Improving Water Quality in the Houston Ship Channel and Galveston Bay

Assessing Contamination from PCBs

High concentrations of polychlorinated biphenyls (PCBs) in fish tissue can pose a risk to consumers, even at low concentrations. Although their manufacture is now banned, PCBs are extremely persistent in the environment. The Texas Department of State Health Services (DSHS) has consequently issued consumption advisories for areas of the Houston Ship Channel and Galveston Bay.

Polychlorinated biphenyls (PCBs) are a group chemicals which share a common structure called biphenyl, but vary in the number and location of attached chlorine atoms. Prior to discovery of its toxicity in the early 1970s, it was widely used in electrical equipment and sealants.

PCBs are linked to increased rates of certain cancers in rats, mice and study animals, suggesting they are probably cancer-causing in humans.

In October 2001, in advisory ADV-20, DSHS warned people to limit or cease eating all species of finfish due to PCBs in fish. The area covered by ADV-20 is the Houston Ship Channel upstream of the Lynchburg Ferry crossing and all its contiguous waters, including the San Jacinto River Tidal segment below the U.S. Highway 90 bridge.

The DSHS then issued ADV-28 in January 2005, warning people to limit or stop eating speckled trout, also known as spotted sea trout or spotted weakfish, because of contamination by PCBs and dioxin. ADV-28 includes the Upper Galveston Bay and the Houston Ship Channel downstream of the Lynchburg Ferry crossing and all its contiguous waters, including Upper Galveston Bay north of a line drawn from Red Bluff Point to Five Mile Cut Marker to Houston Point.

The DSHS renewed and combined the various advisories for the ship channel and bay watersheds in 2013 as ADV-49, and renewed it again in 2015 as ADV-50. A map of the ADV-50 area and additional consumption advice are available on the DSHS website at <www.dshs.texas.gov/seafood/advisories-bans.aspx>

Learn more about water quality standards, monitoring, and TMDLs by reading *Preserving and Improving Water Quality*, available on our website at <www.tceq.texas.gov/goto/tmdl/>.

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 (Segment 1001)
- Houston Ship Channel (1005, 1006, 1007)
- Tabbs Bay (2426)
- San Jacinto Bay (2427)
- Black Duck Bay (2428)
- Scott Bay (2429)
- Burnett Bay (2430)
- Barbours Cut (2436)

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

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

Public Participation

In all its projects, the TCEQ TMDL Team gathers opinion and information from people affected by its operations. Due to the lengthy and extremely technical nature of the sampling, analysis, and model development expected with this TMDL project, a stakeholder group was convened in the early stages of the project.

The stakeholder 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

Visit the TCEQ website at:
<www.tceq.texas.gov/waterquality/tmdl/78-hsc-pcbs.html>

and

<www.tceq.texas.gov/waterquality/tmdl/26-houston_group.html>

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

Highlights

- Sampling was completed. Results indicated PCBs 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.
- Analysis and modeling were completed, affirming that the legacy contamination of the sediment is the source of the fish tissue concentrations.