Mercury in Galveston and Houston Fish

Contamination by Neurotoxin Places Children at Risk

Many fish commonly caught or consumed in the Houston area are contaminated by mercury from air pollution. The US Environmental Protection Agency should adopt stronger air pollution regulations to protect the public from mercury contamination.

Until air pollution is reduced, education and health advisories are the best way to reduce the harm to people caused by mercury. The state should establish a voluntary or mandatory health advisory program for to reach people in restaurants, at seafood markets, and when purchasing fishing licenses.

Background: Health effects

Mercury is a neurotoxin and, according to the Texas Medical Association, "threatens human health and child development." In adults, mercury can permanently damage the brain and cardiovascular system and reduce fertility. Affected infants and young children may experience irreversible damage to their intelligence, learning capabilities, vision, and hearing.

One-fifth of women of childbearing age have mercury levels in their hair that exceed federal health standards, according to University of North Carolina scientists, and the US Environmental Protection Agency (EPA) warns that mercury exposure places 630,000 infants born each year at risk of irreversible harm. Also at risk are young children and those adults who eat fish daily.

Certain fish species tend to accumulate higher amounts of mercury than others. The variation is partially explained by the amount of mercury released by nearby sources of pollution. Other factors include the lifespan and diet of the fish. In 2003, 44 states had active mercury consumption advisories covering one-fifth of all river miles, one-third of all lake acres, and two-thirds of coastal waters in the contiguous 48 states.

Consumers cannot be expected to deduce the level of mercury in fish available to them. To help educate Houston-area consumers on which fish to avoid, GHASP gathered fish samples from a cross-section of sources in the Galveston and Houston area (see table 1).

Table 1: Mercury levels in fish samples

Seafood	Mercury Concentration (parts per million)	Source
Marlin	8.30	Texas A&M Galveston study (Rooker and Gill)
Wild swordfish	1.68	River Oaks area grocery
Largemouth bass	0.75	Rogers Lake, Montgomery County (EPA data)
King mackerel	0.61	Gulf of Mexico (off Galveston Island)
Largemouth bass	0.57	Lake Houston (TDH data)
Canned "white" albacore tuna	0.51	Study by Mercury Policy Project
Wild yellowfin tuna	0.31	River Oaks area grocery
EPA standard for non-commercial fish*	0.30	US Environmental Protection Agency
Canned "light" tuna	0.12	Study by Mercury Policy Project
Sand trout	0.06	Galveston Beach catch
Flounder	0.04	Galveston seafood market
Red snapper	0.04	Galveston seafood market
Bay shrimp	<0.04	Seabrook area seafood market
Bay crab	<0.04	Seabrook area seafood market
Redfish	<0.04	Seabrook area seafood market
Farmed catfish	<0.04	Southeast Houston area grocery
Basa	<0.04	Southeast Houston area grocery
Atlantic farmed salmon	<0.04	Southeast Houston area grocery
Wild pacific salmon	<0.04	River Oaks area grocery

* The US Food and Drug Administration and the Texas Department of Health (TDH) have somewhat more relaxed standards for mercury concentration. The FDA standard for commercial fish is 1.0 ppm and the TDH standard is 0.7 ppm.

Study findings

The mercury levels found in Houston area fish parallel the results of similar studies in other parts of the country, but unearthed some important implications for consumers in the Houston area.

- Large predator fish generally have high levels of mercury. The three unsafe samples collected by GHASP were large predator fish from the Gulf of Mexico and other oceans. Two fish were store-bought, the other was caught at the beach.
- Predator fish caught in Texas lakes may also have unsafe levels of mercury. The US EPA found mercury in largemouth bass caught in Montgomery County. Bass, walleye, and drum are on state mercury advisory lists for locations near Houston (see table 2).
- All fish from Galveston Bay were safe.
- Farmed fish were also safe.

The unhealthy mercury levels in fish are of particular concern for small children, women of childbearing age, and all people who eat fish daily.

Causes of mercury pollution

Mercury in the air falls to the earth as particles or in rain, and ultimately finds its way to lakes and river sediment. Bacteria and plants absorb the mercury, which accumulates up the food chain. Ultimately, mercury builds to dangerous levels in predators, such as fish, waterfowl, and people.

Coal-fired power plants are the largest unregulated source of mercury emissions. According to the EPA, 10 tons of mercury was emitted from Texas power plants in 2002. The Parish power plant in Fort Bend County is the sixth-largest source of mercury emissions in the nation.

Power plants have yet to be regulated for mercury pollution under federal clean air standards. Two years ago, the EPA's scientists said current technologies could achieve a 90 percent reduction in mercury produced by power plants, but the coal and electric industries are pressing hard to avoid implementing these technologies.

Mercury is not a by-product of combustion. Rather, very small amounts of mercury are present in coal and are vented through the exhaust system when the coal is burned. Different types of coal have various levels of mercury and produce different chemical forms of it when the coal is burned.

Get involved

The Texas Public Interest Research Group (texpirg.org) is organizing state residents to press the EPA for strong regulation of mercury. The Sustainable Energy and Economic Development Coalition (seedcoalition.org) is challenging the State of Texas to protect public health by routinely monitoring fish for mercury contamination.

At the national level, organizations such as Save the Clean Air Act (savethecleanairact.org) and Clear the Air (mercuryhurts.org) mobilize people nationwide to press for pollution controls on coal-burning power plants.

About GHASP's study

In cooperation with Mothers for Clean Air, GHASP collected fish from several locations across the Houston region. Volunteers selected the fish and froze them until samples were collected by a technician from a certified environmental testing laboratory.

The laboratory reported the mercury concentration in milligrams per kilogram, which represents parts per million by weight, using EPA methods 7471 and 245.2.

Table 2: Fish advisories in Texas related to mercury (Texas Department of Health)

Fish	Locations
Freshwater drum	B. A. Steinhagen Reservoir, Big Cypress Creek, Caddo Lake, Sam Rayburn Reservoir, Toledo Bend Reservoir
King mackerel	Gulf of Mexico (all Texas waters)
Largemouth bass	B. A. Steinhagen Reservoir, Big Cypress Creek, Caddo Lake, Sam Rayburn Reservoir, Toledo Bend Reservoir, Lake Daingerfield, Ratcliff Lake
Walleye	Lake Meredith
White and hybrid white/striped bass	B. A. Steinhagen Reservoir
All fish	Lake Kimball, Upper Lavaca Bay, Lake Pruitt (Black Cypress Bayou)

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The Galveston-Houston Association for Smog Prevention (GHASP) is a community-based environmental organization dedicated to improving the quality of our region's hazardous air through public education, participation in the state and federal planning process, and active advocacy in appropriate venues.

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