

# August 2004

**AUGUST 23**

Monday, August 23, 2004

12:00 p.m. to 1:00 p.m.

Legislative Rule-Making  
Review Committee  
(Code §29A-3-10)

Earl Ray Tomblin  
ex officio nonvoting member

Robert "Bob" Kiss  
ex officio nonvoting member

**Senate**

**House**

Ross, Chairman	Absent	Mahan, Chairman	Absent
Minard, Vice Chairman		Thompson, Vice Chairman	
Snyder	Absent	Cann	
Unger	Absent	Kominar	Absent
Boley		Armstead	
Miner		Faircloth	Absent

The meeting was called to order by Mr. Thompson, Vice Chairman.

The minutes of the July 26, 2004, meeting were approved.

Tom Boggs, Vice President and CFO of the Chamber of Commerce discussed the Chamber of Commerce's position on proposed changes to the Water Quality Standards.

Liz Garland, Issues Coordinator for the West Virginia Rivers Coalition, distributed handout and discussed the unresolved water quality issues.

Libby Chatfield, Technical Advisor for the Environmental Quality Board, distributed handouts and discussed the update of Board actions and the toxicity of proposed 69 pollutants. Ms. Chatfield answered questions from the Committee Members.

Joe Altizer, Associate Counsel, responded to questions from the Committee Members.

Allyn Turner, Director of the Division of Water and Waste Management, with the West Virginia Department of Environmental Protection distributed and explained handouts.

The meeting was adjourned.

**TENTATIVE AGENDA**  
**LEGISLATIVE RULE-MAKING REVIEW COMMITTEE**  
**Monday, August 23, 2004**  
**12:00 p.m. to 1:00 p.m.**

1. **Approval of Minutes - Meeting of July 26, 2004**
2. **Tom Boggs - Vice President and CFO of the Chamber of Commerce**  
Discussion on the Chamber of Commerce's position on proposed changes to the Water Quality Standards.
3. **Liz Garland - Issues Coordinator for the West Virginia Rivers Coalition**  
Discussion of unresolved water quality issues.
4. **Libby Chatfield - Technical Advisor for the Environmental Quality Board**  
Discussion on the update of Bard actions and discussion of the toxicity of proposed 69 pollutants.
4. **Other Business**

**AUGUST INTERIM ATTENDANCE**  
**Legislative Interim Meetings**  
**August 22, 23, and 24, 2004**

**Monday, August 23, 2004**

12:00 p.m. - 1:00 p.m.

**Legislative Rule-Making Review Committee**

Earl Ray Tomblin, ex  
 officio nonvoting member

Robert "Bob" Kiss, ex  
 officio nonvoting member

**Senate**

**House**

Ross, Chair \_\_\_\_\_  
 Minard, Vice Chair   
 Snyder \_\_\_\_\_  
 Unger \_\_\_\_\_  
 Boley   
 Minear

Mahan, Chair \_\_\_\_\_  
 Thompson, Rick, Vice Chair   
 Cann   
 Kominar \_\_\_\_\_  
 Armstead   
 Faircloth \_\_\_\_\_

Thompson called meeting to order  
 Tom Beggs, VP & CFO, Chamber of Commerce

Water  
 Quality  
 Act

- ① Rubber stamp EPA
- ② State makes determination

Not quick enuf - into political arena - rubber  
 stamp w/o explanation. Bd ~~is~~ needs to  
 request funding to be able to do the job  
 appropriately. Should consult w/ regulated  
 community prior to adopting standards. Need  
 to adopt std after problem has been found

Liz Garland - Issues coordinator for WV Rivers  
 Coalition - distributed ad

discussed handout

Appendix A - "toxic" list - needs updated

Selenium - fish tissue & water testing

Aluminum - toxic to water life

Manganese - change submitted to EPA

inadequate to protect human health

Libby Chatfield - distributed handouts

Bd in process of revising aluminum standards

Public hearing 9/15. Plan to meet 10/1 deadline

Bd proposing revision add two streams to waters of special concern

What are our options

Armistead ① adopt criteria set forth

② adopt own criteria

Joe responded to questions

Libby responded to q's regarding options

Turner - explained handout

contains summary column

**AUGUST INTERIM ATTENDANCE**  
**Legislative Interim Meetings**  
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Legislative Rule-Making Review Committee

Earl Ray Tomblin, ex  
 officio nonvoting member

Robert "Bob" Kiss, ex  
 officio nonvoting member

Senate

House

Ross, Chair	_____
Minard, Vice Chair	_____✓
Snyder	_____
Unger	_____
Boley	_____✓
Minear	_____✓

Mahan, Chair	_____
Thompson, Rick, Vice Chair	_____✓
Cann	_____✓
Kominar	_____
Armstead	_____✓
Faircloth	_____

- Thompson called meeting to order
- Minutes Approved
- Tom Boggs - Vice President - CFO of Chamber of Com.
  - Discussion on the Chamber of Commerce's position on proposed changes to the Water Quality Standards
  - No Questions
- Liz Harland - Executive Director for the WV Rivers Coalition
  - Handout distributed
  - Discussion of unresolved water quality issues
  - No questions

- Libby Chatfield - Tech Advisor for the Environmental Quality Board

- ~~2~~<sup>3</sup> Handouts distributed

- Discussion on the update of Board actions and discussion of the toxicity of proposed 69 pollutants

