MERCURY INITIATIVE

LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY

MERCURY

What is Mercury?

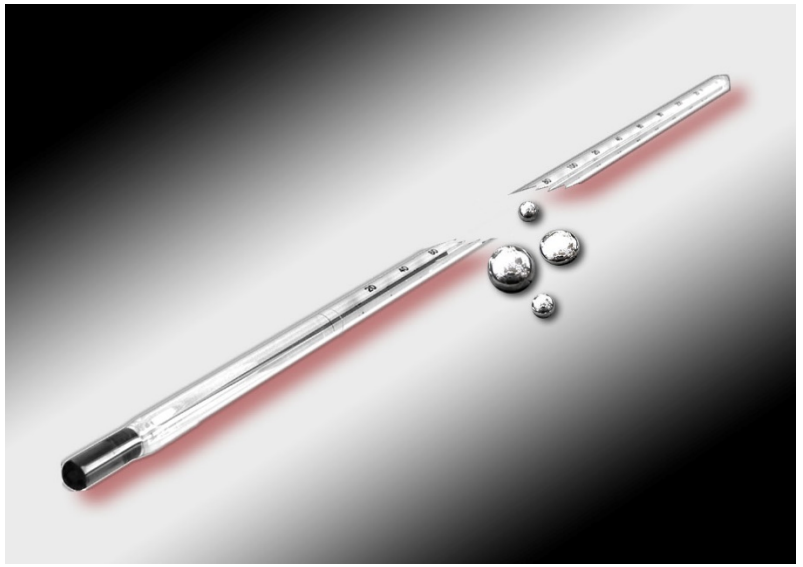
- A shiny, silvery, liquid metal, sometimes called quicksilver
- Is one of the "transition metals" on the Periodic Chart of Elements
- Heavy Silver d-block metal
- Hg, Atomic #80
- A potent neurotoxin that can accumulate in fish to levels of concern for human health and the health of fish-eating wildlife.
- Majority of exposure in the U.S. is from methylmercury in fish

Uses of Mercury

- Thermometers, Barometers, Manometers, Float Valves, Dental Amalgams, Fluorescent Lamps, Production of chemicals and many other scientific apparatus

Hazards

- Poisoning and highly toxic neurotoxin
  - Can permanently damage or fatally injure the brain and kidneys
  - Can be absorbed through the skin and cause allergic reactions
- Most toxic form of Mercury
  - Methyl Mercury



MERCURY IN THE ENVIRONMENT

Mercury is an element that occurs naturally in the environment and can migrate or cycle between various media such as air, soil and water. Mercury that is released into the atmosphere, mainly from human activities such as waste incineration and coal burning power plants, can be transported long distances and deposited in aquatic ecosystems. Microorganisms in aquatic ecosystems can absorb the mercury compounds and convert them into methylmercury.

