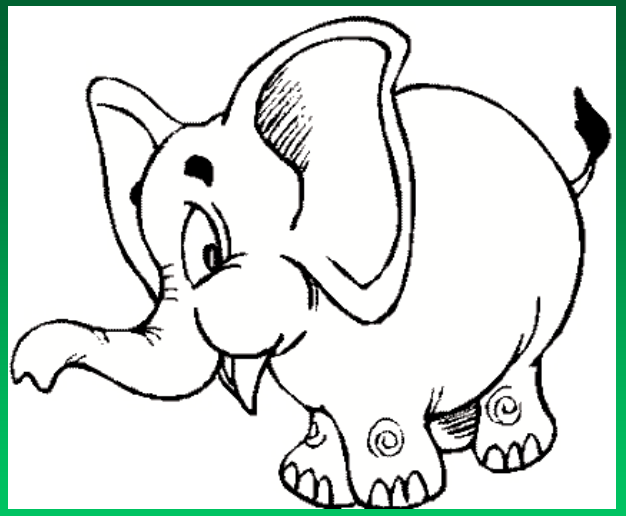
1 MPa = 10 bar



Gram negative: 200 Mpa
Gram positive : 400 Mpa
Spores: 800 MPa



6 tons

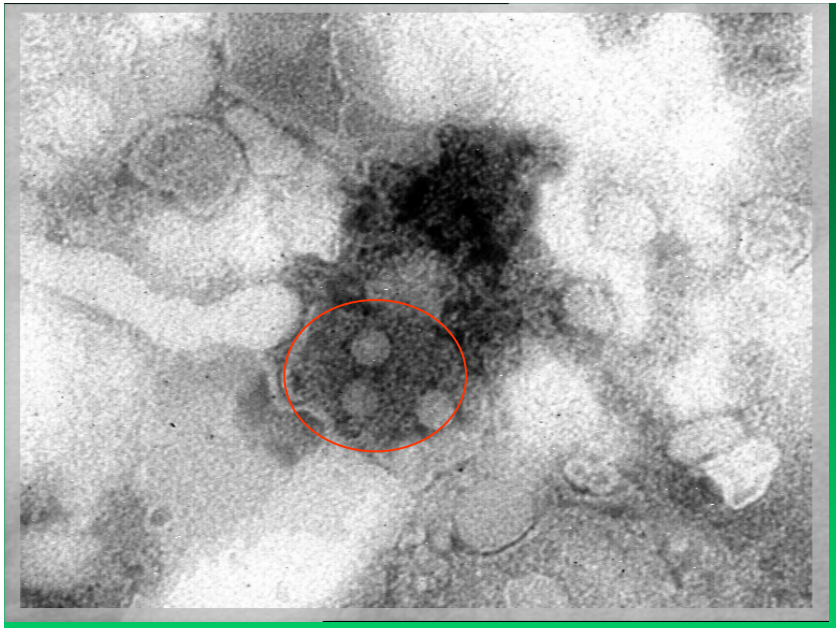


6 tons

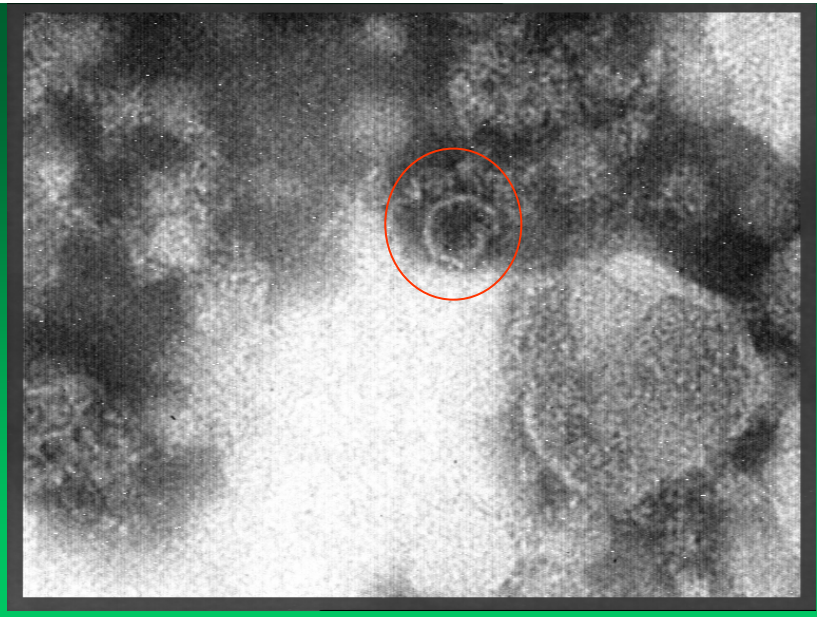
900 MPa = 9000 bar

1 cent

SSICA – IZSVe agreement

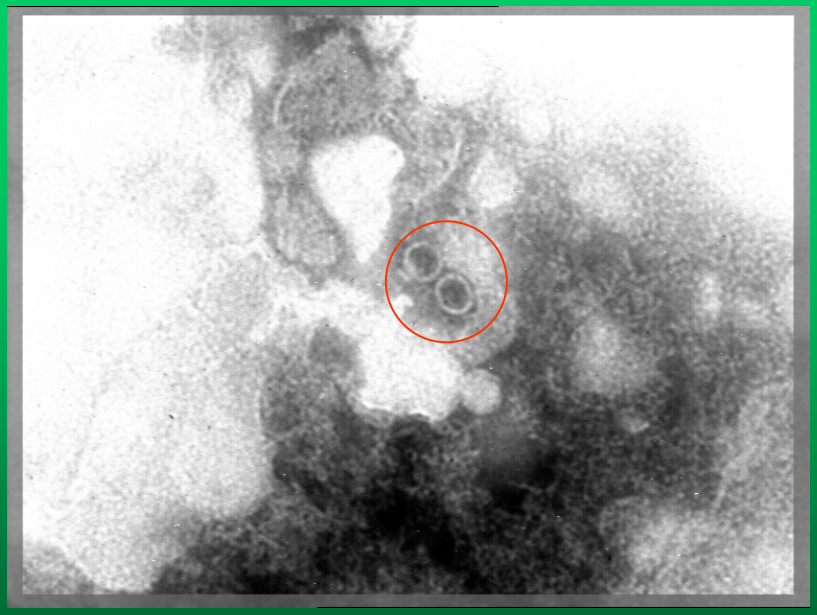


Not pressured: nucleocapsid complete



Pressured: nucleocapside interrupted

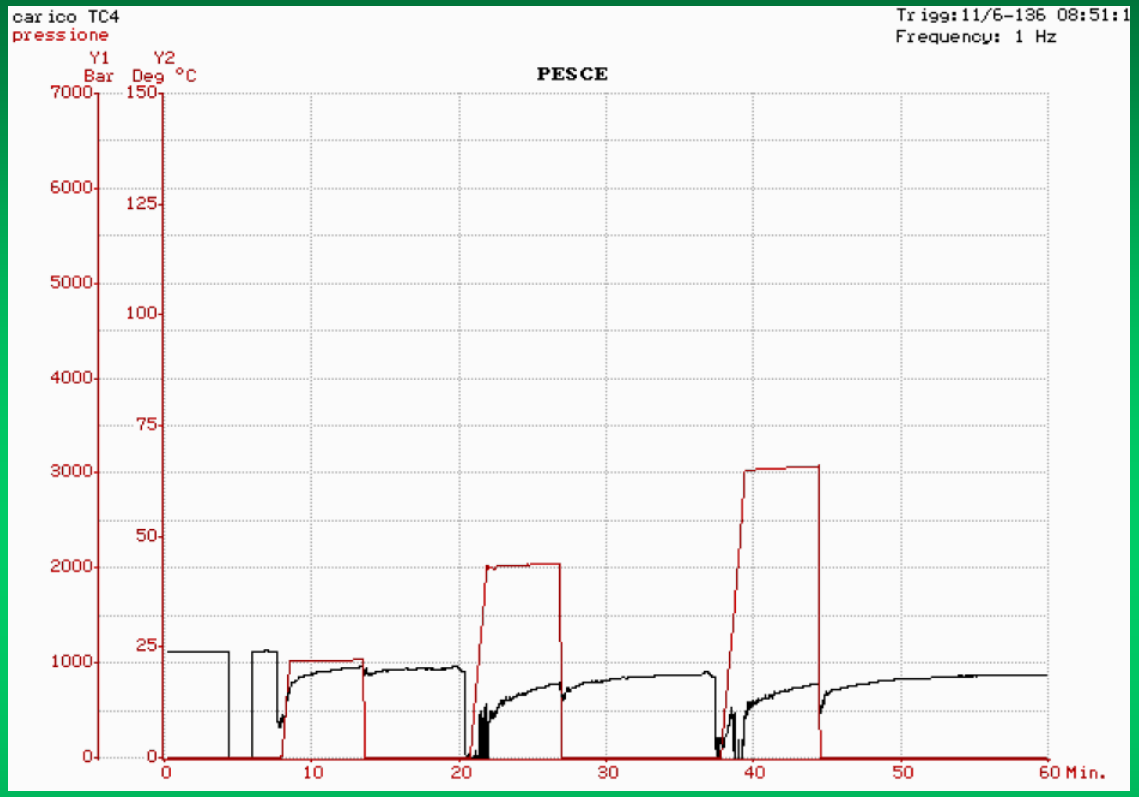
5.000 bar x 5 min



Pressured: viral particles appear empty

HAV : M.E.

Hydrostatic High pressure vs. Anisakis spp.



	100 MPa – 5 min.	200 MPa – 5 min.	300MPa – 5 min.
Larve vitali	140	12	0
Larve non vitali	9	153	182


300MPa x 5min

Acciughe non trattate

	CMT	C.Psic.T	Anaerobi	TVN mgN/100 g	pH	Istamina ppm	Perossidi Meq 0_2/kg
Dopo 6 gg	1.500	790	< 10	55	6,6	63	102
Dopo 9 gg	5.200	7.900	< 10	114	7,1	523,74	118

Acciughe trattate 4000 bar per 5 min

	CMT	C.Psic.T.	Anaerobi	TVN mgN/100 g	pH	Istamina ppm	Perossidi Meq 0_2/kg
Dopo 6 gg	< 10	< 10	< 10	55	6,5	assente	59
Dopo 9 gg	20	< 10	< 10	77	6,3	assente	47

Non trattate

trattate

Prodotti ittici presenti sul mercato italiano trattati HHP

