

Executive summary

Recently, the foremost scientific authority on the development of children's brains warned of a "chemical braindrain" from low level mercury exposure. Professor Philippe Grandjean, from Harvard University and the University of Southern Denmark, says that our society is losing its intelligence - IQ points in our population are being chemically destroyed. The damage to developing brains, much of which is neurologically irreversible, arises from exposure to methylmercury as well as other neurodevelopmental toxicants during early foetal development. These toxicants cause brain injury at doses much lower than have been previously recognised, as they are much lower than those affecting adult brain function, and much lower than those levels involved in acute mercury poisoning disasters in recent history.

The most vulnerable populations are babies and young children, and by extension, the women who bear them. Because mercury is most toxic to the developing brain; because mercury is stored in the human body and transmitted to the baby during pregnancy; and because many women are unaware of the problem and the sources of exposure; pregnant women or women who have yet to bear children can unknowingly expose their foetus to the risk of serious neurological disorders. Mercury is highly toxic, especially when metabolised into methyl mercury, which accumulates in fish, travels up the food chain and poses risks to humans who consume fish on a regular basis. The main sources of exposure are firstly, through consumption of fish, especially certain kinds of fish – those highest in the aquatic food chain; secondly, through exposure to mercury via contact at work; or thirdly, from industrial sources in the community.

To tackle this public health problem, governments and international bodies have been setting recommended safety levels that aim to protect people. Meanwhile, it is still unclear at what precise level there will be no toxic effects on the foetal brain. Over time, the scientific assessments of safe levels have been constantly revised downwards towards lower levels.

Some scientists believe that there may be no level of mercury in the body which is safe. The current estimates of levels of exposure, therefore, both within and outside of Europe, are a cause for great concern. A large percentage of the world's population consume fish regularly, and so far, regulation has not reduced this health threat to future generations.

Over the past year, Health Care Without Harm and the Health & Environment Alliance have undertaken a campaign to raise awareness about the silent braindrain, and to mobilise the health community to advocate for a swift reduction of mercury pollution in the EU and across the globe. Our Stay Healthy Stop Mercury Campaign has conducted an illustrative survey of mercury levels in hair from over 250 women in 21 countries. This survey demonstrates that more than 95% of the women tested had detectable levels in their bodies. The levels which people ingest directly are often estimated from the levels found in hair, and so certain 'hair levels' are considered to correspond with so-called 'intake' doses. Fifteen per cent were above the most protective "Reference Dose" of 1 µg/g set by the United States National Research Council, a level which should not be exceeded in women of child-bearing age. However, all women were below the Benchmark dose limit of 10 µg/g set in 1990 by the World Health Organisation. This is the level at which it is accepted that there are clear neurological effects. Our survey suggested a link between fish consumption and raised mercury levels.

At an individual level, the risk from low doses of mercury may be less alarming, because an increased mercury level in the mother does not automatically lead to brain damage in the child, and because small effects may not be noticeable. However, the implications of widespread low levels of mercury in all childbearing women for our society are enormous. Due to widespread mercury pollution, our current and future children are at greater risk of suffering from lower intelligence, learning disabilities, sensory deficits, and delays in normal development.

It is very difficult and yet vital for public health officials and other public decision-makers to take low-level mercury contamination seriously. Because mercury is a global pollutant with no respect for national or regional boundaries, its release anywhere in the world can contribute to the chemical braindrain anywhere else. Ultimately global action is necessary to eliminate intentional mercury use – and thereby its subsequent release; clean up mercury contamination; and reduce unintentional releases such as those from major air sources like incinerators, coal-fired power plants and cement kilns. Substitute products and technologies are widely available for the majority of mercury uses which would prevent mercury releases and emissions. These should be pursued as fast as possible at any and all levels of authority, whether governmental, public interest or commercial. However, even if all uses of mercury were stopped immediately, the mercury already in the environment and the food chain

would continue to pose a serious risk to health. Therefore, it is also imperative that governments, private and public interest entities enable us to take immediate measures to protect our children’s health before a concerted, comprehensive solution is achieved. It is essential to identify the populations most at risk through biomonitoring and ensure that people are better informed about how to avoid mercury exposure.

Healthcare professionals can play a leading role in achieving a world free of mercury contamination. The health care sector, including dentistry, is a significant contributor to health care waste, and can thus promote mercury free alternative devices, leading the way for other industries. Moreover, the health care sector is an important trusted source of information, and thereby has a special role in raising public awareness on risks for specific populations.

THE “STAY HEALTHY, STOP MERCURY” CAMPAIGN CALLS FOR:

- ▲ *Policy changes to speed up reductions in the use of mercury, through a global ban with community involvement to ensure effective implementation. This ban must tackle the mercury problem on all fronts, from production, to use, to disposal – and in all parts of the world, so that the burden does not migrate from one region to another. Europe is a leader in these efforts but there is still a lot to be achieved.*
- ▲ *Education of the population about the current risks and provision of tools which show how to minimise the risk of exposing babies and children to mercury. Biomonitoring of actual exposure which involves the public and the health community is key to properly targeting these educational measures, as well as informing policy measures.*
- ▲ *Promotion of alternative technology transfer and financial assistance to Global South countries, to ensure that they can also implement the protective measures which Europe and other developed countries are undertaking.*