

# Mercury & Fish

- Mercury
- Mercury in the Environment
- Mercury and Humans
- Edible Fish
- Media
- Green Economy



# Mercury

## What is Mercury?

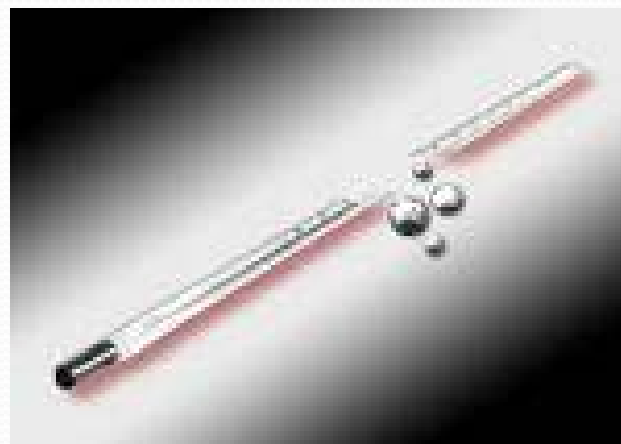
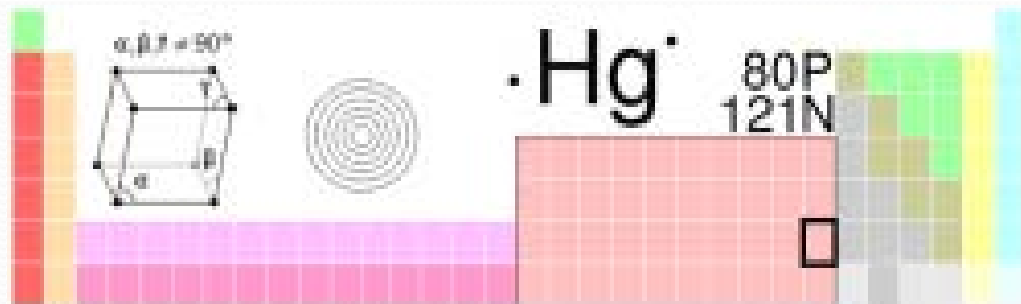
- Heavy silver d-block metal
- Hg, Atomic #80

## Uses of Mercury

- Thermometers, Barometers, Manometers, Sphygmomanometers, Float Valves, Other scientific apparatus...

## Hazards

- Mercury is poisoning
  - Can permanently damage or fatally injure the brain and kidneys
  - Can be absorbed through the skin and cause allergic reactions
  - May cause severe renal and gastrointestinal toxicity
- Most toxic form of Mercury
  - Methyl Mercury



# Environment

- Mercury can migrate between various media such as air, soil, and water.
  - Living organisms more easily absorb some mercury compounds than elemental mercury itself, but when atmospheric mercury falls into the earth, it may be altered by bacterial or chemical actions changing it into an organic form known as Methylmercury.
  - Methylmercury is much more toxic than the original metal because it has the ability to migrate through cell membranes and “bioaccumulate” in living tissue. Bioaccumulation is where a substance builds up in a living organism from surrounding air, water, or consumption and contaminated food.
- Three ways
    - Naturally
      - Volcanoes, weathering of rocks, forest fires, soils
    - Human Activities
      - Burning fossil fuels, municipal/medical waste
    - Re-introduces Natural Process
      - Evaporation of ocean water

# The Process

- When mercury is released into the atmosphere, from its point of origin, it enters the global mercury cycle to be ultimately wet or dry deposited in aquatic and terrestrial ecosystems. Then it is converted by bacterial action in lakes and waterways to the more toxic form, methylmercury. Then it bioaccumulates in fish and shellfish. Then a substance builds up in a living organism from the surrounding air or water, or through the consumption of contaminated food. The methylmercury gets more concentrated as it is transferred up the food chain to birds, animals, marine mammals and humans in a process known as biomagnifications. Through this cycle, mercury can contaminate entire food webs, posing a serious threat to ecosystem health and particularly to the higher order species in the food chain.

# Mercury and humans

- According to the EPA, 5.8 parts per billion is the limit for mercury levels in the blood.
- No more than 12 ounces of white canned tuna should be consumed each week and larger fish should be avoided
- Health effects
  - Toxicity to liver, alteration of cellular genetic code, destruction of white blood cells, Parkinson's disease, Addison's disease, alters thyroid to absorb more nuclear radiation
- Pregnancy
  - only 3.5 parts per billion, found in 16% of American women, need to be present in the mothers blood to cause harm to the fetus.
  - Mercury in the umbilical chord is 1.7 times higher than the mercury in the mothers blood
  - Health effects on babies and children
    - Still births, developmental delays, brain damage, limb deformity, nervous system damage, hyperactivity, Acrodynia



# Can I still Eat Fish? Should I?

## Common Fish High in Mercury Levels

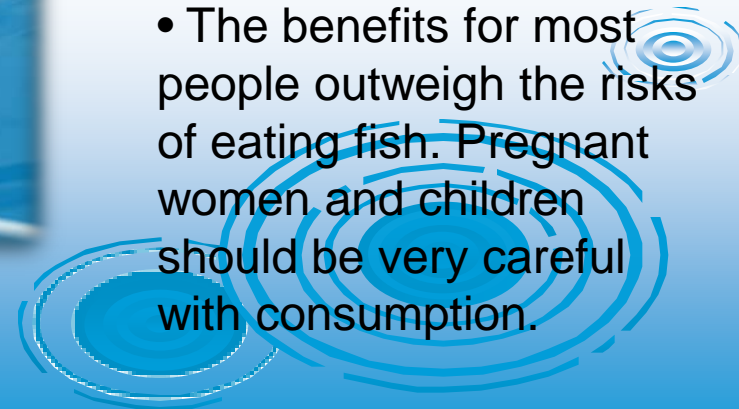
- Bluefin Tuna
- Shark
- Sword Fish
- King Mackerel
- Tilefish

## Common Fish Low in Mercury Levels

- Canned light tuna
- Salmon
- Pollock
- Catfish
- Shrimp

- According to the American Heart Association, fish are a good source of lean protein, and Omega-3 fatty acids, which can help reduce the risk of Cardiovascular disease and Coronary Heart Disease.

