Mercury, fish and childbearing: what every woman should know to protect children and the planet

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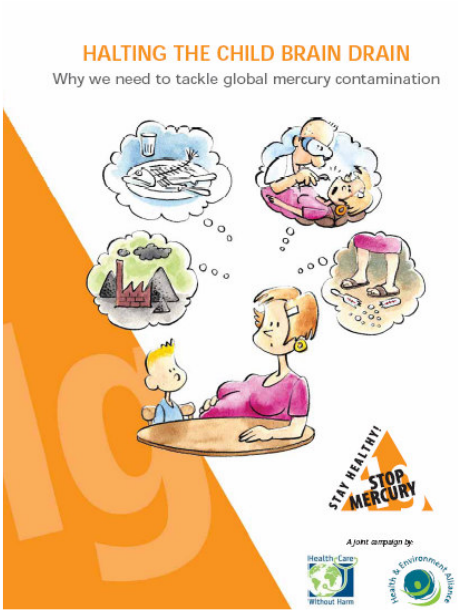
In some parts of Europe, current mercury levels in fish are so high that if a pregnant woman consumes too much of certain types, such as swordfish and tuna, the future development of her unborn child can be impaired. The problem is of greatest concern in fishing communities where large, predatory fish make up a major part of the diet. Studies by Harvard University Professor Philippe Grandjean in the Faroe Islands (Denmark) have clearly demonstrated that children's mental abilities are damaged by their mothers' fish consumption during pregnancy (2).



Mercury in fish is a result of widespread mercury pollution from industrial sources such as chlor-alkali plants (producing raw materials for the chemicals industry) or coal combustion facilities. Half of all mercury emissions come from man-made sources, such as industrial and power plants. Mercury is also used in a variety of medical products, which can also result in human exposure. For example, women and young children may be exposed to broken thermometers containing mercury and nurses in healthcare facilities handle mercury blood pressure devices that may be leaking. Dentists are exposed to mercury vapours because dental fillings are often made of mercury amalgam. When the mercury from broken or discarded products is not properly disposed of, it ends up in the environment through wastewater and evaporation into the atmosphere.

Once this toxin enters the environment, microorganisms convert elemental mercury into the more toxic methyl mercury, which aquatic plants and animals ingest or absorb. Methyl mercury has the capacity to bio-accumulate (collect in organisms rather than being excreted) and to bio-magnify (increase in concentration at each level of the food chain). In this way, mercury builds up in seafood and contaminates humans through fish consumption.

Women-centred participatory research

The Health and Environment Alliance (HEAL) and Health Care Without Harm (HCWH) launched the participatory research project in early 2006. More than 50 environmental, health and professional groups, mainly led by women, were approached. Mainly women representatives in 21 countries volunteered to take part. Each organised mercury hair sampling sessions with women in the reproductive age group. The hair samples and questionnaires completed by participants were sent to

Belgium for analysis, and results were sent back to the groups to be shared and explained to those who had taken part.

Some of the coordinators agreed to participate because they were worried about their own risk of exposure, for example as a nurse or technician in a hospital. They knew their colleagues would also be motivated to have a hair sample tested. Others agreed to set up hair sampling sessions because they knew many women were worried about the effects of mercury on their health, and felt that joining the campaign would increase access to clear and reliable information.

Testimony box

Taking part improved access to information.

"As one of the national coordinators in this project, I learnt how worried many woman are about exposure to mercury. Some were worried about what fish to eat, others about their dental fillings or exposure at work. They felt they did not have enough information. We were overwhelmed by the number of women wanting to participate in this survey. Women have the right to be informed so that they can protect themselves and prevent any effects on the foetus during pregnancy."

Sascha Gabizon, national coordinator for the campaign in Germany and international director of Women I Europe for a Common Future (WECF).

The overall aim of the campaign was to highlight the risks from methyl mercury exposure faced by women in their reproductive years and to provide local, national and global policy solutions to reduce these risks. Each national coordinator returned an average of more than 10 hair samples and completed questionnaires. The analysis showed that levels of mercury in hair samples from more than 15% of the 266 women tested were above recommended levels. Although the sample size was small, the results echoed estimates in a recent European Union assessment of the health impact of mercury. (3)

The European report, published in 2005, had indicated that 1-5% of the general population in Central and Northern Europe and people in coastal areas of Mediterranean countries have levels of mercury in their bodies around the US National Research Council reference dose (a protective limit of 1 ug/g), and that a percentage of this population, notably Mediterranean fishing communities and the Artic population, had levels ten times as high as this recommended norm.

