EEB- HEAL-ZMWG Conference
"Dental Sector as a Source of Mercury Contamination"

Brussels, 25 May 2007

Life cycle of dental amalgams Public Health Concerns

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Health & Environment Alliance, www.env-health.org

Life cycle of Amalgams

OUTLINE

1. **Why the concern?**
2. **Evidence of contamination**
3. **What solutions?**

Summary of Concern

Even if we stopped all mercury production, spills and emissions today, our global food supply would still be contaminated for years to come.

Amalgams to fish to body burden

Methylmercury is a **developmental neurotoxicant** during fetal & postnatal development of brain

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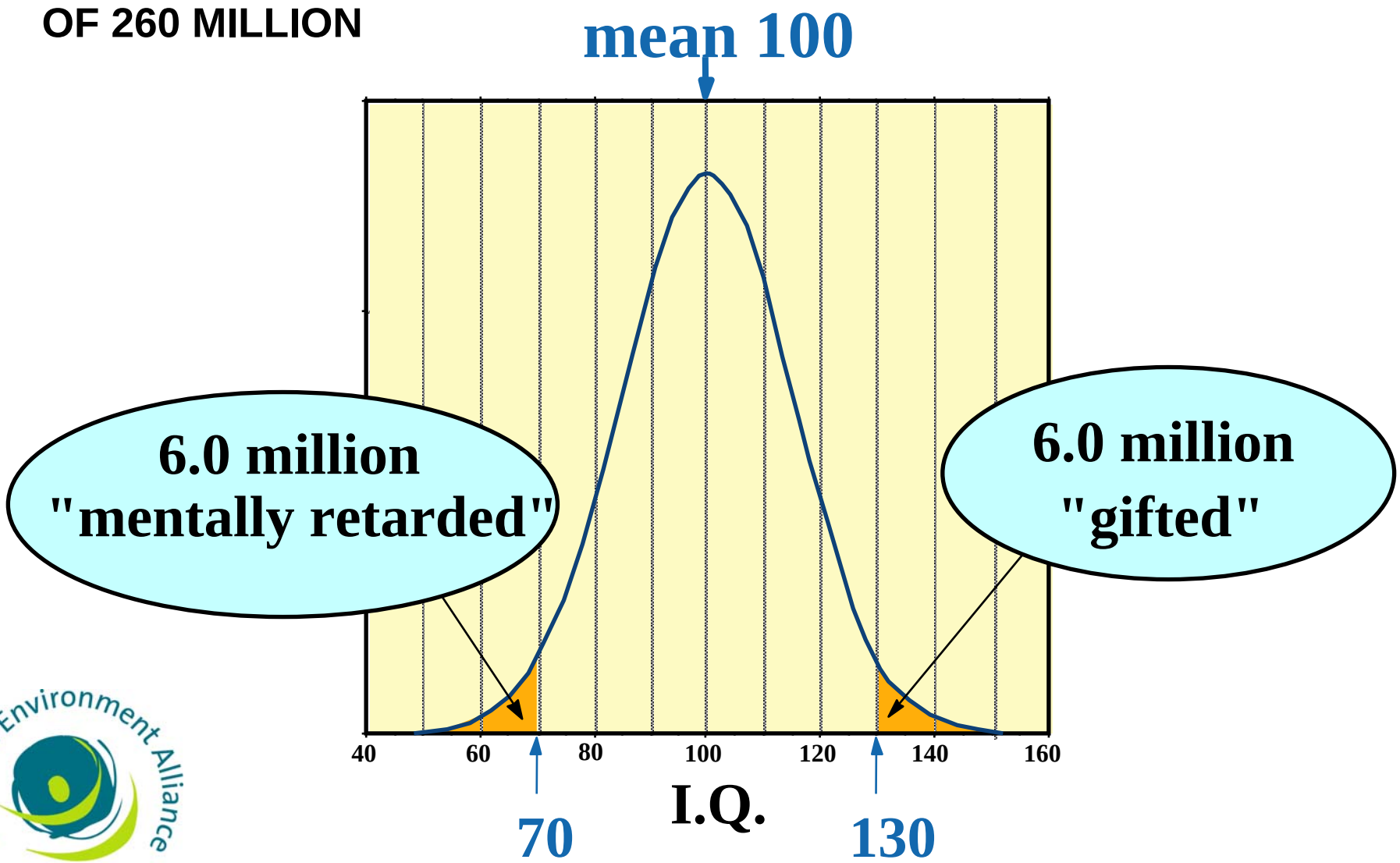
Existing Body Burden