- The benefits for most people outweigh the risks of eating fish. Pregnant women and children should be very careful with consumption.

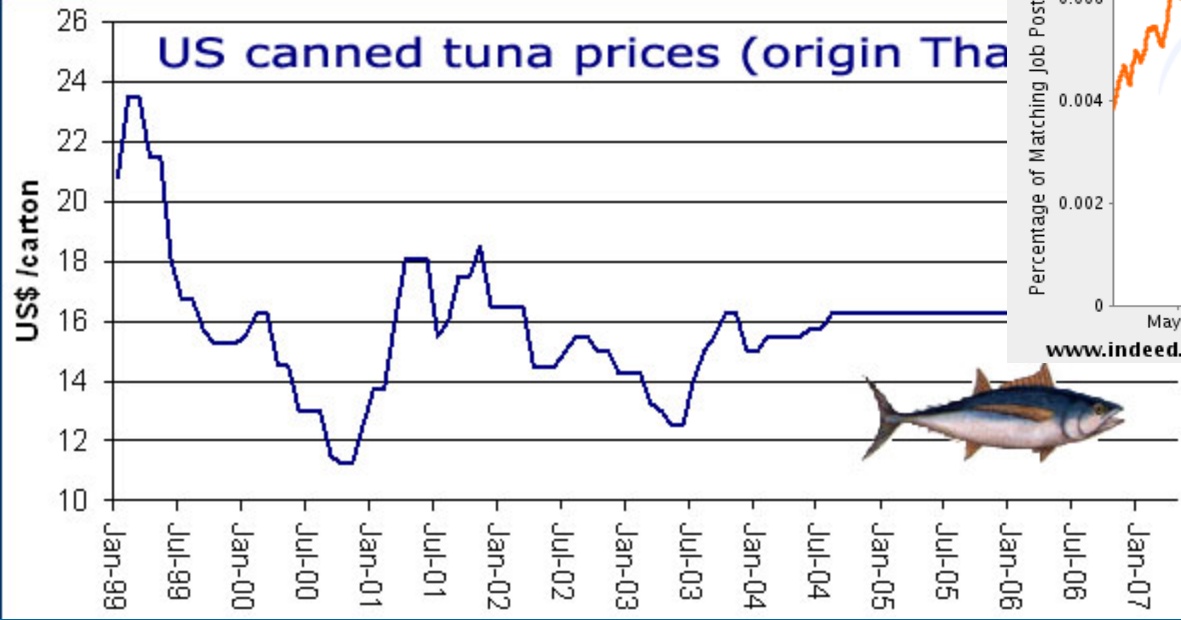


# The Media and Mercury in Fish

- The Environmental Working Group, a non-profit research organization.....
  - Commented on an report put out by the Washington Post, Reuters, ABC and many other outlets, urging “pregnant women to disregard FDA guidance on fish consumption.”
  - The president of EWG stated that “the lack of critical reporting and fact checking on this report is staggering.” He goes on to state, “...that when a stud recommends throwing out official FDA health guidelines for pregnant women that the media might check the sources of the information.”
  - The EWG found out the committee’s travel and website costs where paid my the fish industry itself and the person that published the so called “study” worked for the K Street Lobbying and PR Operation.
  - The “study” called false statements about the support of the American Academy of Pediatrics and the “studies” findings.

# The Fact and Media

- The fact is that the seafood industry wants to stir up a debate about the risk of mercury in fish.....
  - When in fact the FDA has clear recommendations for pregnant women that are based on solid research and studies.
  - The media that reported this story did not check to see if the FDA, CDC or the American Academy of Pediatrics had indeed agreed with the statements or not!
  - The fish industry put the story out and the media fell for it....”hook, line and sinker.”



## Stock Market & Jobs

Ocean	Regional Management Organization	State of Stock	Last Edited
North Pacific Ocean	IATTC, WCPFC	Fully exploited	Year 2007
South Pacific Ocean	IATTC, WCPFC	Fully exploited	Year 2007
Eastern Pacific Ocean	IATTC	Moderately exploited	Year 2007
Southwestern Pacific Ocean	WPFMC	Moderately exploited	Year 2007
Indian Ocean	IOTC	Fully exploited	Year 2004
North Atlantic Ocean	ICCAT	Overfished	Year 2007
South Atlantic Ocean	ICCAT	Fully exploited	Year 2007

# Going Green

- Managing Mercury: The government ensures that the levels of mercury in the environment do not exceed the concentrations that are expected to come from natural processes. Governments are working with concerned citizens, industries, and environmental organizations to examine a range of mercury management tools. Educational programs are also being created to help inform people of appropriate reduction measures that can be used in homes, cars, schools, and workplace.
- Contacting your local legislation or even signing up with the clean air campaign will help reduce pollution emissions.

[www.runningoutofair.com](http://www.runningoutofair.com)

# Sources

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- [www.atuna.com/](http://www.atuna.com/)
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