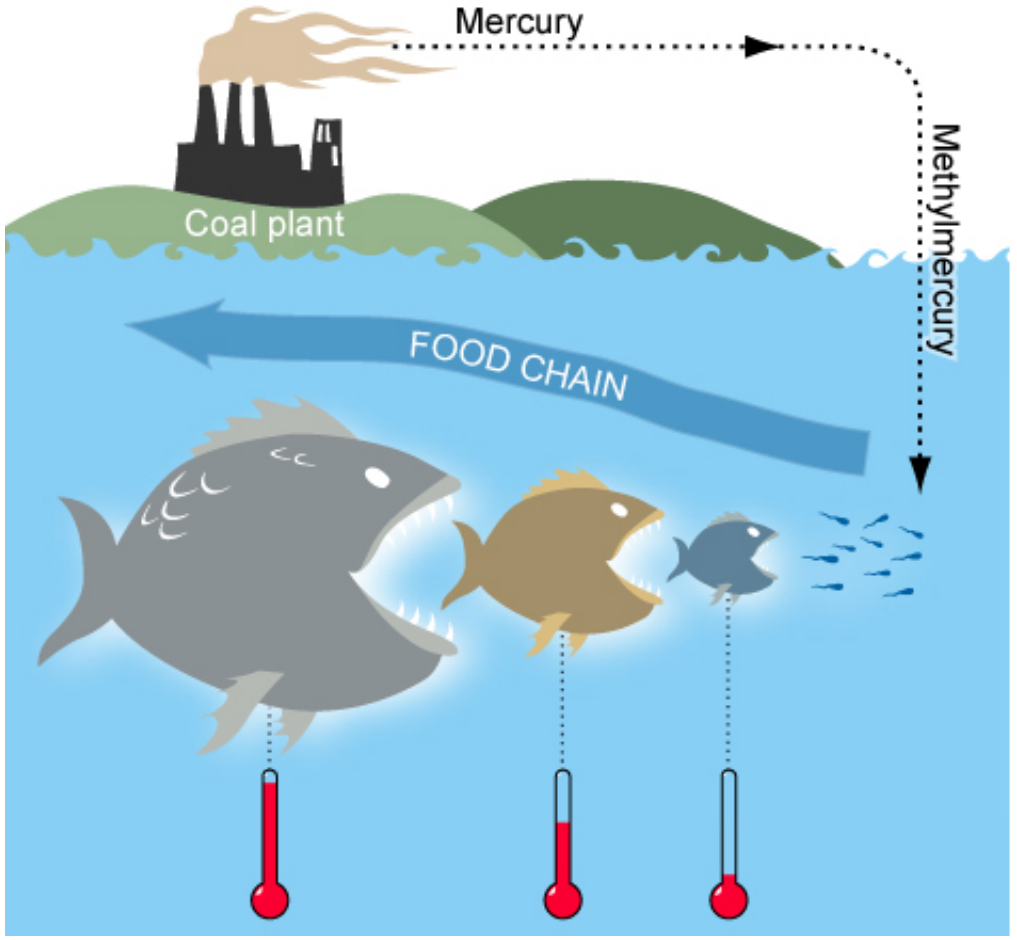
Natural Sources:

- Occurs naturally in soils, sediments, and rocks
- Volcanic Eruptions
- Wildfires

Man-Made Sources:

- Coal Combustion
- Waste Incineration
- Chemical Manufacturing

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 of contaminated food.