- Estimated **3 -15 million people in Europe** are at the Reference Dose level
- Some in **Artic & Mediterranean are at 10 times** that level, where there are definite impacts on brain development in the womb…
  - **Potentially 6 IQ points loss**
- But in Europe **insufficient data** on full extent of exposure - only rough estimates.

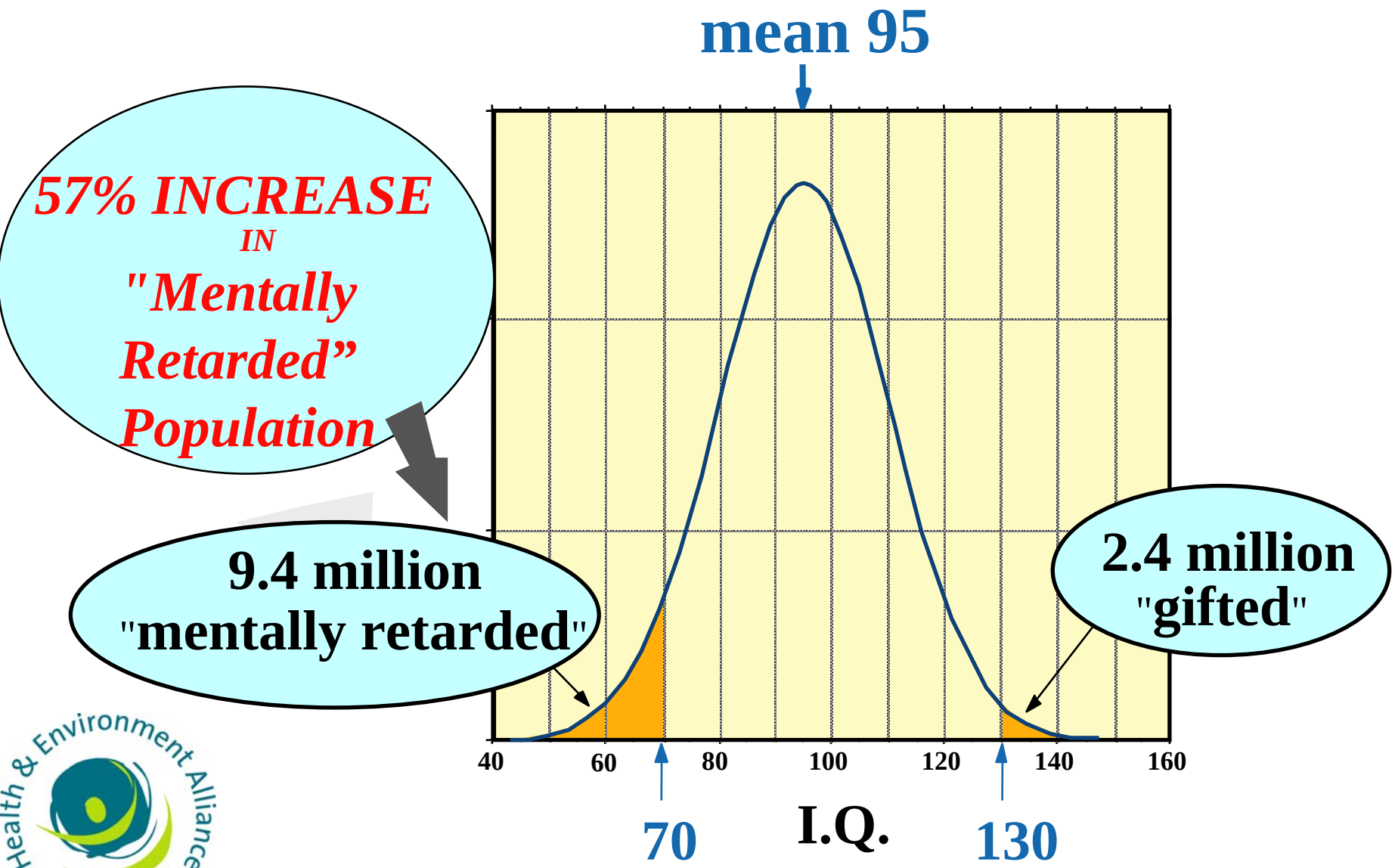
What are the implications?

