

# The Global Mercury Crisis Disproportionally Threatens the World's Most Vulnerable Populations



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## Mercury Policy Project

Promoting policies to eliminate mercury use and reduce mercury exposure



- **Mercury Policy Project** was formed in 1998 and works to promote policies to eliminate mercury uses, reduce the export and trafficking of mercury, and significantly reduce mercury exposures at the local, national, and international levels.
- **Zero Mercury Working Group** is an international coalition of 85 public interest NGOs from around the world founded in 2005 to reduce global mercury pollution and exposure to mercury.

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# **Mercury pollution & exposure compromises the most basic human rights—**

- Uncontaminated food and healthy diet,
- Work in safe environments,
- Rights of indigenous peoples to preserve traditional ways of life.

## **These basic rights are threatened by:**

- Buildup of mercury in fish, the environment and in people,
- Transference of mercury generally from richer, developed countries to less developed nations.

# Children are on the front lines of the global mercury crisis



Child using mercury amalgamation to help her family search for gold



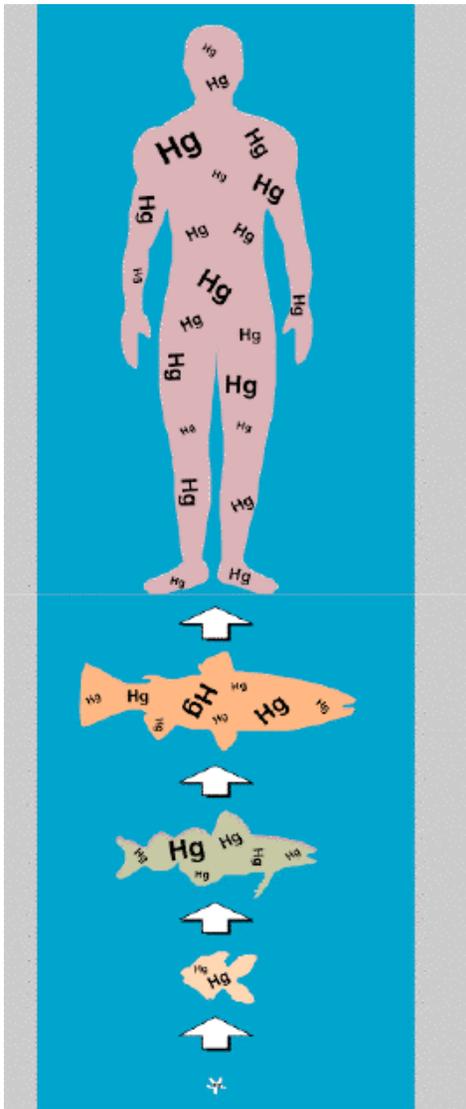
Child affected by a toxic level of mercury

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# U.S. National Research Council

“There is also evidence in humans and animals that exposure to MeHg can have adverse effects on the developing and adult cardiovascular system... Some research demonstrated adverse cardiovascular effects at or below MeHg exposure levels associated with neurodevelopmental effects...”

*Toxicological Effects of Methylmercury (2000)*



**Figure 4.** Mercury (Hg) biomagnifies from the bottom to the top of the food chain. Even at very low input rates to aquatic ecosystems that are remote from point sources, biomagnification