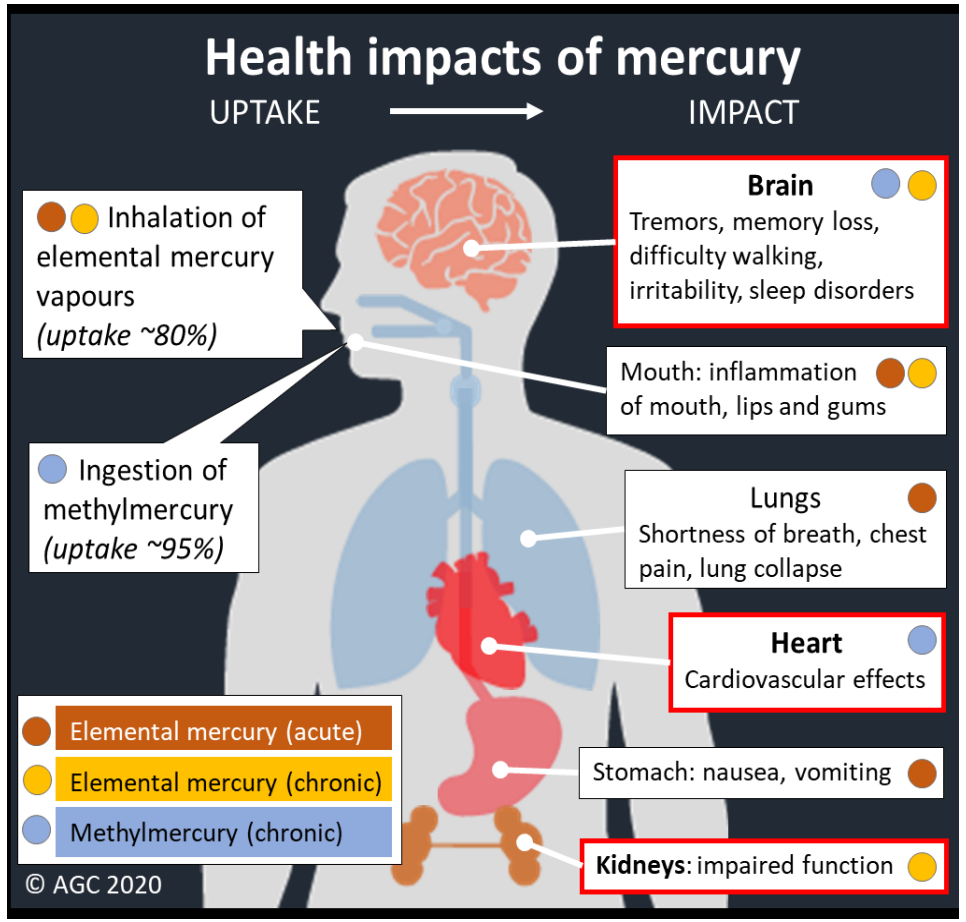


HEALTH EFFECTS

Mercury usually causes no symptoms at low levels. However, if high levels of mercury build up in the human body, it can affect the brain and nervous system. In addition, effects that can occur at high levels include:

- Birth defects in children
- Tingling or numbness in the mouth, hands and feet
- Impairment of speech, hearing, peripheral vision and walking
- Liver and Kidney failure
- Alteration of genetic code
- Destruction of White Blood Cells
- Contributes to the development of Parkinson's disease
- Contributes to the development of Addison's disease

According to EPA (Environmental Protection Agency) standards, 0.46 µg/g is the highest allowable mercury average concentration in fish per serving when eating one serving per week.

