Lake Livingston and the Trinity River (US 287 to US 90) Fish Consumption Advisory Frequently Asked Questions

Prepared by the Seafood and Aquatic Life Group - December 2015

What recommendation has the Texas Department of State Health Services (DSHS) made to protect human health?

- Because the developing nervous system of the human fetus and young children may be especially susceptible to adverse health effects associated with consuming PCB or Dioxin contaminated fish, the DSHS recommends more conservative consumption guidance for this sensitive subpopulation.
- The table below lists DSHS' consumption recommendations for Lake Livingston and the Trinity River from the US 287 Bridge downstream to US 90 Bridge.

Species Affected	Women of Childbearing Age and Children < 12[1]	Women Past Childbearing Age and Adult Men[2]
Blue catfish	**DO NOT EAT**	2 meals/month
Flathead catfish	**DO NOT EAT**	1 meal/month
Freshwater drum	**DO NOT EAT**	2 meals/month
Gar (all species)	**DO NOT EAT**	**DO NOT EAT**
Smallmouth buffalo	**DO NOT EAT**	1 meal/month
Striped bass	1 meal/month	3 meals/month
White bass	1 meal/month	3 meals/month

[1] A meal is four ounces of fish.
[2] A meal is eight ounces of fish.

Is it safe to eat other fish from Lake Livingston and the Trinity River (US 287 to US 90)?

- At this time, it is safe to consume fish as recommended by DSHS or other fish not listed in the advisory.

What species of fish did the DSHS test from Lake Livingston and the Trinity River (US 287 to US 90)?

- DSHS tested alligator gar, black crappie, blue catfish, channel catfish, flathead catfish, freshwater drum, hybrid striped bass, largemouth bass, longnose gar, smallmouth buffalo, spotted bass, striped bass, white bass, and white crappie.

What are the chemical contaminants of concern in Lake Livingston and the Trinity River (US 287 to US 90)?

- Polychlorinated biphenyls (PCBs)
- Polychlorinated dibenzo-p-Dioxins and polychlorinated dibenzofurans (PCDDs/PCDFs or "Dioxins")

What are Polychlorinated biphenyls (PCBs)?

- Polychlorinated biphenyls (PCBs) are a group of chemically-related synthetic compounds which are colorless and odorless.
- PCBs are stable mixtures that are resistant to extreme temperature and pressure.
- PCBs were used widely in electrical equipment like capacitors, transformers, and fluorescent lighting fixtures. They also were used in hydraulic fluids, heat transfer fluids, lubricants, and plasticizers. PCBs were manufactured in the United States until 1977 when commercial production ended because of the harm PCBs cause to humans and wildlife.
- PCBs are released into the environment through spills, leaks from electrical equipment, and improper disposal or storage.
- PCBS are persistent in the environment and have been found in air, water, soil, and sediments throughout the world; predominantly in lake and river bottom sediments.

How are we exposed to PCBs?

- Because PCBs are fat-soluble chemicals, they are easily absorbed by the body and are stored in fatty tissues. Because they are not easily eliminated, they can accumulate in the body.
- Eating contaminated fish remains one of the major dietary sources of PCB exposure.

What are the human health effects associated with PCBs?

Short-term or acute exposure:

- Short-term exposure to high levels (e.g., occupational settings) may affect the skin and cause chloracne.

Long-term or chronic exposure:

- Long-term exposure may affect the hepatic, immune, endocrine and reproductive systems and cause cancer.
- USEPA classifies PCBs as probable human carcinogens (cancer-causing chemicals).
- Birth defects have been linked to mothers who have been exposed to PCBs. Developing fetuses and young children are the most vulnerable to PCBs, therefore, children and women who may become pregnant, are pregnant, or nursing should limit their exposure to PCBs. A pregnant woman can pass these chemicals to her unborn child. Mothers who eat highly contaminated fish before giving birth may have children who have slower mental development. PCBs also can be passed to a baby through breast milk. Young children also may experience developmental health effects.

Additional information about the health effects of PCBs may be obtained from the Agency for Toxic Substances and Disease Registry.

What are Dioxins?

- Dioxins are a general term that describes a group of hundreds of chemically related compounds that are highly persistent in the environment.
- Dioxins are formed as an unintentional by-product of many industrial processes involving chlorine such as waste incineration, chemical and pesticide manufacturing and pulp and paper bleaching.

How are we exposed to Dioxins?

- More than 90% of human exposure is through food, mainly meat and dairy products, fish and shellfish.

What are the human health effects associated with Dioxins?

Short-term or acute exposure:

- Short-term exposure to high levels of Dioxins may result in skin lesions, such as chloracne, and patchy darkening of the skin, and altered liver function.

Long-term or chronic exposure:

- Long-term exposure may impair the immune system, the developing nervous system, the endocrine system and reproductive functions, and may cause birth defects.

Cancer:

- The World Health Organization (WHO) has determined that Dioxin is a human carcinogen.

