


Office of Water Management

Triennial Review of Water Quality Standards TR17 Updates to Human Health Criteria

Water Resources Advisory Committee
November 18, 2015

Tom Wolf, Governor

John Quigley, Secretary

Updates to Human Health Criteria

Pennsylvania's ambient water quality criteria for the protection of human health, for toxic substances, are maintained in Table 5 at 25 Pa Code §93.8c (statewide)

- Under the Clean Water Act and its implementing regulations, states are required to adopt water quality criteria to protect designated uses (e.g., public water supply, aquatic life, recreational use, or industrial use) that are based on sound scientific rationale
- Sections 5(b)(1) and 402 of the Clean Streams Law (35 P. S. §§ 691.5(b)(1) and 691.402) authorize the Environmental Quality Board (Board) to develop and adopt rules and regulations to implement the Clean Streams Law, and §1920-A of the Administrative Code of 1929 (71 P.S. § 510-20), which grants the Board the power and duty to formulate, adopt, and promulgate rules and regulations for the proper performance of the work of DEP

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Updates to Human Health Criteria

States must review, consider, and adopt, where appropriate, recommended water quality criteria that have been issued by the U.S. Environmental Protection Agency (EPA)

- Section 304(a)(1) of the Clean Water Act requires EPA to develop criteria for water quality that accurately reflect the latest scientific knowledge. These criteria are based solely on data and scientific judgments on pollutant concentrations and environmental or human health effects.
- Section 304(a) also provides guidance to states in adopting these water quality standards:
  - States may adopt the criteria that EPA publishes
  - States may modify EPA's recommended criteria to reflect site-specific conditions, or states may adopt different criteria based on other scientifically-defensible methods
  - States must provide valid rationale why they are modifying or choosing not to adopt a specific EPA-recommended criterion

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Updates to Human Health Criteria

On June 29, 2015, EPA published as final updates for the recommended *Human Health Ambient Water Quality Criteria* (*EPA. 2015 Update*), following extensive public and peer review

- 94 pollutants have been updated to reflect the latest scientific information and implementation of existing EPA policies found in the methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (2000)
- These updated recommendations reflect the latest scientific information and EPA policies, including updated body weight, drinking water consumption rate, fish consumption rate, bioaccumulation factors, health toxicity values, and relative source contributions
- This final 2015 update supersedes EPA's previous recommendations to the section 304(a) human health criteria recommendations for these 94 pollutants

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Updates to Human Health Criteria Inputs

- The 2015 human health criteria updates incorporate the latest exposure factors for body weight, drinking water intake, and fish consumption
- EPA has also incorporated the methodology used to determine the bioaccumulation in fish, in addition to other toxicity factors (reference dose and cancer slope factors).
- The default inputs are as follows:
  - Body Weight – From 70 kilograms (154 lbs.) => **80 kilograms** (176 lbs.)
  - Drinking Water – From 2 liters per day => **2.4 liters per day**
  - Fish Consumption – From 17.5 grams per day => **22 grams per day**

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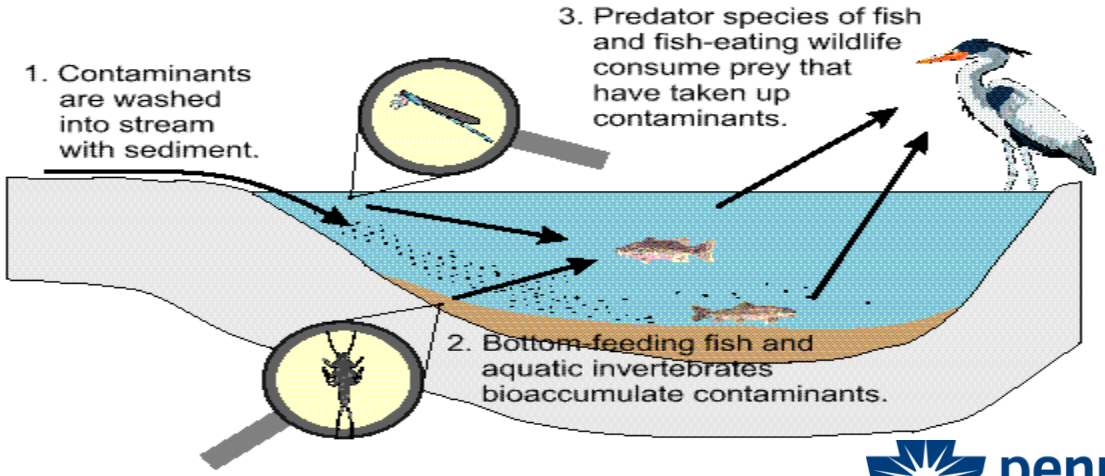
Incorporation of Bioaccumulation Factor

- Bioaccumulation Factor (BAF) – the criteria have been updated using BAFs as recommended in the EPA human health criteria methodology (USEPA 2000)
- BAFs will account for the uptake and retention of a chemical by an aquatic organism from all surrounding media (e.g. water, food, sediment)
- Criteria were previously calculated with bioconcentration factors that only accounted for direct water contact