Mercury and the Chemical Brain Drain

EFFECTS OF A SMALL SHIFT IN IQ DISTRIBUTION IN A POPULATION OF 260 MILLION



Mercury and the Chemical Brain Drain



What might this be costing us?

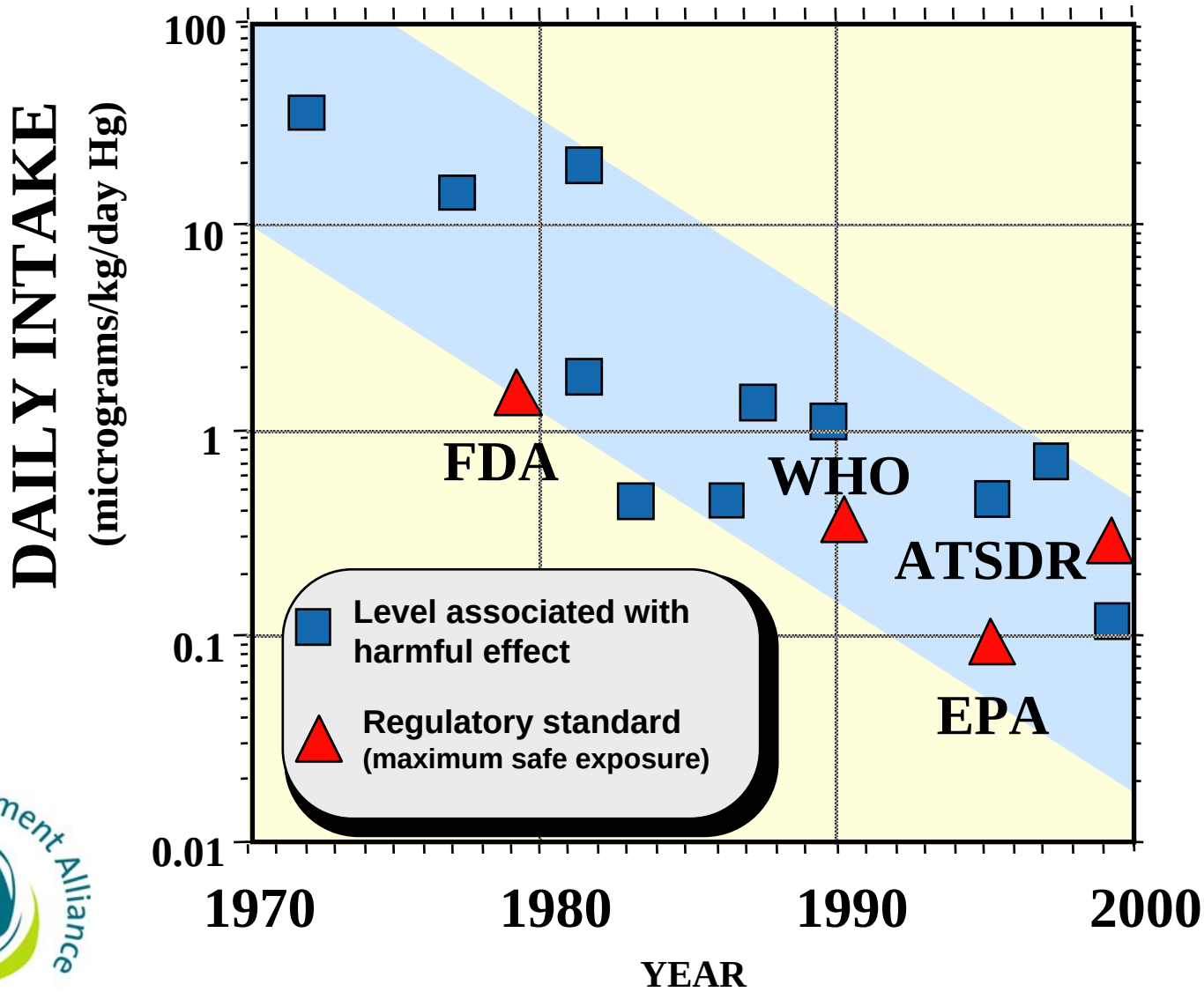
Mt Sinai Study 2005

- IQ loss affect between **300,000-600,000** children annually, cost an estimated **8.7 billion in lost earnings**.
- Loss of IQ hits between **10-15 % of children born**.
- IQ losses range from **one-fifth to as much as 24 points**.
- Even 1.6 drop could cost a person 31,800 Euro in lifetime earnings

Probably equivalent for Europe, if not greater?

Implications for the rest of the world?!!

Moving Target: Declining Thresholds



Prenatal Exposure, Delayed Effects

- Adverse effects may happen at **low levels** from seafood and freshwater fish
  (physical coordination; brain function)
- Imprecise exposure assessments produce a **bias** towards 'no effect' results
- Functional deficits seem to be **permanent**, extent may depend on interaction of toxicants and nutrients.
- Possibly contributing to Attention Deficit Disorder, and other brain function disabilities.
  - ***Grandjean study, May 2007, Reproductive Toxicity***