Lo strumento dell’educazione alimentare !

For further information about the risks of mercury in fish and shellfish call the U.S. Food and Drug Administration's food information line toll-free at **1-888-SAFEFOOD** or visit FDA's Food Safety website **www.cfsan.fda.gov/seafood1.html**.

For further information about the safety of locally caught fish and shellfish, visit the Environmental Protection Agency's Fish Advisory website **www.epa.gov/ost/fish** or contact your State or Local Health Department. A list of state or local health department contacts is available at **www.epa.gov/ost/fish**. Click on Federal, State, and Tribal Contacts. For information on EPA's actions to control mercury, visit EPA's mercury website at **www.epa.gov/mercury**.

What You Need to Know About Mercury in Fish and Shellfish

Advice for

Women Who Might Become Pregnant
Women Who are Pregnant
Nursing Mothers
Young Children

from the
U.S. Food and Drug Administration
U.S. Environmental Protection Agency

EPA-823-F-04-009

3 Safety Tips

By following these 3 recommendations for selecting and eating fish or shellfish, women and young children will receive the benefits of eating fish and shellfish and be confident that they have reduced their exposure to the harmful effects of mercury.

1. Do not eat:

- **Shark**
- **Swordfish**
- **King Mackerel**
- **Tilefish**

They contain high levels of mercury.

2. Eat up to 12 ounces (2 average meals) a week of a variety of fish and shellfish that are lower in mercury.

- Five of the most commonly eaten fish that are low in mercury are shrimp, canned light tuna, salmon, pollock, and catfish.
- Another commonly eaten fish, albacore ("white") tuna has more mercury than canned light tuna. So, when choosing your two meals of fish and shellfish, you may eat up to 6 ounces (one average meal) of albacore tuna per week.

3. Check local advisories about the safety of fish caught by family and friends in your local lakes, rivers, and coastal areas.

If no advice is available, eat up to 6 ounces (one average meal) per week of fish you catch from local waters, but don't consume any other fish during that week.

Follow these same recommendations when feeding fish and shellfish to your young child, but serve smaller portions.