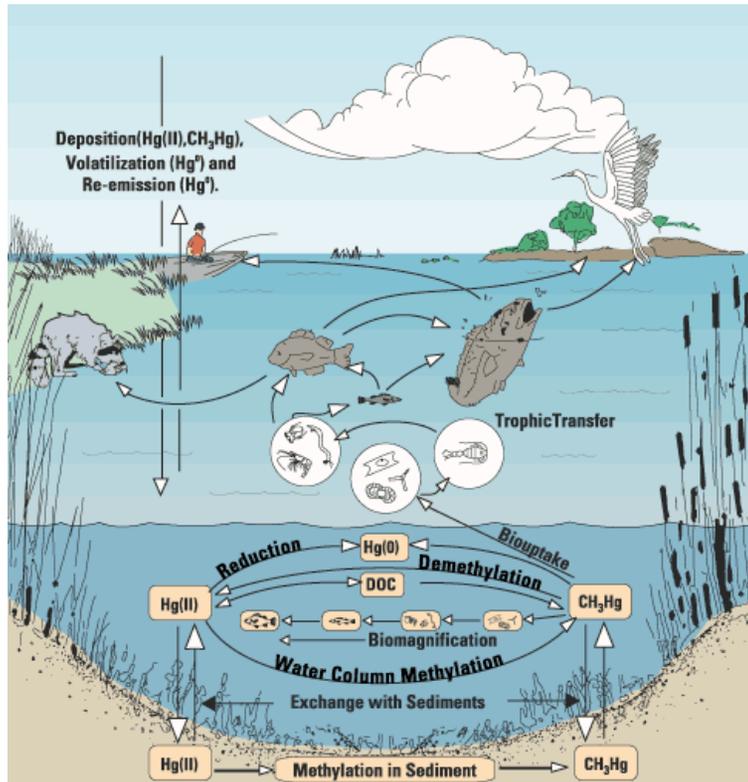
# Mercury Releases From Major Sources

- Coal combustion—estimated to be the largest global source of mercury emissions
- Other sources also can release significant quantities of mercury
  - Chlor-alkali facilities
  - Incineration of wastes (municipal, medical, and hazardous wastes)
  - Mining, product discards and mercury waste piles



Residents walk down a road that leads to the county's power plants in Zhangjiakou, China

# Mercury “Hotspots”



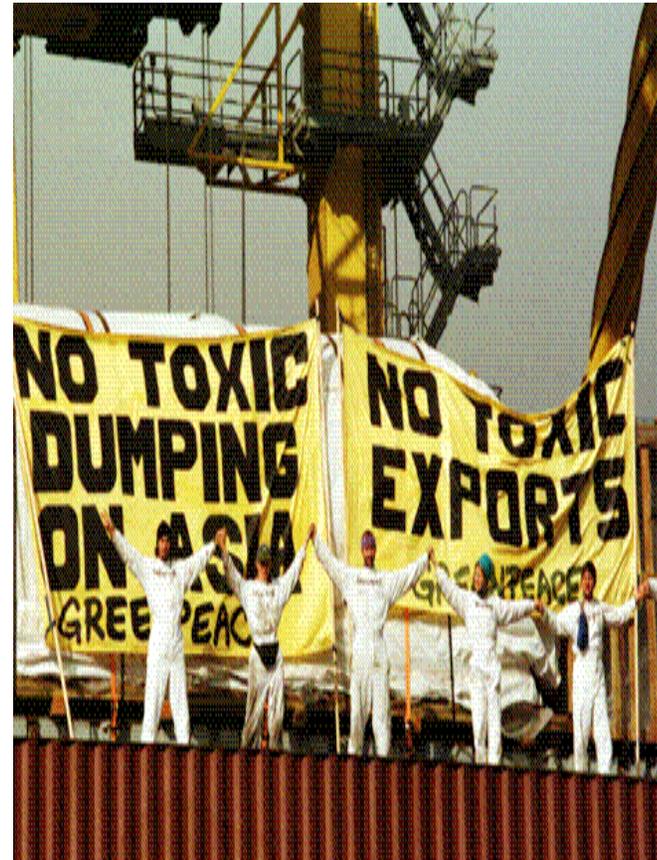
[www.epa.gov/grtlakes/seahome/mercury/src/presmerc.htm](http://www.epa.gov/grtlakes/seahome/mercury/src/presmerc.htm)

Mercury concentrates in so-called Hotspots:

- 1) Often located near low income and disadvantaged communities,
- 2) In developing countries,
- 3) Mercury “sunrise” in Arctic release twice as much in 4 months as other regions get annually; results in higher Hg levels in Inuit food