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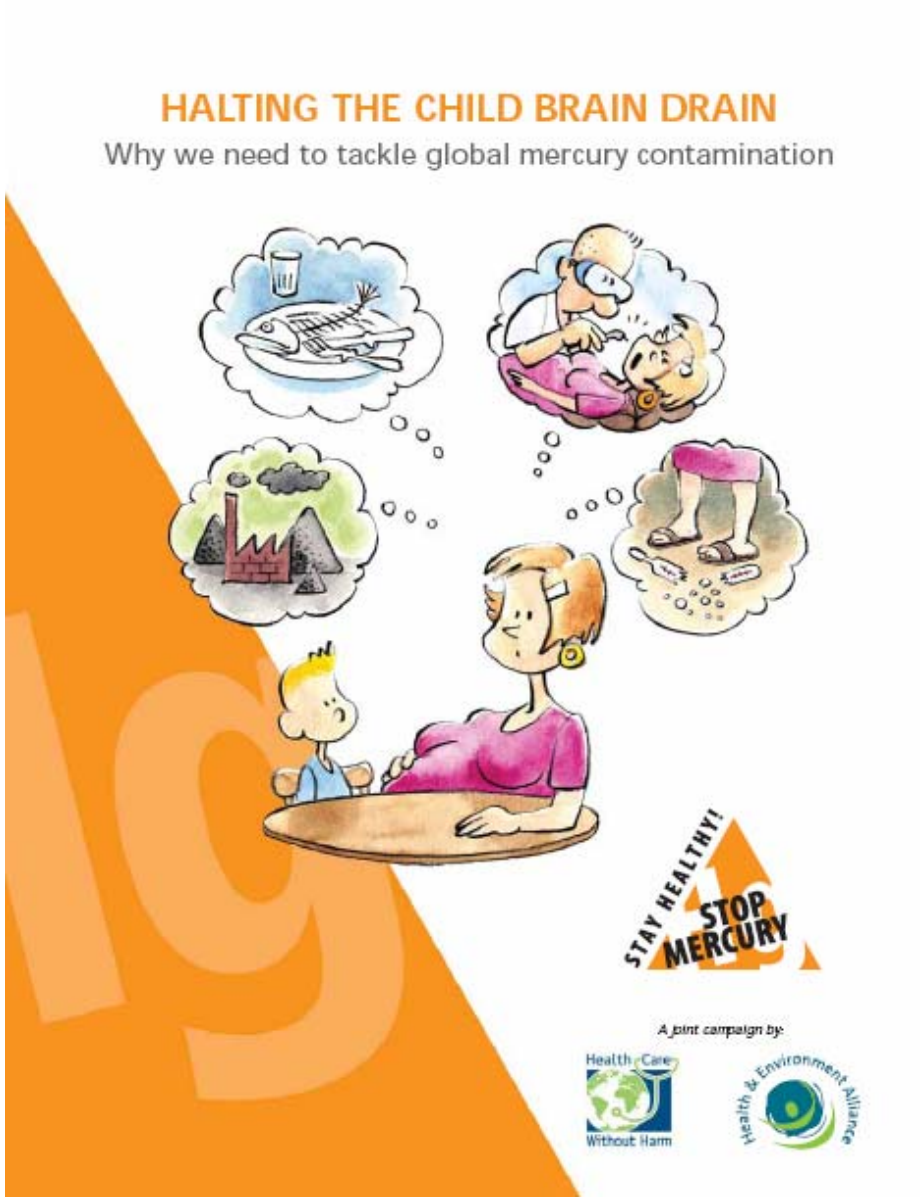
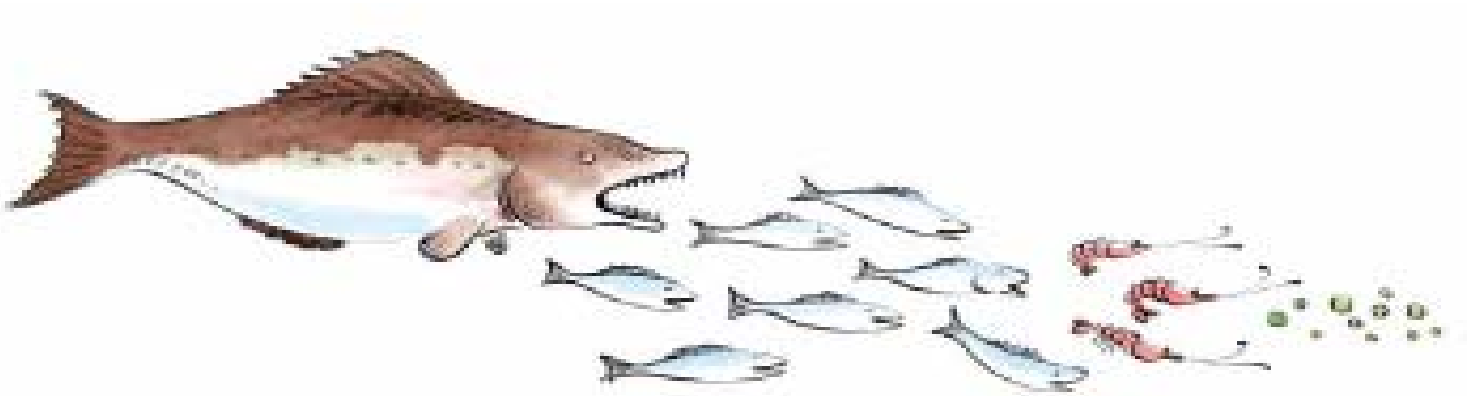
Stay Healthy Stop Mercury campaign

- Small scale survey
- 21 countries
- 250+ samples
- Women 18 - 45 years



Mercury Hair Sampling Survey

- 95% of women presented detectable levels
- elevated levels for some countries
  - link with fish consumption
- 15% of women had elevated levels above the “reference dose”. This is a dose which should not be exceeded in women who intend to have children.