Results of the project bio monitoring of the hair samples showed 42 women had levels above what is considered safe by the US National Research Council, the most protective limit defined by an international authority. (The World Health Organization puts its "benchmark value" ten times higher.), However, the safety level at which it is recognised that mercury can cause harm has fallen steadily over the years.
A table in the campaign report showed the results in terms of country-by-country mean values of mercury in hair samples. (See Figure 1) The results of individual women's hair samples were not made publicly available.

Figure 1 Hair sample results: mean values per country

Origin country	Number of participants	Mean value [ug/g]
Armenia	11	0,13
Poland	24	0,25
Argentina	8	0,16
Macedonia	19	0,16
Bulgaria	6	0,17
The Netherlands	8	0,22
Slovakia	9	0,26
Germany	17	0,29
Sweden	5	0,3
Belgium	36	0,65
Czech Republic	10	0,33
Ireland	18	0,35
India	10	0,37
Belarus	11	0,43
South Africa	3	0,53
UK	12	0,54
Cyprus	9	0,55
France	8	0,57
Croatia	10	0,66
Philippines	9	0,92
Spain	9	2,18

Testimony Box

What is a safe level of mercury?

"The evidence that a mother's exposure to methyl mercury can affect the neurodevelopment of her unborn child is not disputed. What is still debated is the level of environmental mercury contamination, which causes documented harm. Over time, our techniques have improved and we have been able to identify harm to humans at lower and lower levels. In time, it is likely that the scientific consensus will conclude that there is no safe level of foetal exposure.
Peter Orris, MD, MPH, FACP, FACOEM, Professor at University of Illinois at Chicago School of Public Health

Capacity building for advocacy

The campaign process involved women at all stages. The aim was to encourage their contribution and to provide them with an opportunity to be part of an effective

campaign to put across key messages on environmental health to policy makers and the media.

The first step was to share information about mercury and health. Over 50 groups were contacted. They were mainly based in Europe and most were members of HCWH or HEAL. Groups that volunteered to take part were mainly based in Europe, some represented doctors' associations and women's groups and three were based in countries outside Europe, namely the Philippines, Argentina and India. Toxics Link, India is an NGO with a strong track record in toxic campaign work.

Each group expressing interest was encouraged to review materials produced by the campaign, translate and disseminate the information produced, and organise the hair sampling. Once individual results had been shared with women participants, the overall findings could be officially released as part of an effort to raise awareness about the issue.

The report was launched at an event organised by HEAL and HCWH in the European Parliament in Brussels on 10 January 2007. The meeting was addressed by leading women health and environment advocates, politicians and other key figures in European health and environment policy. For example, the Zero Mercury Campaign, which aims to minimise mercury in the environment at EU level and globally, addressed participants. Many of the national women coordinators were brought to Brussels to attend the meeting and network with others in the campaign.

Testimony Box

Conveying a convincing and urgent message

"Even if we stopped all mercury production and spills and emissions today, our global food supply would still be contaminated for years to come. Yet we face a future of mercury-contaminated fish, a valuable source of nutrition particularly for pregnant women, with no real end in sight.

If we have to ask women to eat only certain types of fish, and we do, we must also ask how quickly we can stop using mercury and change industrials processes that contribute to mercury contamination.

We hope this campaign transmits to leaders and industry worldwide, the silent but increasing health damage of mercury to our children, and the urgency of acting today, not next year or the year after."

Genon K. Jensen, Executive Director, Health & Environment Alliance

Journalists interviewed some of the national coordinators who came to Brussels. Media coverage included a feature in the early evening news on EuroNews, a television station broadcast in seven European languages, and in a dispatch from Associated Press news agency that was published by numerous newspapers and websites. Some national coordinators organised local press conferences with national representatives recommending specific measures for protecting women mercury exposure and asking for national legislative measures to reduce mercury

pollution. Where necessary, coordinators were supported in their efforts to work with national media.