# What happens to 50% of the world's mercury supply, exported from the USA & EU?

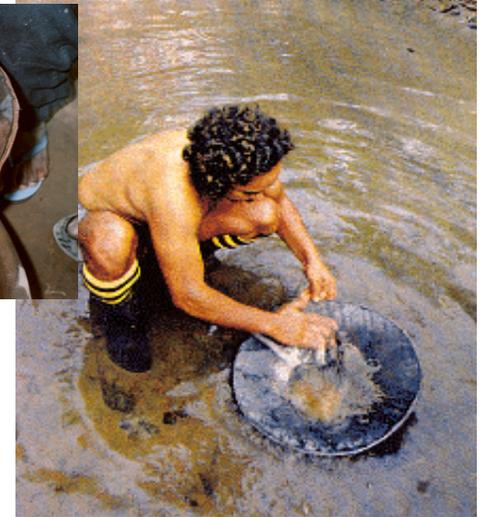
- General direction of mercury trade flow from developed world to developing world
- Little or no control over mercury end use once it leaves USA and EU
- Uses in the developing world are often highly dispersive and polluting practices, both local and global
- Mercury export bans in EU (2011) & USA (2013) & closing primary Hg mines, will reduce global supply



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# Mercury Use in Artisanal & Small Scale Gold Mining (ASGM)

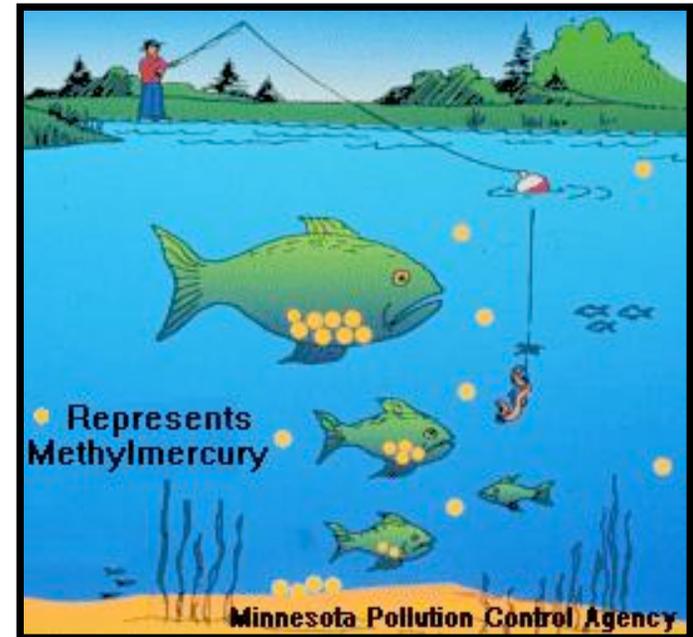
- Miners use mercury to amalgamate gold
- 1000 tons of mercury in ASGM consumed annually in 40-50 developing countries
- 10-15 million miners, with 100 million dependents
- Results in much pollution & exposure; upwards of half of miners intoxicated w/mercury
- +350 MT mercury released to atmosphere annually



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# Global Fish Consumption & Mercury

- More than one billion people worldwide rely on fish as their primary protein source.
- Global fish consumption is at record levels—making fish a more important global staple than beef, pork or poultry.
- In the developing world, fish provides as much as 25 percent of all animal protein in Asia, and 17 percent in Africa.
- In many indigenous communities fish is at the center of centuries-old subsistence economies.



# Sensitive Populations Most at Risk

- People and cultures where fish is a staple
- People eating fish for “health” reasons



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# Governments Issue Mercury Fish Consumption Advisories

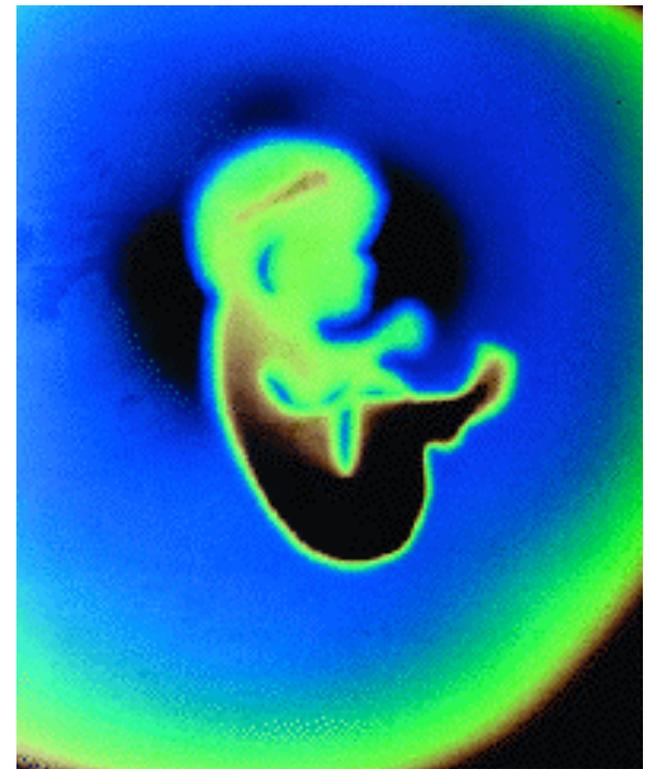
- US FDA found canned “*white albacore*” tuna has 3-4 times more mercury than “*chunk light*” from U.S. tuna processors
- FDA warns pregnant women and children to not eat certain fish, such as swordfish and shark, and limit canned “*white albacore*” to 6 ounces per week
- EU Food Standard Authority (EFSA) warns women and children to limit eating certain fish, including tuna and swordfish
- EFSA estimates 44% French children (ages 3-6) have mercury levels that exceed U.S. EPA’s RfD health standard