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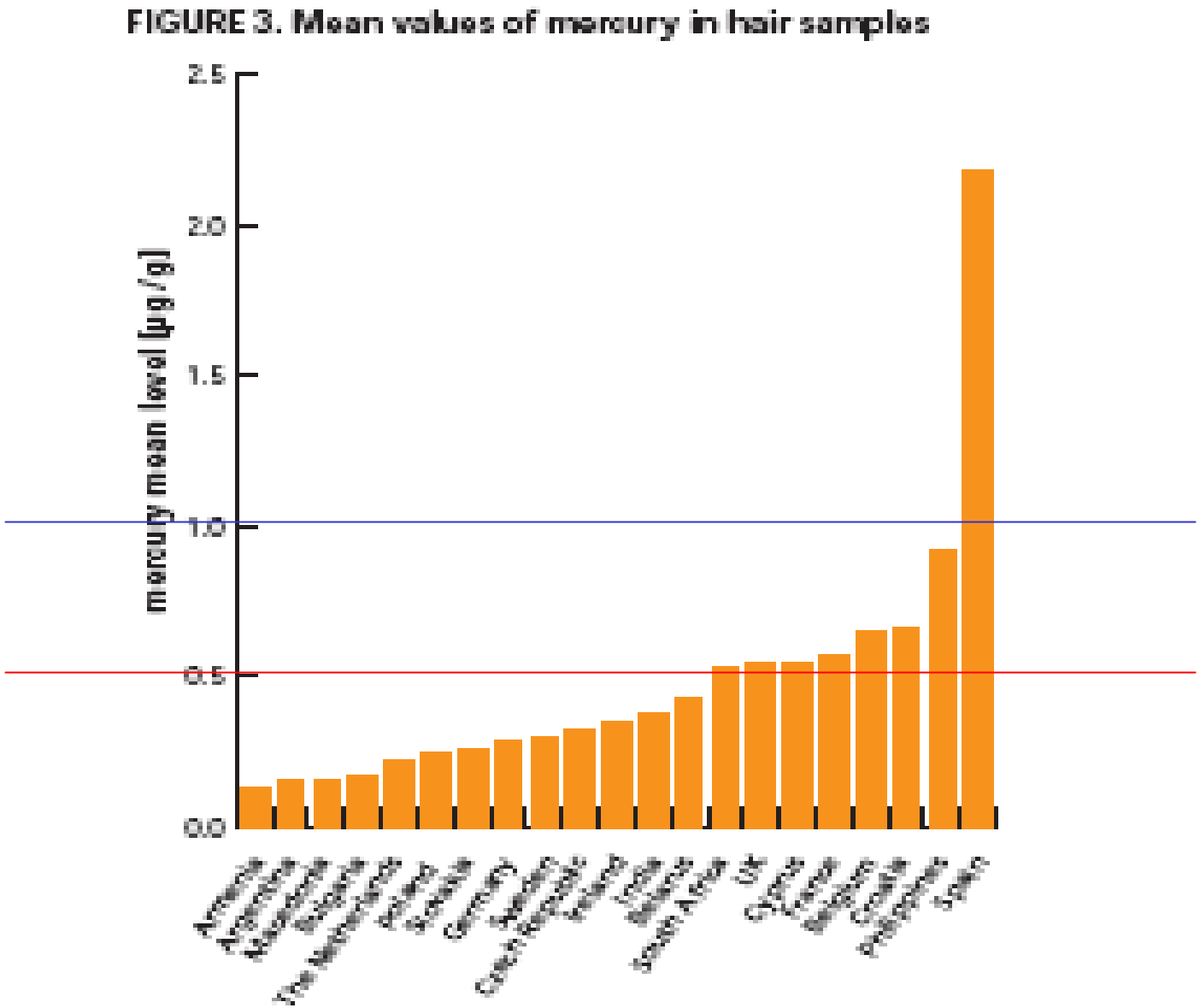
Mercury Levels in Hair