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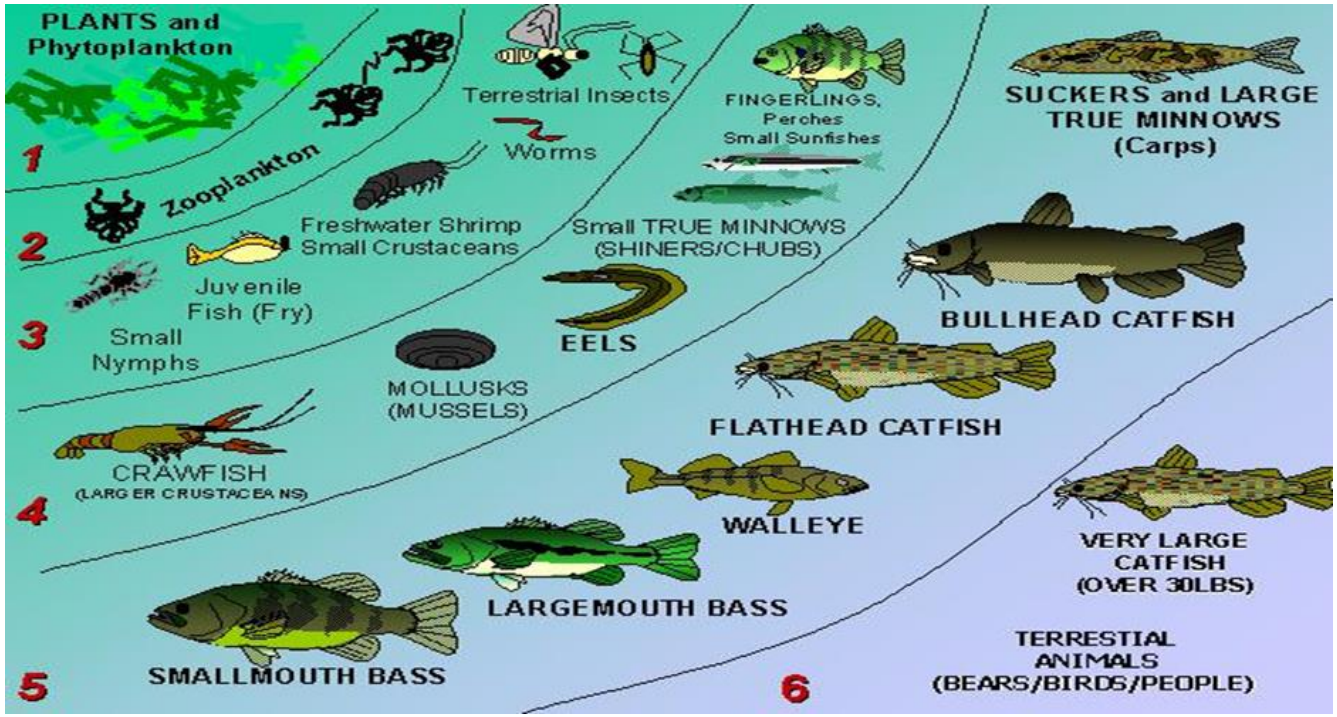
Updates to Human Health Criteria

To account for the variation in bioaccumulation due to the aquatic tropic position of an organism, EPA is recommending that the BAFs be determined and applied to three tropic levels of fish.



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Other Toxicity Factors

- **Health Risk Factors** – EPA has updated the health risk factors using the most current toxicity information
  - toxicity values for both non-carcinogenic and carcinogenic effects used
  - EPA's Integrated Risk Information System (**IRIS**) is the primary source for reference dose and cancer slope values
- **Relative Source Contribution** – EPA has updated the Relative Source Contribution (**RSC**) to reflect chemical-specific exposure
  - The RSC will range from 20 to 80 percent as recommended in EPA's human health methodology (USEPA 2000)
  - This value is only applied to threshold non-carcinogens
  - The RSC protects against particular pollutant exposures from other foods, marine fish consumption, dermal exposure, and respiratory exposures
  - The RSC is to ensure that an individual's total exposure from all sources of a pollutant does not exceed the criteria

Summary to Human Health Criteria

- According to EPA's recalculated criteria, **55** of these 94 pollutants will have a **more stringent** criterion than previously listed in 25 Pa Code Chapter 93, Table 5
- **19** of the recalculated toxic pollutants will result in a **less stringent** criterion than previously listed in Table 5
- **Five toxic** pollutants that **may be added** to the water quality criteria for toxic substances, not previously in Table 5
  - 1,1,1-Trichloroethane (CAS 71-55-6)
  - Chlorophenoxy Herbicide (2,4-D) (CAS 94-75-7)
  - Chlorophenoxy Herbicide (2,4,5 –TP)[Silvex] (93-72-1)
  - 1,2-Dichloropropane (CAS 78-87-5)
  - Pentachlorobenzene (CAS 608-93-5)
- There are **nine pollutants** that have an **insignificant** change in the toxicity and will not require any change to the current criteria in Table 5, and **six others** that are still **under review.**

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Questions?

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