Visit the Food and Drug Administration's Food Safety Website www.cfsan.fda.gov or the Environmental Protection Agency's Fish Advisory Website www.epa.gov/ost/fish for a listing of mercury levels in fish.

Frequently Asked Questions *about Mercury in Fish and Shellfish:*

What is mercury?

Mercury occurs naturally in the environment and can also be released into the air through industrial pollution. Mercury falls from the air and can accumulate in streams and oceans and is turned into methylmercury in the water. It is this type of mercury that can be harmful to your unborn baby and young child. Fish absorb the methylmercury as they feed in these waters and so it builds up in them. It builds up more in some types of fish and shellfish than others, depending on what the fish eat, which is why the levels vary.

I'm a woman who could have children but I'm not pregnant - so why should I be concerned about methylmercury?

If you regularly eat types of fish that are high in methylmercury, it can accumulate in your blood stream over time. Methylmercury is removed from the body naturally, but it may take over a year for the levels to drop significantly. Thus, it may be present in a woman even before she becomes pregnant. This is the reason why women who are trying to become pregnant should also avoid eating certain types of fish.

Is there methylmercury in all fish and shellfish?

Nearly all fish and shellfish contain traces of methylmercury. However, larger fish that have lived longer have the highest levels of methylmercury because they've had more time to accumulate it. These large fish (swordfish, shark, king mackerel and tilefish) pose the greatest risk. Other types of fish and shellfish may be eaten in the amounts recommended by FDA and EPA.

Note:
If you have questions or think you've been exposed to large amounts of methylmercury, see your doctor or health care provider immediately.

I don't see the fish I eat in the advisory. What should I do?

If you want more information about the levels in the various types of fish you eat, see the FDA food safety website www.cfsan.fda.gov/~frf/sea-mehg.html or the EPA website at www.epa.gov/ost/fish.

What about fish sticks and fast food sandwiches?

Fish sticks and "fast-food" sandwiches are commonly made from fish that are low in mercury.

The advice about canned tuna is in the advisory, but what's the advice about tuna steaks?

Because tuna steak generally contains higher levels of mercury than canned light tuna, when choosing your two meals of fish and shellfish, you may eat up to 6 ounces (one average meal) of tuna steak per week.

What if I eat more than the recommended amount of fish and shellfish in a week?

One week's consumption of fish does not change the level of methylmercury in the body much at all. If you eat a lot of fish one week, you can cut back for the next week or two. Just make sure you average the recommended amount per week.

Where do I get information about the safety of fish caught recreationally by family or friends?

Before you go fishing, check your Fishing Regulations Booklet for information about recreationally caught fish. You can also contact your local health department for information about local advisories. You need to check local advisories because some kinds of fish and shellfish caught in your local waters may have higher or much lower than average levels of mercury. This depends on the levels of mercury in the water in which the fish are caught. Those fish with much lower levels may be eaten more frequently and in larger amounts.

United States Environmental Protection Agency
EPA823-B-97-009
September 1997
Office of Science and Technology (4305)

EPA Should I Eat the Fish I Catch?

A guide to healthy eating of the fish you catch

ATSDR *Developed in collaboration with the Agency for Toxic Substances and Disease Registry, U.S. Public Health Service*

INTRODUCTION

[redacted]liet. They Some ivers, ntain micals that could pose health risks if these fish are eaten in large amounts.

The purpose of this brochure is not to discourage you from eating fish. It is intended as a guide to help you select and prepare fish that are low in chemical pollutants. By following these recommendations, you and your family can continue to enjoy the benefits of eating fish.

Fish taken from polluted waters might be hazardous to your health. Eating fish containing chemical pollutants may cause birth defects, liver damage, cancer, and other serious health problems.

Chemical pollutants in water come from many sources. They come from factories and sewage treatment plants that you can easily see. They also come from sources that you can't easily see, like chemical spills or runoff from city streets and farm fields. Pollutants are also carried long distances in the air.

Fish may be exposed to chemical pollutants in the water, and the food they eat. They may take up some of the pollutants into their bodies. The pollutants are found in the skin, fat, internal organs, and sometimes muscle tissue of the fish.

What can I do to reduce my health risks from eating fish containing chemical pollutants ?

Following these steps can reduce your health risks from eating fish containing chemical pollutants. The rest of the brochure explains these recommendations in more detail.