Group most at risk to exposure to Dioxins:

- The developing fetus is most sensitive to Dioxin exposure. Newborns, with rapidly developing organ systems, may also be more vulnerable to certain effects.
- Some people may be exposed to higher levels of Dioxins because of their diet (e.g., high consumers of fish in certain parts of the world) or their occupation (e.g., workers in the pulp and paper industry, in incineration plants and at hazardous waste sites).

Additional information about the health effects of Dioxins may be obtained from the Agency for Toxic Substances and Disease Registry.

Can I be tested to see if I have PCBs or Dioxins in my body?

- Tests are available to measure PCBs and Dioxins in the blood, body fat, and breast milk, but these tests are not routinely available.

How do PCBs and Dioxins accumulate in fish?

- PCBs and Dioxins have been found in soil, ground and surface water, air, sediment, plants, and animals in all regions of the world.
- PCBs and Dioxins break down very slowly in the environment and accumulate in fatty tissue, skin, and internal organs of fish and other animals.
- Levels of PCBs and Dioxins in fish may be hundreds to a million times higher than the concentrations found in water.
- The amount of PCBs and Dioxins found in fish varies with species, age, size, fat content, diet, and surface water and sediment concentrations.
- Generally, larger, older fish will contain higher levels of PCBs and Dioxins than smaller, younger fish; fatty fish such as smallmouth buffalo and catfish species may contain higher levels of PCBs and Dioxins than lean fish such as crappie and sunfish.

Why do blue catfish, flathead catfish, gar, and smallmouth buffalo accumulate higher levels of PCBs and Dioxins than other Lake Livingston and Trinity River fish?

- Generally, PCB and Dioxin level differences can occur between fish species because of higher lipid "fat" levels, dietary differences, and/or feeding locations in the reservoir or river.

What is the source of PCBs and Dioxins in Lake Livingston and the Trinity River?

- DSHS does not attempt to determine contaminant sources in its risk assessments nor do these assessments produce the types of data or information to make these determinations.
- Questions related to contaminant sources should be directed to the Texas Commission on Environmental Quality (TCEQ).

I have been eating these fish all my life. Will I have adverse health effects?

- The recommended consumption limits made by the DSHS have allowed a margin of safety below those levels that could result in adverse health effects.
- Eating more than the recommended amount of fish from Lake Livingston or the Trinity River does not necessarily mean that a person will have adverse health effects.

Should I stop eating fish?

- No, fish are an important source of protein in the diet.
- DSHS recommends that people do not eat or limit consumption of those species listed in the advisory.
- DSHS recommends that you follow general consumption guidelines and/or fish consumption advisories or bans issued by the Department for Texas waters.
- Specific advisory information may be obtained by contacting the DSHS Seafood and Aquatic Life Group (512)-834-6757 or by accessing the DSHS Seafood and Aquatic Life Group Web site at **http://www.dshs.state.tx.us/seafood**.
- Fish consumption advisory information is also published in the *Texas Parks and Wildlife Outdoor Annual Hunting and Fishing Regulations* booklet. This booklet is provided to all licensed anglers in Texas.

How can I reduce the amount of PCBs and Dioxins that I get from Lake Livingston and Trinity River fish?

- In general, when you have a choice you should eat smaller fish that have had less time to build up PCBs and Dioxins in their tissues.
- Choose to eat fish other than those listed in the advisory.

Will cooking or cleaning fish a certain way reduce the PCB and Dioxin level?

- Yes, PCBs and Dioxins readily accumulate in the fatty tissues of fish.
- To reduce exposure to PCBs and Dioxins, the skin, dark (reddish-color) muscle tissue, and fatty portions (i.e., belly fat, side fat, and fat along the top of the back) of the fish should be removed before cooking.
- DSHS recommends baking or broiling skinned, trimmed fish on a rack or grill to allow fat to drip away from the fillet.
- If fish are fried, the frying oil should not be reused.

- These cooking methods will reduce exposure to many of the most common organic chemical contaminants in fish.

Should I stop fishing?

- No, recreational fishing does not need to stop.
- Consuming fish in amounts recommended by the DSHS or choosing species of fish not listed in the advisory poses no significant health risks.
- Catch-and-release fishing eliminates potential health risks.

Should I be concerned about PCBs or Dioxins while conducting contact recreation activities like fishing, boating, or swimming?

- There is not a concern for PCB or Dioxin poisoning while swimming or participating in other contact recreational activities.
- Levels in the water are low.
- Concern is for consumption of fish that concentrate the PCBs and Dioxins in their tissue.

Sources of Information

United States Environmental Protection Agency (EPA) Chemical–specific Fact Sheets
http://water.epa.gov/scitech/swguidance/fishshellfish/techguidance/chemfacts.cfm

Agency for Toxic Substances and Disease Registry (ATSDR) ToxFAQs
http://www.atsdr.cdc.gov/toxfaqs/index.asp

Agency for Toxic Substances and Disease Registry (ATSDR) Public Health Statements
http://www.atsdr.cdc.gov/PHS/Index.asp