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## TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

*Protecting Texas by Reducing and Preventing Pollution*

April 23, 2008

Dr. Jane Watson, Chief  
U.S. Environmental Protection Agency, Region 6  
Ecosystems Protection Branch, 6WQ-E  
1445 Ross Avenue  
Dallas, Texas 75202

Re: Water Quality Standards for Mercury

Dear Dr. Watson:

The Texas Commission on Environmental Quality (TCEQ) is currently reviewing and developing proposed revisions to the Texas Surface Water Quality Standards (TSWQS) -- Title 30, Chapter 307 of the Texas Administrative Code. This review includes consideration of any new or revised federal criteria such as those recently developed for methylmercury. Texas currently has human-health criteria for mercury that are based on water-column concentrations of (1) 0.0122  $\mu\text{g/L}$  for the protection of drinking water and freshwater fish consumption, and (2) 0.0250  $\mu\text{g/L}$  for the protection of saltwater fish consumption.

After reviewing the Environmental Protection Agency's (EPA) 2001 final methylmercury criterion, TCEQ staff agrees that it might be more appropriate to express mercury water quality standards as a fish-tissue concentration, rather than as a water-column concentration. EPA has established a national methylmercury criterion of 0.3 mg/kg, which was based on an acceptable reference dose (RfD) of 0.1  $\mu\text{g/kg/day}$ . This RfD corresponds to blood mercury levels of 5.8 ppb, which is ten times lower than levels of mercury associated with subtle neurological effects in the children of women whose diet is composed primarily of fish.

The state agency responsible for issuing fish advisories for the protection of human health is the Texas Department of State Health Services (TDSHS) which currently issues fish consumption advisories when fish fillet mercury levels exceed 0.7 mg/kg. After EPA issued the 2001 criterion of 0.3 mg/kg, TDSHS developed a study which evaluated blood mercury levels as well as self-reported residency duration and fish consumption habits for a sub-population of Caddo Lake residents. Total blood mercury levels ranged from 1.0 to 15.9 ppb, with an average of 2.63 ppb. In comparison, total blood mercury levels in the nationally representative 1999-2000 National Health and Nutrition Examination Survey (NHANES) study for the broader US population ranged from 0.07 to 38.9 ppb, with an average of 1.26 ppb. The primary population of concern is women of child-bearing age. Five of the 37 women in the Caddo Lake study were of child-bearing age, and

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they all had blood mercury levels less than 5.8 ppb. No Caddo Lake participants had blood mercury levels above the "no observable adverse effect level" (NOAEL) of 58 ppb. In addition, a recent analysis of the NHANES 1999-2000 data by Allen et al. (2007) predicted that less than 0.7% of the U.S. women of child-bearing age have mercury exposures that exceed the EPA RfD of 0.1 µg/kg/day and that the probability of exceeding the Agency for Toxic Substances & Disease Registry Minimum Risk Level of 0.3 µg/kg/day is 0.00002%.

The Caddo Lake study concluded that while the DSHS advisory level is less conservative than EPA's 2001 fish tissue criterion of 0.3 mg/kg, blood mercury levels for Caddo Lake residents consuming fish containing greater than 0.7 mg/kg of methylmercury remained well below the estimated NOAEL. These data indicate that the 0.7 mg/kg fish tissue level is health protective, and therefore TCEQ is considering a criterion of 0.7 mg/kg of mercury in fish tissue for human consumption of fish.

EPA staff at Region 6 has indicated that EPA might not approve a proposed fish-tissue criterion of 0.7 mg/kg. It would be helpful to us if EPA would express their potential objections in writing and also provide the data indicating the need for the 0.3 mg/kg level over the 0.7 mg/kg level for our further review. We would also like to establish additional dialogue with EPA staff concerning appropriate water quality criteria for mercury in Texas.

Information on TCEQ's review of the appropriate RfD and fish-tissue criterion for mercury is available from Dr. Tracie Phillips with the TCEQ Toxicology Section. She can be contacted by phone at 512/239-2269 or by email [tphillips@tceq.state.tx.us](mailto:tphillips@tceq.state.tx.us). Overall information on the water quality standards revisions for toxic pollutants is available from Ms. Debbie Miller with the TCEQ Water Quality Division. She may be contacted by phone at 512/239-1703, or by e-mail [demiller@tceq.state.tx.us](mailto:demiller@tceq.state.tx.us).

Sincerely,



L'Oreal W. Stepney, P.E., Director  
Water Quality Division  
Texas Commission on Environmental Quality

DM/jp

cc: Ms. Diane Evans, U.S. EPA, Region 6, 6WQ-EW, 1445 Ross Avenue, Dallas, Texas 75202