

Future Revisions to Fish Tissue-Based Criteria in the 2013 Texas Water Quality Standards (TSWQS)

Surface Water Quality Standards Advisory Workgroup, March 28, 2012
Texas Commission on Environmental Quality Water Quality Standards (WQS)

Reasoning behind 2000 TSWQS adoption of fish tissue-based criteria:

In the 2010 TSWQS revisions, the TCEQ adopted human-health criteria for fish tissue for PCBs, dioxins/furans, and DDT and its metabolites. The EPA has approved these revised criteria. While EPA has no nationally recommended fish tissue criteria for these analytes, some stakeholders expressed an interest in developing additional tissue-based human health criteria for other highly bioaccumulative substances ($BCF \geq 1000$). Reasons for this change included:

- For these highly bioaccumulative toxicants, the criteria would be established more directly on the concentration of concern, rather than on a derived water-column concentration.
- The Texas Department of State Health Services (TDSHS) fish consumption advisories and the ensuing TCEQ impairments are already based on tissue concentrations.
- Fish-tissue criteria could allow site-specific flexibility (particularly for bioaccumulation factors) in calculating allowable water-column concentrations for wastewater permitting and other regulatory actions.

Differences Between TSWQS Criteria and TDSHS HAC Values

The TDSHS is charged under state statute with the authority to determine if a water body contains fish or any other organism which may be unsafe for human consumption. This is accomplished by developing a site-specific Health-Based Assessment Comparison Value (HAC) for specific chemicals of concern to specific water bodies. A HAC value determined for one chemical for one water body may not be the same as the HAC value for the same substance for another water body.

In commenting on guidance for the 2012 assessment, EPA has indicated that TCEQ should utilize these criteria to define an impairment, rather than basing impairments on TDSHS advisories (EPA email on July 19, 2011). In addition, EPA requested that TCEQ acquire TDSHS fish-tissue data when assessing standards attainment.

TCEQ fish tissue criteria have the potential to be more stringent than the HAC values developed by TDSHS in the past. Differences between TSWQS criteria and HAC values exist in part because:

- TDSHS advisory levels are based on a cancer risk of 1: 10,000 and TCEQ criteria are based on a cancer risk of 1: 100,000.
- Different consumption rates are assumed by each agency
- TDSHS may consider many other site-specific factors regarding risk to the local population

Some examples of previously calculated TDSHS HAC values and TCEQ criteria for these parameters are as follows:

Analyte	CASRN	DSHS HAC Value (ppm)	TCEQ WQS Value (ppm)
4,4'-DDD	72-54-8	1.167	0.166
4,4'-DDE	72-55-9	1.167	0.214
4,4'-DDT	50-29-3	1.167	0.209
Mercury	22967-92-6	0.7	0.7
PCBs	1336-36-3	0.047	0.02
Dioxin/Furans	1746-01-6	2.33E-06	4.00E-07

Reconsideration of Tissue-Based Human Health Criteria in Light of EPA Comments on 2012 Integrated Report:

Possibilities to discuss with the workgroup include:

- Revert back to water column criteria (similar to the 2000 TSWQS)
- Revert back to water column criteria and add language to §307.6(d) to allow for the development of site-specific BCFs/BAFs (similar to the current WER approach in §307.6(c)(9))
- Address this issue in the *Guidance for Assessing and Reporting Surface Water Quality in Texas*