

# Mercury is swimming on your plate

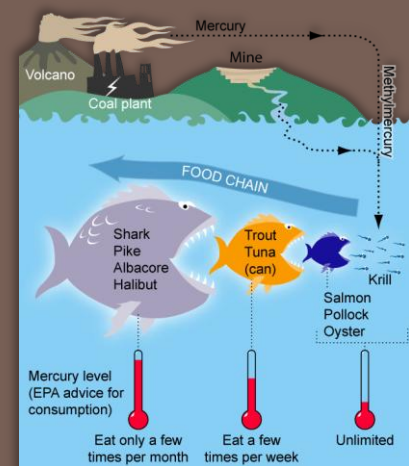
Mercury poses a very serious health concern for humans since it bioaccumulated in fish as the toxic methylmercury. This ends up on your plate.

## Why is mercury in the ocean important?

Mercury (Hg) is a pollutant resulting from both human causes, such as coal fired power plants, and natural cases, such as volcanoes<sup>1</sup>. This element is different than other trace elements since it is highly stable in the atmosphere allowing it to be transported globally and deposited in the oceans<sup>1</sup>. It is then absorbed by algae as methylmercury at the start of the food chain<sup>2</sup>. Bioaccumulation occurs as the higher on the food chain with top predators having the most accumulation<sup>2</sup>. These top predators, along with other fish and shellfish, are often caught and consumed by humans, which further accumulates mercury in humans<sup>3</sup>.

## How does mercury affect humans?

When mercury accumulates in humans as a result of methylmercury in fish, mercury poisoning may occur. Pregnant women may consume methylmercury which impairs the neurological development of the fetus<sup>4</sup>. In adults, methylmercury can permanently damage the kidneys and brain resulting in symptoms such as personality changes, impairment of peripheral vision, incoordination in movement, speech and hearing problems<sup>3,4</sup>. This leads to loss of productivity that costs about \$13billion Canadian dollars each year and \$2 billion are attributed to power plant emissions (values account for inflation and currency change)<sup>5</sup>.



<http://www.groundtruthtrekking.org/Graphics/MercuryFoodChain.html>

Written by Mary Kassis  
[m.kassis@hotmail.ca](mailto:m.kassis@hotmail.ca)

## So what can be done?



## Reduce mercury emissions to ensure better environment and health

While there are safety measures in place in order to ensure that fish with toxic amounts of mercury are not sold to the public, the root of the problem must be dealt with. Most pollution is legal<sup>5</sup>. The amount of mercury that is being deposited in the ocean must be reduced in order to lessen the amount of methylmercury being bioaccumulated through the food chain up to humans. As previously mentioned, emissions include coal-fired power plants and fossil fuel combustion, which is estimated to be about 90% of all human-caused emissions<sup>6</sup>.

Outlined below are recommendations to reduce mercury emissions:

- Monitor air pollution by using Air Pollution Control Device (APCS)<sup>7</sup>
- Substitute the use of mercury with non-mercury alternatives when possible<sup>7</sup>
- Ensure pre-combustion coal cleaning<sup>8</sup>
- Reducing the quantities of coal consumed through increased energy efficiency<sup>8</sup>
- Use coal with lower mercury content<sup>8</sup>
- Enforce the use of existing control technologies to remove mercury from all power plants
  - Selective Catalyst reduction with flue-gas desulfurization (FGD)<sup>7</sup>
  - Activated Carbon Injection (ACI)<sup>7</sup>
  - ACI with Fabric Filter (FF) or Electrostatic Precipitators (ESP)<sup>7</sup>

### References

- <sup>1</sup> Hylander L.D. and Goodsite M.E. 2006. Environmental costs of mercury pollution. *Science of the Total Environment* **368**: 352-270.
- <sup>2</sup> Croteau, M., Luoma S.N., and Stewart A. R. 2005. Trophic transfer of metals along freshwater food webs: Evidence of cadmium biomagnification in nature. *Limnol. Oceanogr.* **50**(5): 1511-1519.
- <sup>3</sup> Toxicological Profile for mercury. 1999. U.S. Department of health and human services
- <sup>4</sup> Health Effects. 2014. U.S. Environmental Protection Agency <http://www.epa.gov/mercury/effects.htm> (accessed 26 November 2014)
- <sup>5</sup> Transande L., Landrigan P.J. and Schechter C. 2005. *Environ Health Perspect.* **113**(5): 590-596.
- <sup>6</sup> Swain E.B., Jakus P.M., Rice G., Lupi F., Maxon P.A., Pacyna J.M., Penn A., Spiegel S.J. And Veiga M.M. 2007. Socioeconomic Consequences of Mercury Use and Pollution. *Ambio* **36**(1): 45-61.
- <sup>7</sup> Cleaner Power Plants. United States Environmental Protection Agency <http://www.epa.gov/mats/powerplants.html> (accessed 26 November 2014)
- <sup>8</sup> Mercury. Facts on Health and the Environment. <http://www.epa.gov/en/mercury/1-3/mercury-6.html> (accessed 26 November 2014)