



Improving Water Quality in the Houston–Galveston Area

Assessing Contamination from Dioxin

In 1990, the Department of State Health Services (DSHS) issued advisory ADV-3 warning people not to eat catfish or blue crab caught in the Houston Ship Channel and Upper Galveston Bay. The advisory was issued to protect consumers from health problems caused by dioxin found in catfish and blue crab. The advisory was renewed, revised, or combined other advisories in various forms: in 2001 as ADV-20, in 2005 as ADV-28, in 2013 as ADV-49, and finally in 2015 as ADV-55.

Exposure to dioxin can cause a variety of harmful health problems, including cancer, birth defects, diabetes, developmental delays, and immune system abnormalities.

Dioxin is a generic term for a group of chemicals properly called polychlorinated dibenzodioxins (PCDDs), which share a common hydrocarbon backbone, but vary in the number and location of attached chlorine atoms. Dioxin was never produced or used commercially, but is a trace byproduct of many industrial and chemical processes including bleaching, organic chemical manufacturing, and low temperature combustion.

A map of the ADV-55 area and additional consumption advice are available on the DSHS webpage [Fishing Advisories and Bans](https://www.dshs.texas.gov/seafood/advisories-bans.aspx)¹.

Learn more about water quality standards, monitoring, and TMDLs by reading [Preserving and Improving Water Quality](https://www.tceq.texas.gov/publications/gi/gi-351)², available on our website and in print.

Houston Ship Channel and Upper Galveston Bay Watershed

The Ship Channel system is in the San Jacinto River Basin. Its various branches originate in western and northern areas of the city of Houston, and at the Lake Houston Dam on the San Jacinto River. The Ship Channel area has one of the highest densities of petrochemical facilities in the world. Facilities in the area, and the waterway itself, are important elements in the economic health of the region, state, and nation.

Houston has long been one of the busiest ports in the United States. The channel’s production of materials and its inland location have been, and will continue to be, important to the military security of the nation.



The commercial navigation provided by the channel initiated and supported the historic growth of the Houston area economy. The headwater reaches, tributaries, and fringes of both the Houston Ship Channel System and Upper Galveston Bay provide recreational opportunities for residents.

The watershed includes portions of the following political jurisdictions:

- **Counties:** Chambers, Fort Bend, Galveston, and Harris
- **Cities:** Houston, Pasadena, Baytown, La Porte, and Deer Park

The Houston Ship Channel system consists of 14 classified segments, which together comprise the “enclosed” portion of the Houston Ship Channel with its major tributaries and side bays.

This project includes ten of the ship-channel segments:

- San Jacinto River Tidal (1001)
- Houston Ship Channel (1005, 1006, 1007)
- Tabbs Bay (2426) ▪ San Jacinto Bay (2427)
- Black Duck Bay (2428) ▪ Scott Bay (2429)

¹ <https://www.dshs.texas.gov/seafood/advisories-bans.aspx>

² <https://www.tceq.texas.gov/publications/gi/gi-351>

- Burnett Bay (2430) ▪ Barbours Cut (2436)

Also included are four segments not considered part of the Houston Ship Channel system:

- Cedar Bayou Tidal (Segment 0901)
- Upper Galveston Bay (Segment 2421)
- Bayport Channel (Segment 2438)
- Clear Lake (Segment 2425)

Public Participation

In all its projects, the TMDL Program seeks to gather opinion and information from people in the watershed.

Due to the lengthy and extremely technical nature of this project, TCEQ convened a standing stakeholder group. The group included area residents and representatives of nongovernmental organizations, industry, and various local, state, and federal governments. The Houston–Galveston Area Council (H-GAC) coordinated public participation.

For More Information

Call us at 512-239-6682 or e-mail us at tmdl@tceq.texas.gov.

Or visit the project webpage at:

www.tceq.texas.gov/waterquality/tmdl/26-hsctdioxin.html

Highlights

- 1990. The Department of State Health Services issued the first Seafood Advisory for dioxin.
- 2002. Sampling began to support analyses of dioxins in water, sediment, tissue, watershed runoff, wastewater discharges, and air.
- 2005. Data collected by the project led to the discovery of a concentrated deposit of dioxin-contaminated sludge submerged in the San Jacinto River. That site has since become a National Priority List Superfund Site managed by the EPA.
- 2006. Sampling results indicated dioxin concentrations in water, sediment, and tissues were elevated. Preliminary analyses suggested that current sources are unlikely to be significant, and residual sediment loads are the primary issue. Subsequent sampling and model analyses continue to support that conclusion.
- 2008. Analysis and modeling were completed, affirming that the legacy contamination of the sediment is the source of the fish tissue concentrations.
- 2020. TCEQ published the final report for this project, *Source Characterization of Dioxin Loads in the Houston Ship Channel*, AS-192, on November 20, 2020.