# What's Causing Hg Fish Advisories?

## Sensitive Populations Exposure to Methylmercury

- Babies and children under age 6
  - Incomplete and rapidly growing nervous systems are especially vulnerable to mercury
  - Blood brain barrier, which restricts the penetration of toxicants, is not fully developed in humans until about one year of age
- Exposure can permanently damage brain, kidneys and developing fetus



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# MeHg Exposure Impacts on Children



- Those who eat fish more than 3 times per week show worse performance in the general cognitive, executive and perceptual-manipulative areas.
- Those with higher levels of exposure to mercury show a generalized delay in cognitive, memory and verbal areas.

12/10/09

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# Case Study: Mercury in Canned Tuna

- Only animal protein source available in most state women, infant & children (WIC) programs
- Staple of school lunch programs, emergency food shelters, often subsidized by USG
- Grocery stores often sell as “loss leader”
- Main protein source for many poor families
- “Off brands represent over 50% of the market
- Testing finds mercury levels in imported “light” cans of tuna often exceed standards by far
- Tuna greatest Hg exposure concern in USA



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# Total Mercury found in Tuna\* \*\*

Species and/or Fishing Fleet	Average	Median	Range in parts per million (ppm)
Albacore (White)	0.401	0.400	0.170-.730
All Light Tunas	0.269	0.160	0.012-1.50
American Light	0.204	0.120	0.023-.990
Asian Light	0.073	0.052	0.012-.440
<b>Costa Rica Light</b>	<b>0.281</b>	<b>0.230</b>	<b>0.079-1.30</b>
<b>Ecuador Light</b>	<b>0.754</b>	<b>0.680</b>	<b>0.300-1.50</b>
<b>Mexican Light</b>	<b>0.310</b>	<b>0.180</b>	<b>0.064-1.40</b>
Overall Average	0.285 ppm	0.180 ppm	<b>0.012-1.50 ppm</b>

\*From Defenders of Wildlife 2006 report, "*Is Our Tuna Family Safe?*"

\*\*Note: U.S. FDA advises pregnant women against consuming more than 6 ounces per week of canned 'white' tuna, which on average contains over 0.35 ppm mercury; no warnings, however, for imported 'light' canned tuna

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# Mercury Pollution: Global Problem Warranting International Solutions

- 3-5 fold increase over past 300 years
- Mercury cycling threatens global fish supply and consumers
- Primary exposure risk for pregnant women and children
- Increased risks also for sub-populations dependent on fish & mammals
- W.H.O. paper: “...mercury may have **no threshold below which some adverse health effects do not occur.**”



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# ***There are alternatives to mercury, but there is no alternative to international cooperation.***

- Consensus reached in Feb. 2009 for UNEP Governing Council to establish binding global Hg reduction strategy
- Global Hg reduction strategy likely to simultaneously coordinate reduction in demand, supply & exports
- Goals established to reduce mercury releases from major sources
- UNEP GC Decision 25 recognized “**The Principle of Common But Differentiated Responsibilities**”
- Outstanding questions remains whether donor countries will follow through



**UNEP Headquarters  
in Nairobi, Kenya**

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