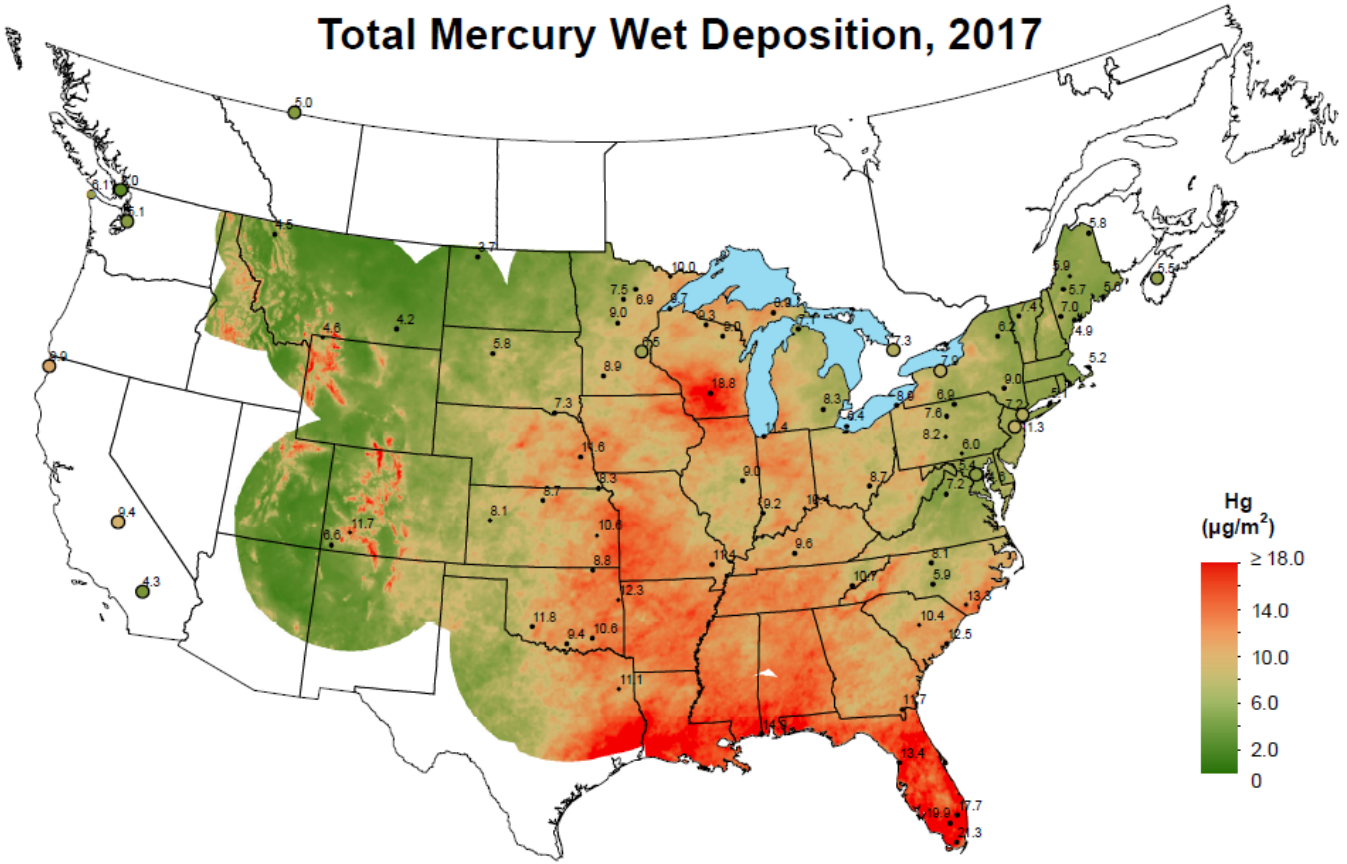


MERCURY HISTORY

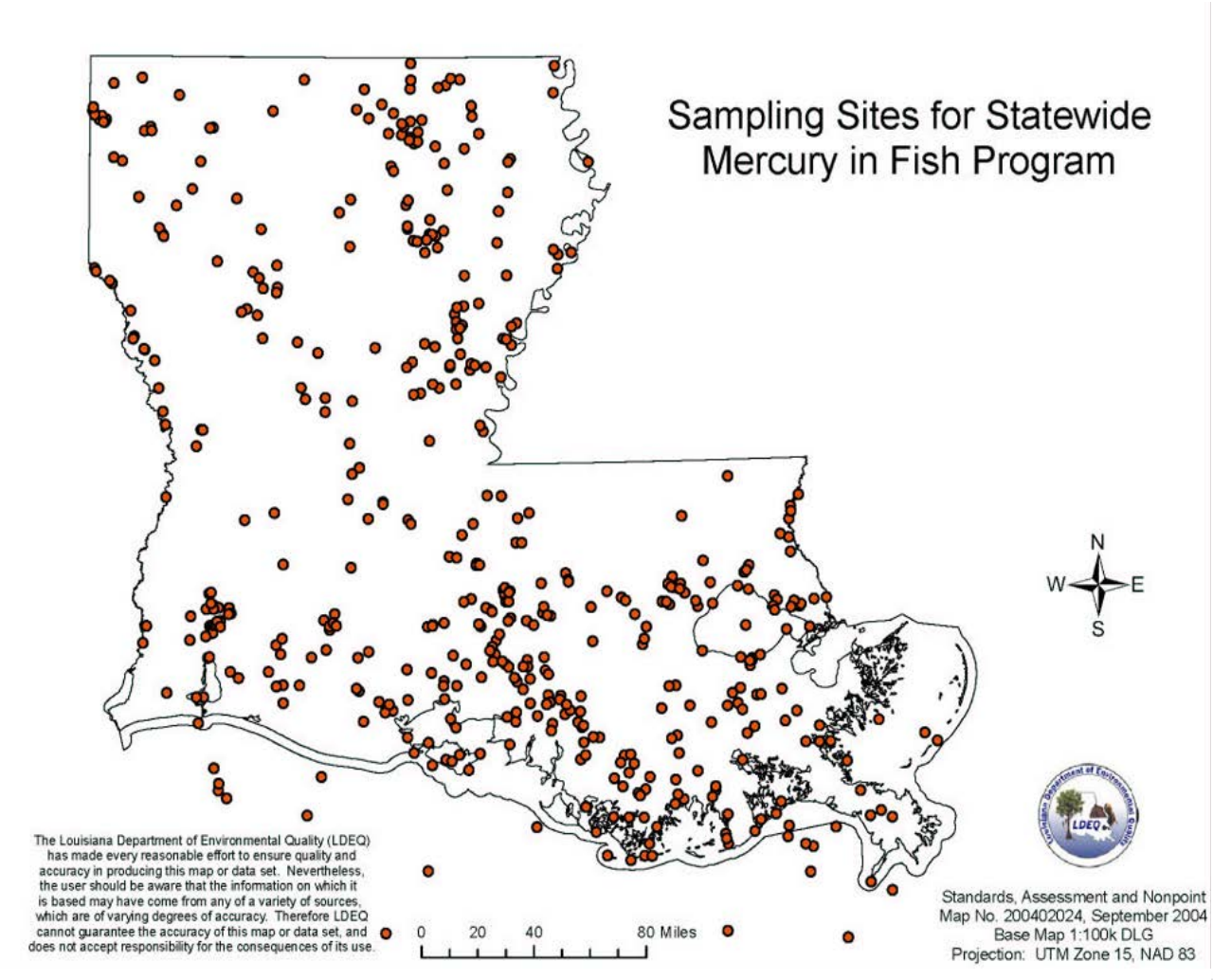
Mercury is the leading cause of impairment in the Nation's estuaries and lakes being cited in nearly 80% of all reported fish consumption advisories.