Let’s think ahead

“In time, it is likely that the scientific consensus will conclude that there is no safe level of foetal exposure”

Peter Orris,

Professor Public Health

University of Illinois

Eliminate Hg use in dental sector

National advisories against use for pregnant & breastfeeding women, children until 6 year-old

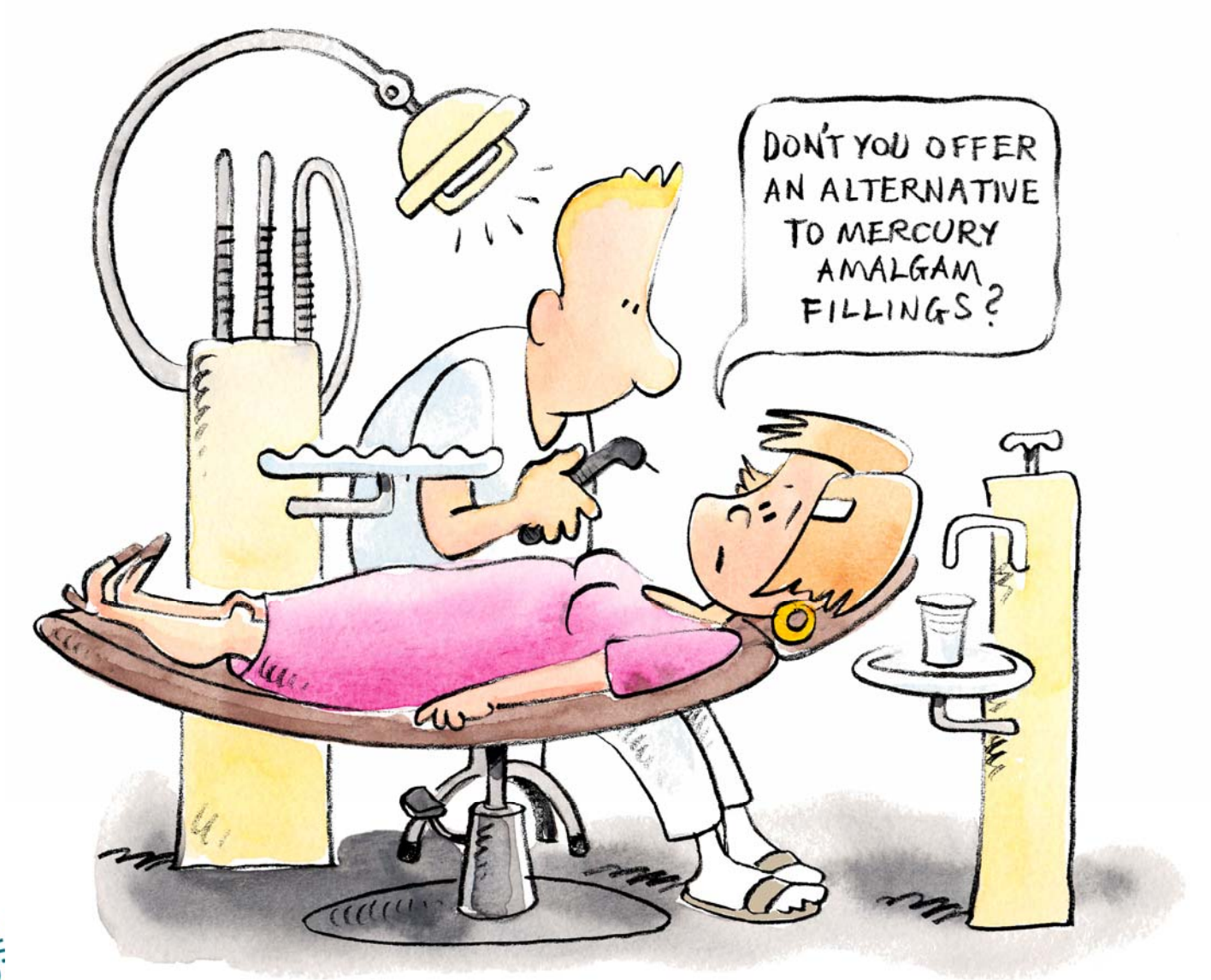
- Denmark: permits amalgams only in molar teeth where fillings already exist
- France: advises pregnant & breastfeeding women avoid installation/removal

