

Mercury: An Industrial Meal

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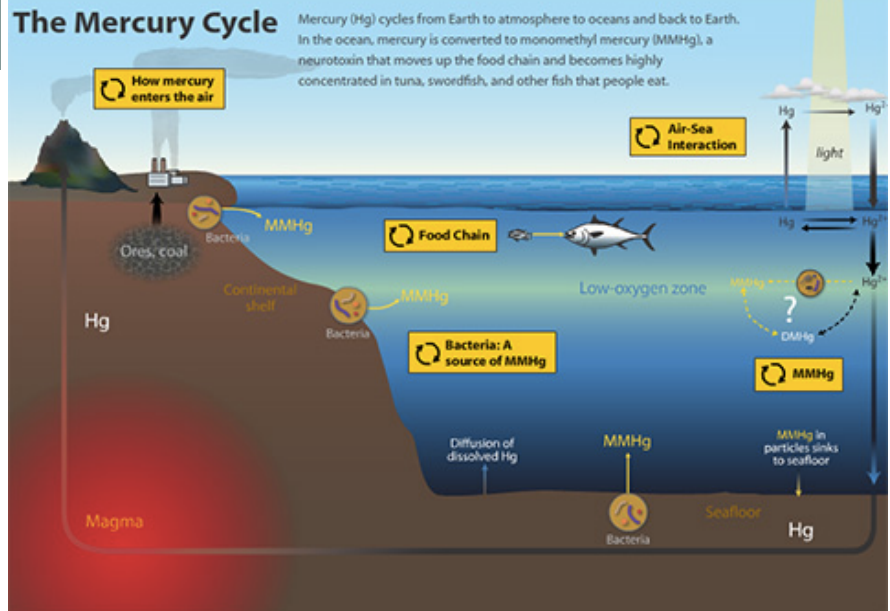
BIOL 420 – Ocean Conservation & Sustainability

Why should you care?

Release of mercury into the environment starts a dangerous sequence towards humans' primary exposure to mercury pollution: the consumption of fish. Mercury pollution can make its way to oceans and waterways, contaminating fish and seafood, and accumulating in higher concentrations as it makes its way up the food chain.¹

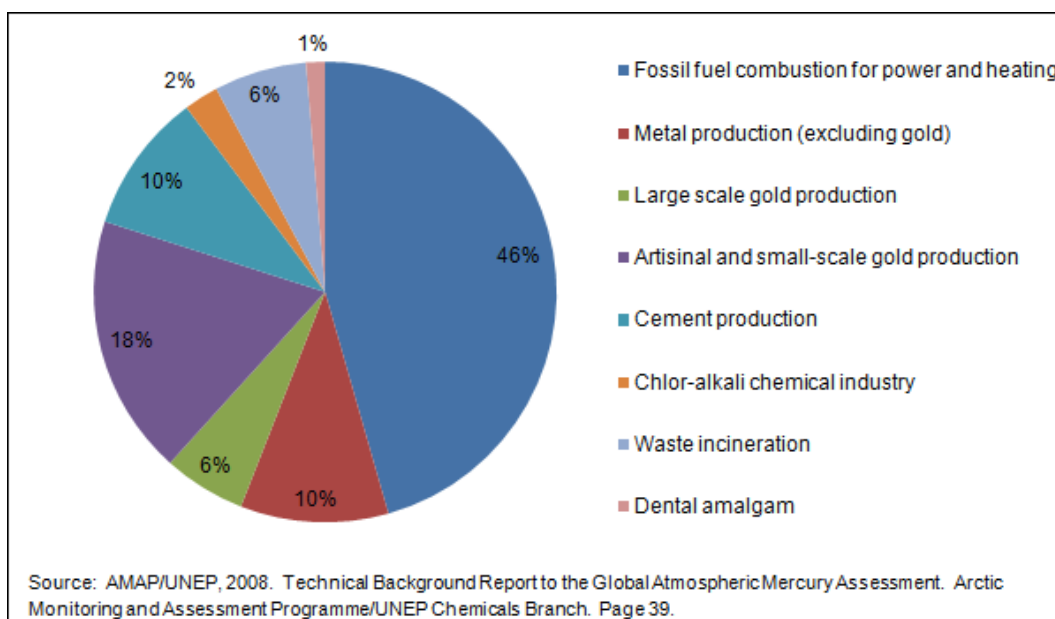
Where does the mercury come from?

Major sources of mercury pollution in the US include coal-fired power plants, steel production, incinerators, and cement plants. Power plants are the *largest source*, emitting 33 tons of mercury pollution in the US annually, and contributing to almost half of all mercury emissions.¹



http://www.whoi.edu/cms/images/oceanus/callout-mercury-cycle_292376.jpg

The Mercury Cycle: Mercury (Hg) cycles from Earth to the atmosphere to the oceans and then back to the earth through the ocean. In the ocean the mercury is 'fixed' by cultures of bacteria into monomethyl mercury (MMHg), a neurotoxin that works its way up the food chain into higher trophic levels and bioaccumulates becoming very concentrated in species such as: Swordfish, Chilean Sea bass, and Blue Fin Tuna (shown below).





Health Impacts of Mercury:

- Degenerative effects on nervous, digestive, and immune systems²
- Toxic effects on organs: lungs, kidneys, skin, and eyes²
- Serious threat to pregnant women while the child is *in utero* as well as early development²

<http://news.nationalgeographic.com/content/dam/news/2015/06/29/coalplant/01mercurycoalplant.ngsversion.1435671000624.adapt.768.1.jpg>

Limiting mercury pollution for the health of all

In order to best deal with mercury pollution, we suggest focusing on the areas of largest mercury production. This area specifically is the combustion of fossil fuels for the purpose of power and heating.

Suggestions in help limit mercury pollution:

- Establishing standards to reduce toxic pollution from the thousands of power plants nationwide¹
 - Implementing monitoring systems and setting S.M.A.R.T. goals (Specific, Measurable, Attainable, Realistic, and Time Specific) to be met within a reasonable amount of time.
- Reducing mercury mining and consumption of raw materials and products that generate mercury releases²
- Controlling mercury emissions through 'end-of-pipe techniques' such as: exhaust gas filtering, may be especially appropriate to raw materials with trace mercury contamination, including fossil-fuel power plants, cement production (in which the lime raw material often contains trace mercury)³

References:

- ¹ NRDC: Mercury Contamination in Fish – Protect Yourself and Your Family. (n.d.). Retrieved December 4, 2015, from <http://www.nrdc.org/health/effects/mercury/protect.asp>
- ² NRDC: Mercury Contamination in Fish – Protect Yourself and Your Family. (n.d.). Retrieved December 4, 2015, from <http://www.nrdc.org/health/effects/mercury/guide.asp>
- ³ Mercury. (n.d.). Retrieved December 3, 2015, from <http://www.greenfacts.org/en/mercury/1-3/mercury-6.htm>