1. **Call your local or state environmental health department.** Contact them before you fish to see if any advisories are posted in areas where you want to fish.

2. **Select certain kinds and sizes of fish for eating.** Younger fish contain fewer pollutants than older, larger fish. Panfish feed on insects and are less likely to build up pollutants.

3. **Clean and cook your fish properly.** Proper cleaning and cooking techniques may reduce the levels of some chemical pollutants in the fish.

Health Note

Advisories are different from fishing restrictions or bans or limits. Advisories are issued to provide ***recommendations*** *for limiting the amount of fish to be eaten due to levels of pollutants in the fish.*

CATCHING FISH

How can I find out if the waters that I fish in are polluted?

It's almost impossible to tell if a water body is polluted simply by looking at it. However, there are ways to find out.

First, look to see if warning signs are posted along the water's edge. If there are signs, follow the advice printed on them.

Second, even if you don't see warning signs, call your local or state health or environmental protection department and ask for their advice. Ask them if there are any advisories on the kinds or sizes of fish that may be eaten from the waters where you plan to fish. You can also ask about fishing advisories at local sporting goods or bait shops where fishing licenses are sold.

If the waterbody has not been tested, follow these guidelines to reduce your health risks from eating fish that might contain small amounts of chemical pollutants.

Health Note

Some chemical pollutants, such as mercury and PCBs, can pose greater risks to women of childbearing age, pregnant women, nursing mothers, and young children. This group should be especially careful to greatly reduce or avoid eating fish caught from polluted waters.

Do some fish contain more pollutants than others?

Yes. You can't look at fish and tell if they contain chemical pollutants. The only way to tell if fish contain harmful levels of chemical pollutants is to have them tested in a laboratory. Follow these simple guidelines to lower the risk to your family:

- If you eat gamefish, such as lake trout, salmon, walleye, and bass, eat the smaller, younger fish (within legal limits). They are less likely to contain harmful levels of pollutants than larger, older fish.
- Eat panfish, such as bluegill, perch, stream trout, and smelt. They feed on insects and other aquatic life and are less likely to contain high levels of harmful pollutants.
- Eat fewer fatty fish, such as lake trout, or fish that feed on the bottoms of lakes and streams such as catfish and carp. These fish are more likely to contain higher levels of chemical pollutants.

CLEANING FISH

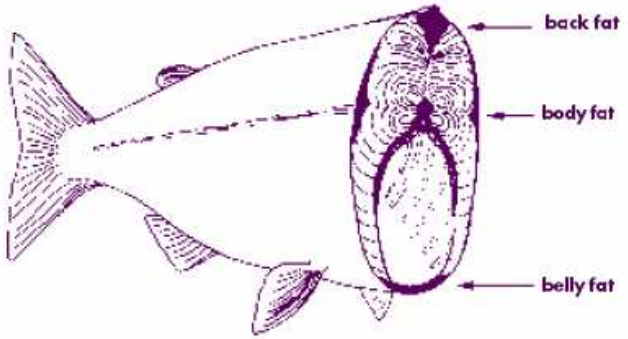
Can I clean my fish to reduce the amount of chemical pollutants that might be present?

Yes. It's always a good idea to remove the skin, fat, and internal organs (where harmful pollutants are most likely to accumulate) before you cook the fish.

As an added precaution:

- Remove and throw away the head, guts, kidneys, and the liver.
- Fillet fish and cut away the fat and skin before you cook it.
- Clean and dress fish as soon as possible.

Trim away the skin and fatty tissue before cooking to reduce the level of some pollutants in the fish you eat.



Health Note

Mercury is found throughout the tissue in fish, so these cleaning and cooking techniques will not reduce the amount of mercury in a meal of fish.

Remember that with any fresh meat, always follow proper food handling and storage techniques. To prevent the growth of bacteria or viruses, keep freshly caught fish on ice and out of direct sunlight.

COOKING FISH

Can I cook my fish to reduce my health risk from eating fish containing chemical pollutants?

Yes. The way you cook fish can make a difference in the kinds and amounts of chemical pollutants remaining in the fish. Fish should be properly prepared and grilled, baked, or broiled. By letting the fat drain away, you can remove pollutants stored in the fatty parts of the fish. Added precautions include:

- Avoid or reduce the amount of fish drippings or broth that you use to flavor the meal. These drippings may contain higher levels of pollutants.
- Eat less fried or deep fat-fried fish because frying seals any chemical pollutants that might be in the fish's fat into the portion that you will eat.
- If you like smoked fish, it is best to fillet the fish and remove the skin before the fish is smoked.