National dental care **reimbursement** for alternatives.

EU advisory against use for aforementioned groups

EU Medical Devices **Directive** restriction on amalgams

Eliminate Hg use in dental sector



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HEAL Recommendations

Mercury & Dental Amalgams Fact Sheet (english)

Other Fact Sheets

- Health
- Healthcare
- Fish Consumption
- Vaccines
- Mercury Spills
- Blood Pressure Instruments

MERCURY AND DENTAL AMALGAMS

FACT SHEET, MAY 2007

STAY HEALTHY! STOP MERCURY

What is the concern about mercury in dental fillings?

Mercury comes in different forms, most of which are toxic to humans, ecosystems and wild-life. High doses can be fatal to humans, but even relatively low doses of mercury containing compounds can have serious adverse neurodevelopmental impacts, and have recently been linked to possible harmful effects on the cardiovascular, immune and reproductive systems.

The second largest use of mercury in Europe is for dental amalgams. In 2000, 70 tonnes were used in the old 15 member states alone.[1] It is estimated that the use of amalgam in the new EU member states is even higher than in the old 15 EU members. The so-called "silver fillings" used to fill dental cavities contain around 50% mercury and are the largest source of exposure to elemental mercury for people who have fillings.[2] The exposure comes both from inhalation of the elemental vapours during installation/removal of the fillings, and of mercury vapours released during different mouth actions (chewing or ingesting hot foods and liquids – see below)[3]. Approximately 80 percent of inhaled mercury vapours are absorbed by the lungs. (See the Table on Exposure Routes and Toxicity of different Mercury forms in the Mercury and Health Factsheet). Studies indicate that inhaled elemental mercury is converted to inorganic mercury in the body[4] and that mercury from amalgam is passed to babies via the placenta and through breast milk[5]. As much as 50 percent of the mercury in dental fillings can be vaporised after 5 years, and 80 percent after 20 years.[6] Common habits such as chewing gum, drinking hot liquids, tooth brushing, and grinding of teeth greatly increase the amount of mercury vapours released and thus individual exposure to a highly absorbable form of mercury and total body burden[7].

While in some studies health effects have been observed,[8] there is no general scientific consensus on the significance of these exposures in the general population. The absorbed mercury is excreted by the body and enters the waste water systems, making its way into fish in the form of methylmercury, and eventually into people through seafood consumption. (For the health implications of mercury and methylmercury exposure, please see our factsheets on Mercury and Health: Mercury and Fish Consumption: and our report "Halting the Child Brain Drain" at www.env-health.org/stopmercury).

An additional source of mercury to the environment from dental fillings is from crematoria[9]. At the EU level, there are no mandatory limits on mercury emissions from crematoria and it is estimated that between 2 and 3.5 tonnes of mercury is released annually from crematoria in the EU. There are national

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"The second largest use of mercury in Europe is for dental amalgams."

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www.env-health.org/stopmercury

Thank you for your attention!