



## FACT SHEET

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# Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (2000) Technical Support Document, Volume 2: Development of National Bioaccumulation Factors

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EPA has released a second technical support document to accompany the *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health*, published in 2000. The *Technical Support Document Volume 2: Development of National Bioaccumulation Factors* contains technical details on how EPA develops national bioaccumulation factors for use in deriving national recommended ambient water quality criteria for protecting human health.

### Background

Aquatic organisms can accumulate chemicals in their bodies when they are exposed to these chemicals through water, their diet, and other sources. This process is called bioaccumulation. The extent of bioaccumulation by aquatic organisms varies widely depending on the chemical and the species, but it can be extremely high for some highly persistent and lipid-soluble chemicals. For such highly bioaccumulative chemicals, concentrations in aquatic organisms may pose unacceptable human health risks from eating fish and shellfish even when concentrations in water are too low to cause unacceptable health risks from drinking the water.

In order to prevent harmful exposures to chemicals in water through eating contaminated fish and shellfish, national 304(a) water quality criteria for protecting human health must address chemical bioaccumulation in aquatic organisms.

### About this Technical Support Document

In 2000, EPA published the *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health* ("2000 Human Health Methodology"), that updated and revised the existing 1980 Guidelines and Methodology. The 2000 Human Health Methodology incorporates scientific advancements made over the past two decades in chemical risk assessment, exposure assessment, and bioaccumulation.

EPA developed detailed procedures and guidelines described in the 2000 Human Health Methodology for estimating bioaccumulation factor (BAF) values for use in deriving or revising ambient water quality criteria. The *Technical Support Document Volume 2: Development of National Bioaccumulation Factors* ("National BAF TSD") discusses the technical basis for developing national BAFs, the underlying assumptions and uncertainties inherent to the approach, and applying the bioaccumulation component of the 2000 Human Health Methodology.

### **Technical Information**

Using the 2000 Human Health Methodology, criteria are derived using a bioaccumulation factor to reflect the uptake and retention of a chemical by fish and shellfish from all sources (e.g., water, food, sediment), rather than just from water as in bioconcentration factors from the 1980 Guidelines Methodology. The major changes in the bioaccumulation portion of the 2000 Human Health Methodology that are described in detail in the National BAF Technical Support Document include a framework for selecting the appropriate procedure for deriving a BAF that is based on chemical properties and biological activity and scientific information for deriving national BAFs that were not available in 1980.

### **How do I get a copy of the new technical support document?**

You can get copies of "*Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health, Technical Support Document Volume 2: Development of National Bioaccumulation Factors*" (EPA-822-R-03-030) from EPA's Water Resource Center by calling (202) 566-1735. You can request a copy by sending an e-mail to [center.water.resource@epa.gov](mailto:center.water.resource@epa.gov) or by conventional mail to: EPA Water Resource Center, 4101T, 1200 Pennsylvania Avenue, N.W., Washington, DC 20460. You can also download the document from EPA's web site at <https://www.epa.gov/waterscience/humanhealth/method/>.