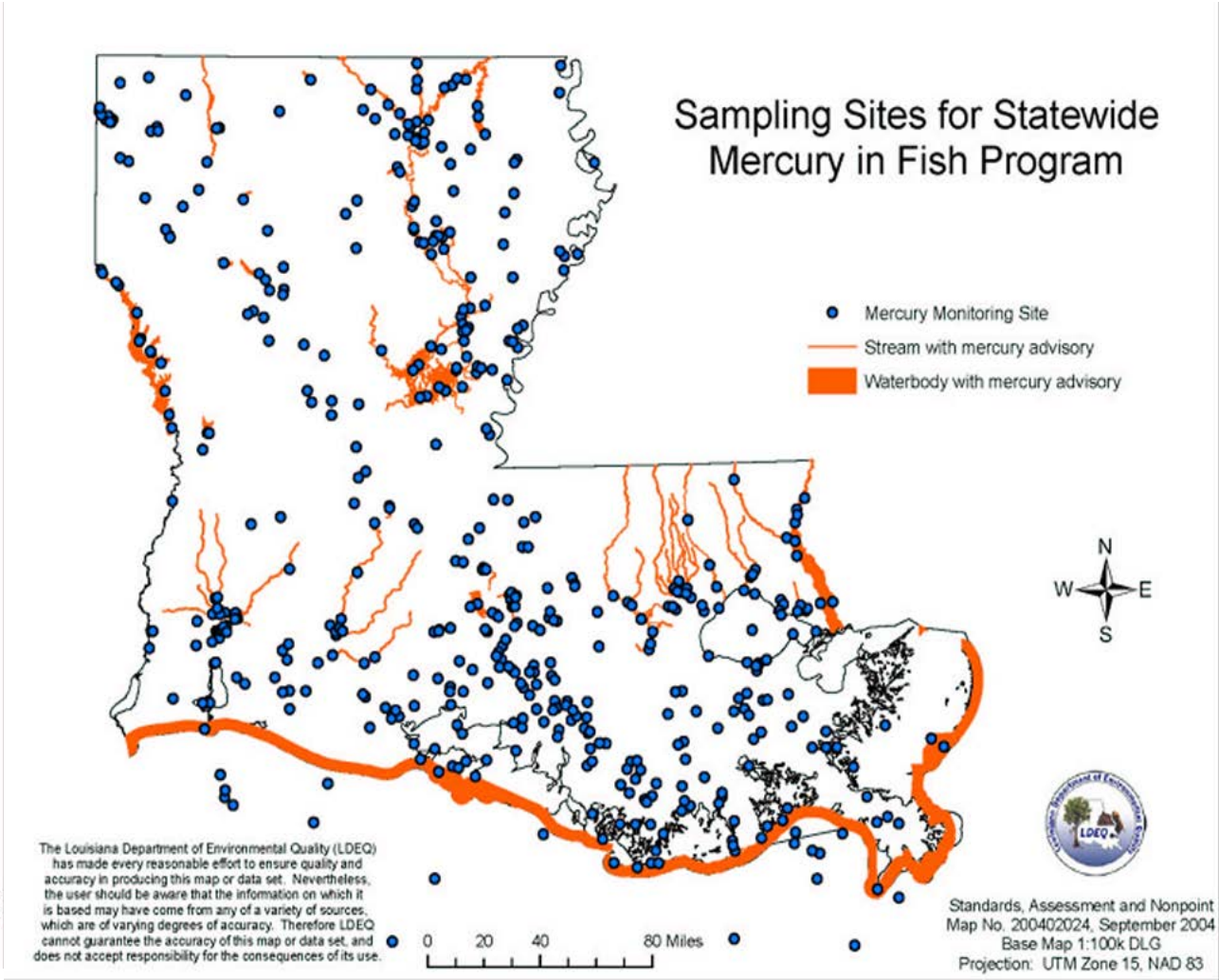
Mercury sampling in Louisiana originally started in 1994 and was discontinued in 2009.