A special effort was made to involve national coordinators in sharing the key messages from the report with environmental groups and experts. For example, a representative from Women in Europe for a Common Future presented the campaign and distributed copies of the report at discussions on mercury policy at the Governing Council of the United Nations Environment Programme (UNEP) in Nairobi, Kenya in February 2007. UNEP is continuing to investigate the damaging environmental and health mercury effects and preparing discussions for a globally binding legal agreement to restrict the use of mercury in 2009. Feedback from the presentation indicated considerable interest, especially from policy makers who were previously unaware of the extent of the evidence of harm to health from low-dose exposure to mercury.

Multiplier effect of networking

The entire research and communication initiative was highly collaborative process aimed at reaching as many people as possible. The materials produced were disseminated to the groups who then themselves shared the materials. The project documents included fact sheets, frequently asked questions, press releases, guidelines on hair sampling, and hints on working with the media.

Many groups further extended access to information by translating materials into local languages. Campaign materials are now available on partner NGO websites in 10 languages, providing a resource for visitors and for non-English language journalists contributing to articles in the press in more than a dozen countries.

Several hundred women became advocates themselves representing groups and organisations worldwide or simply as a result of having their hair tested. A considerable number spoke to the media either in Brussels or in their own countries. They described both their own concerns and the necessary policy changes required to control mercury pollution. Some had provided testimonies for the international report that were later used in articles in newsletters and journals.

Creating top-profile spokeswomen

The campaign involved many women politicians and health professionals thanks to the wide-ranging contacts of HEAL, HCWH and participant groups.

A key political leader on environmental issues at the European level, Belgium MEP Frederique Ries, who is a member of the European Committee on the Environment, Public Health and Food Safety, addressed the Brussels meeting and spoke to the media about the campaign. She drew further attention by putting photos of herself having a hair sample taken on her official website.

German Green MEP, Hiltrud Breyer has said publicly that she appreciated the campaign. She said it highlighted scientific research that underlined the message on the need for a mercury ban on mercury.

Testimony Box

Flagging the latest science

“Recent studies have once again confirmed the detrimental and irreversible effects toxic substances like mercury have during phases of a child’s brain development. A brain is unique and cannot be replaced. It is highly regrettable that the new EU-chemicals legislation REACH does not adequately protect humans and the environment from dangerous chemicals. I hope the EU will take the lead for a global ban, which is long overdue. This report from the “Stay Healthy, Stop Mercury” campaign underlines these arguments.”

Hiltrud Breyer, Member of the European Parliament, Greens/EFA, Germany

Many doctors and nurses took up the messages at a policy, professional and personal level. A major hospital in Grenada, Spain now features the risks to health from mercury on their website. In Croatia, the campaign coordinator became a high-profile spokesperson after she organised a press conference that sparked a national debate on mercury and health.

Achievements

Assessing how effective a campaign has been is never straightforward. However, some evidence suggests that the campaign did contribute to the EU Parliament adopting a ban on mercury in measuring devices in July 2007. Healthcare institutions can no longer buy mercury thermometers, and the Commission is committed to producing a report in 2009 about the use of mercury blood pressure devices in healthcare. This report will address the alternatives and their availability and, once the review is complete, HCWH believes the Commission will have an unanswerable case for prohibiting the sale of these devices as well.

The campaign also helped convince those responsible for the planned EU bio monitoring project that mercury should be one of the chemicals to measure in women

in their reproductive years. The European Commission is also currently investigating the viability of restricting dental amalgam use, and various EU authorities are debating the scope of a proposal to ban the export of mercury from Europe to countries of the global south.

The campaign made more information materials available. For example, it provided groups in hospitals in Europe and in Philippines, India and Argentina, with more appropriate materials to advocate for policies to eliminate mercury from hospitals and healthcare sector.

The “Halting the Child Brain Drain” report provided women with information about how they can be exposed to mercury in food and other products, and how they can protect themselves. Campaign fact sheets provided guidance on fish consumption, alternative mercury-free products, information on what to do in case of mercury spill and even an overview of current research regarding the still controversial uses of mercury in vaccines and dental amalgam. Women were also given guidance on how to take precautionary measures and to ask the right questions of their doctors and politicians so that they could become spokespeople for their children, families and communities.