REGOLAMENTO (CE) N. 2375/2001 DEL CONSIGLIO
del 29 novembre 2001
recante modifica del regolamento (CE) n. 466/2001 della Commissione che definisce i tenori massimi di taluni contaminanti presenti nelle derrate alimentari
(Testo rilevante ai fini del SEE)

consideranda…….

18) Talune specie ittiche originarie della regione baltica possono contenere un elevato livello di **diossina**. Una considerevole quantità del pesce azzurro del Baltico, come **l'aringa ed il salmone del Baltico**, non rispetta il tenore massimo e risulterebbe quindi esclusa dal regime alimentare degli svedesi e dei finlandesi. Secondo le indicazioni esistenti, l'esclusione del pesce dal regime alimentare può avere un impatto negativo sulla salute in Svezia ed in Finlandia. La Svezia e la Finlandia hanno un sistema in grado di assicurare che i consumatori siano pienamente informati sulle raccomandazioni alimentari riguardo alle restrizioni al consumo di pesce della regione baltica da parte di gruppi di popolazione identificati come vulnerabili per evitare rischi potenziali per la salute.

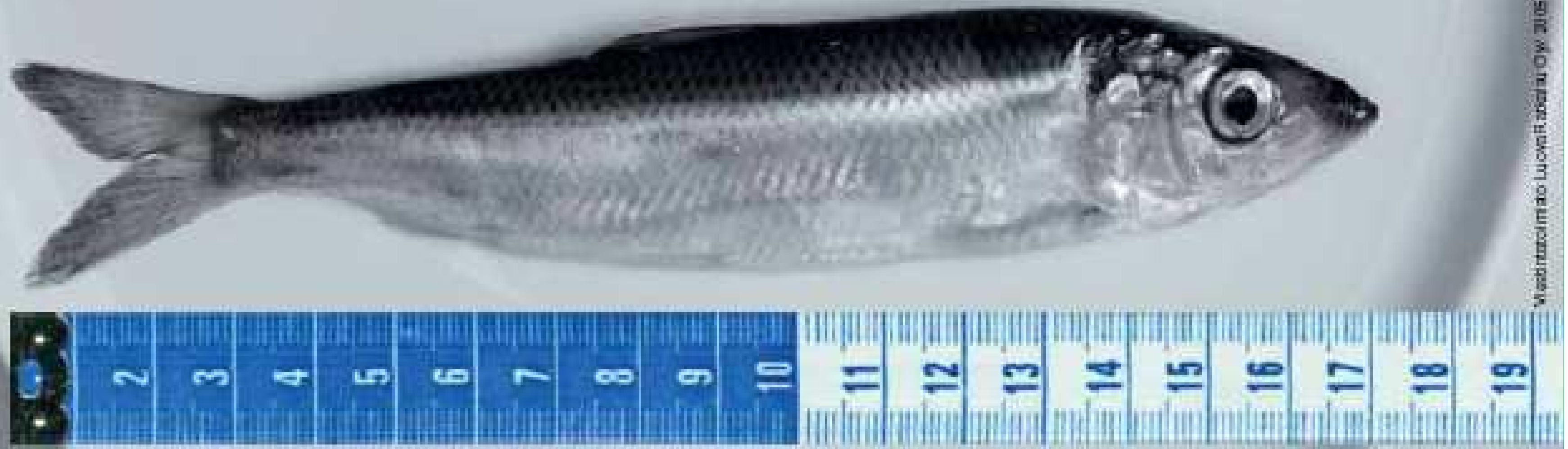
NATIONAL FOOD AGENCY
FINLAND

Dietary advice on fish consumption

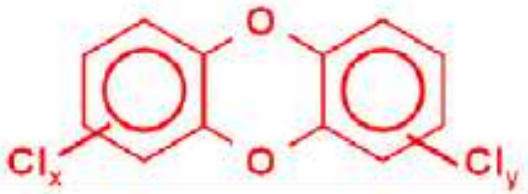
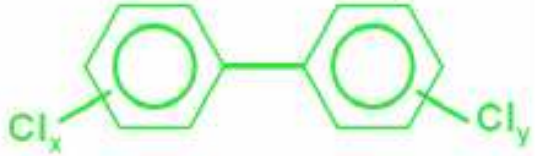
- Fish should be eaten twice a week, varying the fish species.
- Due to the contaminant levels, children, young people and persons at fertile age should eat large Baltic herring, longer than 17 cm, or alternatively Baltic salmon or pike caught from the sea or inland waters only once or twice a month.
- Pregnant and nursing mother are advised not to eat pike.
- Persons who eat inland water fish on a daily basis should decrease their consumption of other predatory fish that accumulate mercury. Such fish include large perch, pike-perch and burbot.
- The recommendations are based on known levels of accumulated dioxins, PCB compounds, mercury and cesium-137, and safety estimates are based on a portion size of 100 g of raw weighed fish.

National Food Agency
P.O. Box 28 (Vanha talvitie 5)
FI-00581 Helsinki, Finland
Tel. +358 (0) 9 393 1500
info@elintarvikevirasto.fi
www.elintarvikevirasto.fi

NATIONAL FOOD AGENCY FINLAND



PCB e agoni : la decisione del Canton Ticino per il lago di Verbano (Lago Maggiore)

Nome	Struttura	Numero di congeneri 1)	2)
Policlorodibenzodiossine (PCDD)		75	7