Brought back regionally in 2016, the Mercury Initiative program is now stationed out of Baton Rouge and has 3 dedicated full time positions.



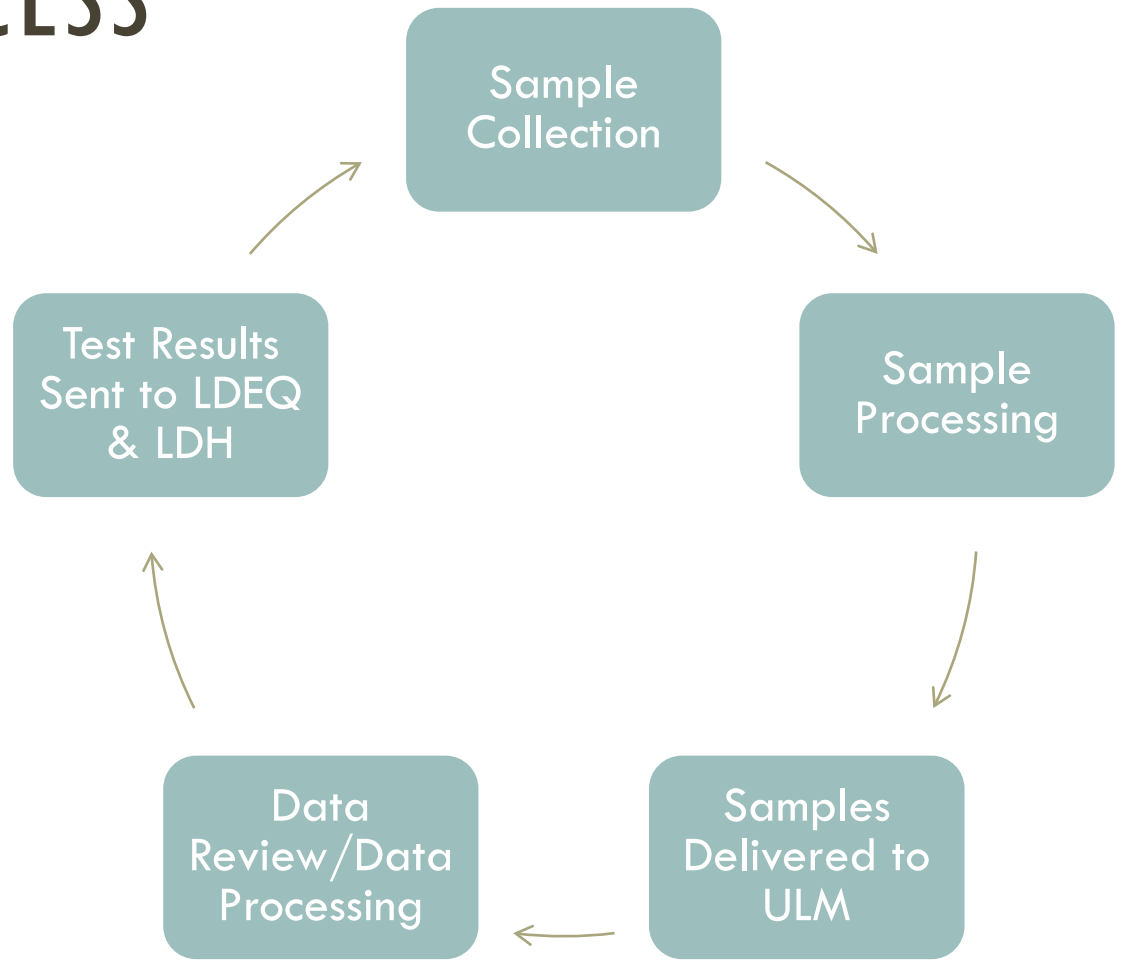
MERCURY HISTORY (SITES & ADVISORIES '94-'04)





