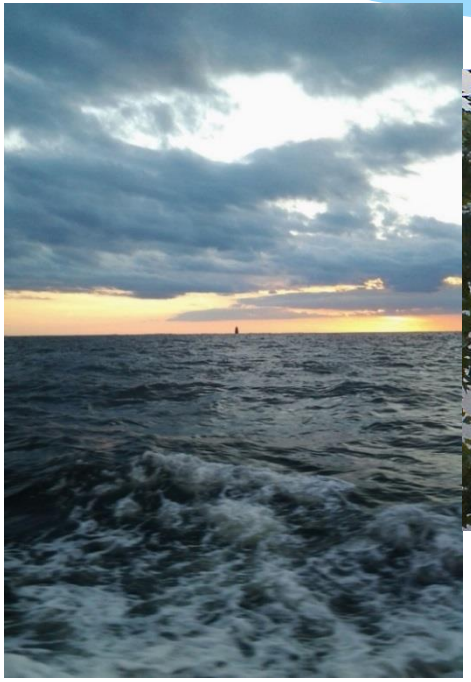
# Delaware River Basin Commission

## Revisions to Human Health Stream Quality Objectives for Toxic Pollutants



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# Introduction

In 2015, EPA published final updated ambient water quality criteria for the protection of human health for 94 chemical pollutants. These updated recommendations reflect the latest scientific information and EPA policies.

DRBC Resolution 2013-7 to reauthorize TAC includes

WHEREAS, the TAC's input is desired to inform the Commission's ongoing initiatives associated with: (1) updating DRBC water quality criteria for toxic pollutants;

# From DRBC Regulations

" It is the policy of the Commission to designate numerical stream quality objectives for the protection of human health for the Delaware River Estuary and Bay (Zones 2 through 6) which correspond to the designated uses of each zone. Stream quality objectives for protection from both carcinogenic and systemic effects are herein established on a pollutant-specific basis for:

pollutants listed as toxic under Section 307(a)(1) and other toxic pollutants, and

other chemicals for which EPA has published final criteria under Section 304(a) of the Act.

Other toxic substances for which any of the three Estuary states have adopted criteria or standards may also be considered for the development of stream quality objectives."

Eight additional directives including use of more stringent MCLs in Zones 2 and 3

# Human Health Ambient Water Quality Criteria
# EPA 2015
# Updated Exposure Inputs

https://www.epa.gov/sites/production/files/2015-10/documents/human-health-2015-update-factsheet.pdf

Ambient water quality criteria under Clean Water Act section 304(a) represent specific levels of chemicals or conditions in a water body that are not expected to cause adverse effects to human health.

**Default Body weight** for human health criteria revised to 80 kilograms based on National Health and Nutrition Examination Survey (NHANES) data from 1999 to 2006 (USEPA 2011). This represents the mean body weight for adults ages 21 and older.

EPA's previously recommended default body weight was 70 kilograms, which was based on the mean body weight of adults from the NHANES III database (1988-1994).

# EPA 2015 Updated Exposure Inputs

**Default drinking water consumption rate** revised to 2.4 liters per day based on NHANES data from 2003 to 2006 (USEPA 2011). This represents the per capita estimate of community water ingestion at the 90th percentile for adults ages 21 and older.

EPA previously recommended a default drinking water consumption rate of 2 liters per day, which represented the per capita community water ingestion rate at the 86th percentile for adults.

# EPA 2015 Updated Exposure Inputs

**Default fish consumption rate** revised to 22 grams per day. This rate represents the 90th percentile consumption rate of fish and shellfish from inland and nearshore waters for the U.S. adult population 21 years of age and older, based on NHANES data from 2003 to 2010 (USEPA 2014).

EPA's previously recommended rate of 17.5 grams per day was based on the 90th percentile consumption rate of fish and shellfish from inland and nearshore waters for the U.S. adult population and was derived from 1994-1996 CSFII data.

EPA recommends developing criteria to protect highly exposed population groups and use local or regional data in place of a default value as more representative of their target population group(s). The preferred hierarchy is: (1) use of local data; (2) use of data reflecting similar geography/ population groups; (3) use of data from national surveys; and (4) use of EPA's default consumption rates.

# Local Fish Consumption Data

Faulds, A. et al., 2004. Patterns of Sport-fish Consumption at Six Pennsylvania Sites Along the Tidal Portion of the Delaware River with Special Emphasis on Shore Anglers. PENNSYLVANIA COASTAL ZONE MANAGEMENT PROGRAM TECHNICAL REPORT  Zones 2 to 4 PA

KCA Research Division, David C. Cox & Associates, Inc. 1994. Fish consumption patterns of Delaware recreational fisherman and their households. Prepared for the State of Delaware Department of Natural Resources & Environmental Control. Alexandria, VA. April 13,1994.  Zones 5 and 6

# Local Fish Catch and Harvest Data

Pierce, D. J. and J. L. Myers. 2007. Delaware River and Estuary Angler Log 2005 & 2006. Pennsylvania Fish & Boat Commission, 450 Robinson Lane, Bellefonte, PA 18623.
http://www.fishandboat.com/images/fisheries/afm/2008/5x07_15delaware.htm
East Branch and West Branch to mouth of Schuylkill River (>Zone 1A to upper Zone 4)

Volstad, J.H., W. Rickhus, J. Miller, A. Lupine and J. Dew. 2003. The Delaware River Creel Survey 2002. Versar Inc., Columbia, MD.
Del Mem Br to Downsville, NY (East Branch) (upper Zone 5 to > Zone 1A)

# EPA Guidance for Conducting Fish Consumption Surveys

* Updated Draft April 8, 2016
* If a fish consumption rate other than from NHANES data is used to derive a criteria the supporting data should meet the current guidance on conducting fish consumption surveys

# EPA 2015 Updated Exposure Inputs

EPA selected **bioaccumulation factors (BAFs)** using a framework for deriving national trophic level-specific bioaccumulation.

**Updated Health Toxicity Values** EPA's Integrated Risk Information System (IRIS) was the primary source for reference dose and cancer slope factors. For some pollutants, however, more recent toxicity assessments were provided by EPA's Office of Water, EPA's Office of Pesticide Programs, and international or state agencies.

Chemical-specific **relative source contributions (RSC)** ranging from 20 to 80 percent following the Exposure Decision Tree approach described in EPA's methodology (USEPA 2000). The RSC allows a percentage of the reference dose's exposure (non-carcinogens or non-linear carcinogens) to be attributed to ambient water and fish consumption. Exposures excluding consumption of ocean fish and non-fish food , dermal exposure, and respiratory exposure.

# Next Steps

Does TAC have any specific topics or issues to addressed related to HH criteria updates?

Proceed with update of DRBC HH criteria for Zones 2 to 6.

Expand DRBC HH criteria to Zone 1?

DRBC staff to propose revised criteria in consultation with basin states.

Toxic Criteria Workgroup to review criteria updates and present proposed criteria revisions to TAC.