HEAL and HCWH take pride in the fact that hundreds, perhaps thousands, more women now know about the risks of mercury to health, how to take personal action to protect their children, and how to convince others of the need for local policy change and a global ban. All these women are aware of which fish to avoid, when, in what quantities, and what needs to be done at the global level to reduce exposure to mercury.

Conclusions

The health effects from low doses of mercury, which are recognised by scientists, clearly indicate that mercury should not be in our bodies, nor our children’s, even at low levels.

Existing research on levels of exposure in some populations, while still insufficient, nevertheless gives us reason to be concerned about society’s vulnerable groups. Although the risk from low doses of mercury may be low at an individual level, this does not mean we should be reluctant to take appropriate action. Developmental effects on children today will impact on the whole population in the future. The World

Health Organization should show leadership by prioritising mercury as a serious health hazard, particularly in raising awareness in the global south and among vulnerable groups.

All sources of mercury emissions need to be addressed systematically. In healthcare products, the use of mercury inevitably leads to its release into the environment and contamination of the food chain. A global ban on mercury thermometers is a first step. Unless concerted action is taken to substitute mercury with safer alternatives in the health care sector, the relative importance of its contribution will increase as other sources of mercury are addressed and phased out. The historic and continuing use of mercury in dental amalgam will be a growing source of mercury emissions as it escapes into the atmosphere in smoke expelled from crematoria.

Considerable scope exists for reducing the use and emissions of mercury globally. In Europe, regulatory measures adopted so far have begun to make a difference to the amount of mercury emitted into the environment. Positive proposals by the EU and the possibility of a global legal instrument on mercury are both significant steps towards reducing man-made sources of mercury into the environment. However, they need to be supported by financial assistance from developed countries. Globally, emissions may still be rising and action taken must be swift and targeted at ultimately phasing out the use of mercury completely. If mercury continues to be used in products and processes, it will continue to be emitted and added to the "global pool" where it can re-circulate again and again in the global environment. Indeed, even if all uses and emissions of mercury were stopped immediately it is not known how long the contamination of the food chain would continue. (4)

Future action is essential on two levels; *first,* policy change is needed to phase out the use of mercury globally by substituting it with safer alternatives, and *second*, education and communication is needed to ensure that people are better informed about how to prevent the build up of mercury in their bodies, in order to protect the health of future generations.

Box

How much is safe?

The European Commission suggests that women who might become pregnant, women who are pregnant or are breastfeeding and young children should not eat more than one small portion (less than 100 g) per week of large predatory fish, such as swordfish, shark, marlin and pike. If they do eat a portion of this fish, they should not eat any other fish during the same week. Nor should they eat tuna more than twice per week.

The Swedish recommendation is the most stringent (and therefore the most protective) in the European Union. It advises: "Women who are pregnant or thinking of becoming pregnant and breastfeeding should NEVER eat large halibut, cod liver, eel, shark, swordfish, or tuna, fresh or frozen."

Source: Mercury and Fish Consumption Fact Sheet available at http://www.env-health.org/IMG/pdf/Fish_consumption.pdf

The Health and Environment Alliance (formerly European Public Health Alliance Environment Network (EEN)) is an international NGO that advocates greater protection of the environment as a means to improving the health and well being of Europeans. It brings together over 50 citizens', patients', women's, health professionals' and environmental organisations across Europe, and has a strong track record in increasing public and expert engagement in EU debates and in the decision-making process.

Health Care Without Harm Europe (HCWH) is part of an international coalition of 450 hospitals and health care systems, medical and nursing associations, community groups, health-affected constituencies, labour unions, and environmental and health organisations, working to protect health and the environment by reducing pollution and the use of toxic chemicals in healthcare. The coalition believes that nothing bought, built and used in healthcare should create conditions, which make people ill.

Resources

The Stay Healthy, Stop Mercury report, "Halting the child brain drain, Why we need to tackle global mercury contamination", plus press packs, fact sheets and translated materials are available on the campaign website. Visit: HEAL's campaign website at http://www.env-health.org/r/145

Fact sheets cover the following issues: mercury and health, health care, fish consumption, vaccines, mercury spills, substituting mercury in sphygmomanometers, and dental amalgam.

References

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4. European Commission, SEC(2005)101, op.cit., p 15.