MERCURY SAMPLING PROCESS

- Samples are collected for the Mercury Initiative by electrofishing means. Targeted species are typically only the fish that humans would consume.
- Once a sample is obtained, the fish are processed in groupings by species and total length. Each set is frozen and held on site until delivered to ULM for testing.
- Once the results are determined, the test results are sent to LDEQ & LDH for potential fish consumption advisories.



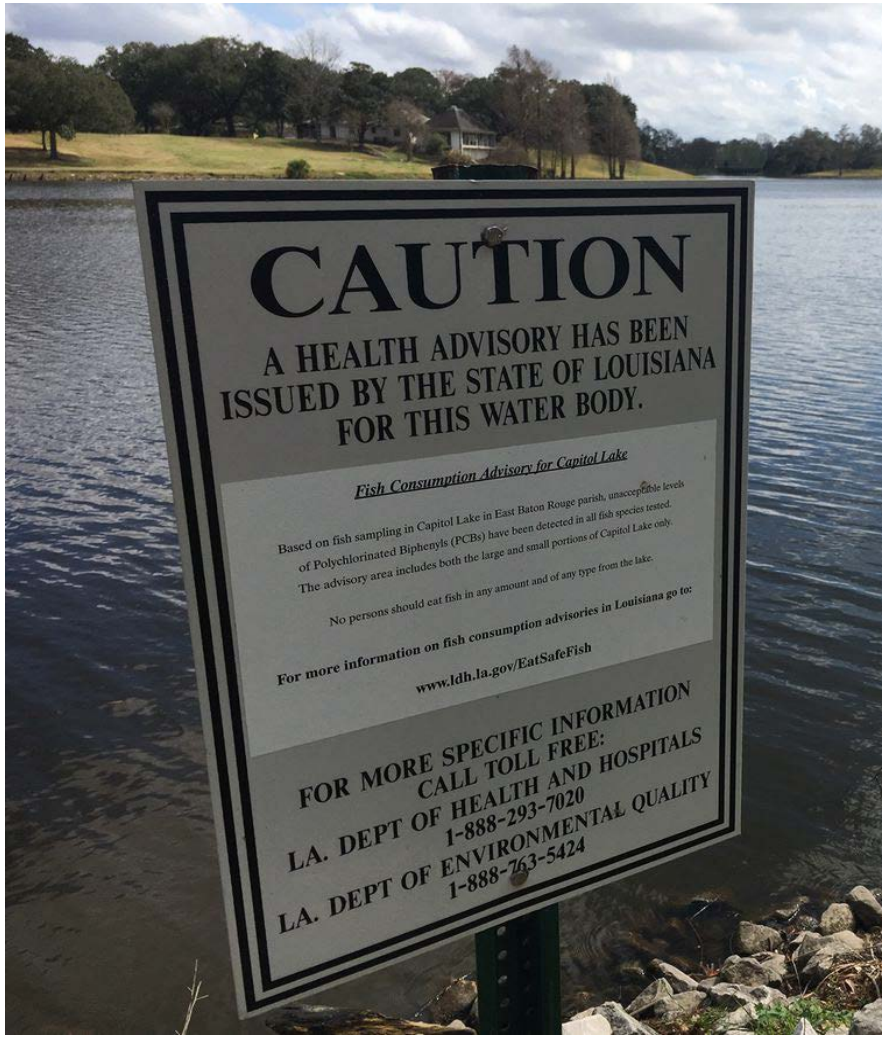
EQUIPMENT

MERCURY ADVISORIES

The Louisiana Department of Health (LDH) Health/Fish Consumption Advisories Program, in conjunction with the Louisiana Department of Environmental Quality (LDEQ), issues fish consumption advisories to help ensure the safe enjoyment of Louisiana's water resources. The Louisiana Department of Wildlife and Fisheries (LDWF), and the Louisiana Department of Agriculture and Forestry (LDAF) are also consulted during the course of advisory development and dissemination.