Policlorofurani (PCDF)		135	10
Policlorobifenili (PCB)		209	12

Reg. (CE) 1881/2006
Muscolo pesce: diossine: 4,0 pg/g
diossine + PCB dioxin.like: 8,0 pg/g


Ascona
Locarno
Brissago
Cannobbio
Maccagno
Cannero
Ruviera
A2
Oggebbio
Luino
Premeno
Ghiffa
Intra
Porto Valtravaglia
Feriolo
Verbania
Baveno
Pallanza
Laveno Mombello
Stresa
Reno
Leggiuno
Gignese
Arolo
Belgirate
Armeno
Lesa
Ispra
Massino
Meina
Ranco
Arona
Angera
A26
Oleggio
Sesto Calende
Dormelletto
Castelletto S.Ticino

Il 15 gennaio 2009, i dipartimenti Sanità e Socialità (DSS) e Territorio (DT) aveva-no riferito sulla situazione generale dei livelli di contaminazione da PCB nei pesci del cantone Ticino. Sulla base dei dati disponibili, questa contaminazione non de-sta particolare preoccupazione. L'unica eccezione riguarda gli agoni del lago Ver-bano, per i quali le ultime verifiche analitiche hanno confermato il superamento si-stematico del nuovo valore di tolleranza, adottato dal nostro paese a inizio 2009 nell'ottica di un'armonizzazione del diritto svizzero delle derrate alimentari con quello europeo. Di conseguenza, in linea con le direttive di UFSP e UFAM, da oggi la pesca professionale, il commercio, la vendita e la consegna a terzi di agoni pro-venienti dal Verbano è proibita.

Le raccomandazioni riportate di seguito si basano sulle direttive di UFSP e UFAM. Sono più severe per i ragazzi, gli adolescenti e le giovani donne (donne fertili), che rappresentano le categorie più sensibili agli effetti negativi che potrebbero insorge-re nel caso di un'assunzione prolungata e importante di dl-PCB, PCDD e PCDF.
Vengono dati i seguenti consigli:

- ai bambini e ai ragazzi (di ambo i sessi), agli adolescenti maschi fino a 18 anni di età e alle giovani donne (donne fertili) si raccomanda di non consu-mare agoni del Verbano;
- agli uomini dal 18.mo anno di età e alle donne dopo la menopausa si racco-manda di limitare il consumo settimanale di agoni del Verbano a un massimo di 120g.

Si segnala infine che ai pescatori professionisti attivi sul lago Verbano (patente di tipo P) sarà riconosciuto dal Cantone (Ufficio della caccia e della pesca) un inden-nizzo di fr. 2.- al kg per gli agoni pescati accidentalmente con reti e che dovranno essere obbligatoriamente consegnati al Centro di raccolta delle carcasse di Giu-biasco. Il quantitativo massimo annuo riconosciuto sarà di 2'000 kg per pescatore.