Louisiana's fish consumption advisories are developed using a risk based public health assessment method which establishes consumption levels designed to prevent adverse effects. This approach is used to determine safe consumption levels for different segments of the population. For example, children and pregnant or breast-feeding women are often considered separately in developing consumption advisories because these populations are generally considered to be at greater risk from consumption of contaminated seafood. Therefore, consumption advisories will often be stricter for these populations. The advisories are then posted online and at public launches for the affected waterbodies.

An 'Interactive Fish Consumption and Swimming Advisory Map' can be found at https://deq.louisiana.gov/page/fishing-consumption-and-swimming-advisories



117 WATERBODIES SAMPLED FROM 2016-2020 (182 SITES)

Amite River	Bayou Petit Caillou	Caddo Lake	Indian Creek Reservoir	Little River at Walkers Ferry, LA	Saline Lake Southwest of Calvin, LA
Bauou D'Arbonne	Bayou Plaquemine Brule	Calcasieu River	Ivan Lake	Little River near Moss Bluff, LA	Seventh Ward Canal
Bayou Bartholomew	Bayou Queue de Tortue	Caney Lake near Minden, LA	Kepler Creek Lake	Long Bayou	Shad Lake
Bayou Bodcau	Bayou Sorrel	Catahoula Lake	Lake Bartholomew	Mississippi River	Smithport Lake
Bayou Bonfouca	Bayou Tortue	Catahoula Lake Diversion Canal	Lake Bistineau	Morgan River	Spanish Lake
Bayou Bonne Idee	Beau Bayou	Clear Lake	Lake Buhlow	Natalbany River	Spring Bayou
Bayou Bristow Work Canal	Beckwith Creek	Cocodrie Lake	Lake Chicot	Old River near Bachelor, LA	Tangipahoa River
Bayou Chene	Big Alabama Bayou	Colyell Bay	Lake Concordia	Old River near Niblett Bluff, LA	Tchefuncte River
Bayou de Loutre	Big Creek	Corney Lake	Lake Decade	Old River Northwest of Archie, LA	Tickfaw River
Bayou De Siard	Big Saline Bayou	Crooked Creek Reservoir	Lake Dogwood	Ouachita River	Toledo Bend Reservoir
Bayou des Cannes	Black Bayou Lake	Cross Bayou	Lake Fausse Point	Pass Manchac	Two O'Clock Bayou
Bayou D'Indie	Black Lake	English Bayou	Lake Henderson	Pearl River	Vermilion River
Bayou Dorcheat	Black Lake Bayou	Eunice Lake	Lake Louis	Pearl River Diversion Canal near Talisheek, LA	Vernon Lake
Bayou Gross Tete	Black River	False River	Lake Maurepas	Petite Amite River	Wallace Lake (Concordia Parish)
Bayou Lacassine	Blind River	Grand Bayou Reservoir	Lake Palourde	Phillips Lake	Wallace Lake (Caddo Parish)
Bayou Lacombe	Blood River	Grassy Lake	Lake Ponchartrain	Ponchatoula River	West Fork Calcasieu River
Bayou Liberty	Boeuf River	Hickory Creek	Lake Verret	Rigolets	West Pearl River
Bayou Louis	Bogue Chitto River	Houston River	Larto Lake	Saline Bayou East of Alexandria, LA	
Bayou L'ourse	Bogue Falaya	I-10 Canal, East Atchafalaya Basin	Little Alabama Bayou	Saline Bayou West of Calvin, LA	
Bayou Nezpique	Bushley Bayou	Iatt Lake	Little Bayou Pigeon	Saline Lake Southeast of Deville, LA	

FUTURE PLANS

With the persistent nature of mercury in the environment and state waterbodies, the Mercury Program is tasked with continual monitoring for all waterbodies.

Waterbodies will be placed on a sampling rotation. Those under advisories or with high fishing pressure will be sampled more frequently.

Waterbodies that have not been sampled or waterbodies with no pre-existing mercury data are scheduled for future testing.