- Bd <sup>plans</sup> to file a revision to the rule (aluminum) on Sept 28 before Oct deadline

- proped a revision of 2 streams of Preston City

### Answered Questions

- Joe Altizer responded to questions from Committee

- Libby Chatfield responded to questions from Committee

- Turner explained handout

**AUGUST INTERIM ATTENDANCE**  
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**Legislative Rule-Making Review Committee**

Earl Ray Tomblin, ex  
officio nonvoting member \_\_\_\_\_

Robert S. Kiss, ex  
officio nonvoting member \_\_\_\_\_

Senate

Ross, Chair \_\_\_\_\_

Minard, Vice Chair ✓

Snyder \_\_\_\_\_

Unger \_\_\_\_\_

Boley ✓

Minear ✓

House

Mahan, Chair \_\_\_\_\_

Thompson, Richard, Vice Chair ✓

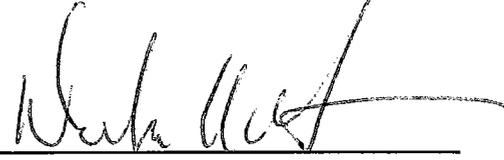
Cann ✓

Kominar \_\_\_\_\_

Armstead ✓

Faircloth \_\_\_\_\_

I certify that the attendance as noted above is correct.



\_\_\_\_\_  
Staff Person

Debra Graham

Please return to Brenda in Room 132-E or Fax to 347-4819.



**WEST VIRGINIA CHAMBER OF COMMERCE**  
*The Voice of Business in West Virginia*

August 23, 2004

Senator Mike Ross  
Legislative Rule-Making Review, Co-Chair  
State Capitol Complex  
1900 Kanawha Boulevard, East, Room 203-W  
Charleston, West Virginia 25305

Delegate Virginia Mahan  
Legislative Rule-Making Review, Co-Chair  
State Capitol Complex  
1900 Kanawha Boulevard, East, Room 215-E  
Charleston, West Virginia 25305

Re: Environmental Quality Board;  
69 Toxic Pollutant Criteria

Dear Senator Ross and Delegate Mahan:

The West Virginia Chamber of Commerce ("Chamber") is pleased to have the opportunity to renew our concerns about the manner in which water quality standards in West Virginia have been and continue to be adopted for toxic pollutants.

At issue is the historical approach of the Environmental Quality Board ("EQB") of adopting default national water quality criteria. The preferred alternative is to follow the procedure set forth in the federal Clean Water Act which calls first for the West Virginia to determine if it is necessary to adopt any standard at all, and, if so, to adopt standards based on criteria that are appropriate for that state.

For the reasons that will be described in this letter, we urge the Legislative Rule-making Review Committee to continue to reject the adoption of new water quality standards based upon default criteria, and instead to insist on the development of standards that are appropriate for West Virginia.

Clean Water Act

The federal Clean Water Act sets forth the mechanism by which states are to adopt water quality standards. With respect to toxic pollutants, the Act sets forth the following directive:

Whenever a State reviews water quality standards pursuant to paragraph (1) of this subsection, or revises or adopts new standards pursuant to this paragraph, such State shall adopt criteria for all toxic pollutants listed pursuant to section

1317(a)(1) of this title for which criteria have been published under section 1314(a) of this title, the discharge or presence of which in the affected waters could reasonably be expected to interfere with those designated uses adopted by the State, as necessary to support such designated uses....

Clean Water Act §303(c)(2)(B).

The implementing regulations of the United States Environmental Protection Agency [USEPA] also address the obligation of a State to act to adopt criteria for toxic pollutants:

(a) *Inclusion of pollutants:* (1) States must adopt those water quality criteria that protect the designated use. Such criteria must be based on sound scientific rationale and must contain sufficient parameters or constituents to protect the designated use. For waters with multiple use designations, the criteria shall support the most sensitive use.

(2) *Toxic pollutants:* States must review water quality data and information on discharges to identify specific water bodies where toxic pollutants may be adversely affecting water quality or the attainment of the designated water use or where the levels of toxic pollutants are at a level to warrant concern and must adopt criteria for such toxic pollutants applicable to the water body sufficient to protect the designated use....

40 CFR §131.11

#### EQB Position

In its letter to this Committee dated February 2, 2004, the EQB cited a 1993 USEPA handbook for the proposition that the state could exercise either the option set forth above based on the Clean Water Act and implementing rule or by adopting USEPA's default national criteria. That letter stated that the EQB favors the default approach. The EQB offered the following reasons in support of its position:

1. The default approach allows criteria to be included in permits without delay.
2. The default approach avoids the cost impact on the state of conducting the more refined analysis authorized by the Clean Water Act.

That statement of the EQB's position is consistent with the EQB's Response to Comments dated August 1, 2003, in which the EQB offered the following additional reasons for adopting the more stringent default approach:

1. The more refined approach authorized by the Clean Water Act "would be a difficult task" that would be "unworkable with current resources".

2. To the extent that the default approach resulted in criteria that “are found to be unnecessarily stringent”, the EQB has expressed a willingness to work with permit holders and WVDEP.

As will be set forth in the next section, the Chamber finds the EQB position to be flawed not only on legal grounds, but also on the basis of sound public policy.

#### The Chamber Position

Beginning with its formal comments to the EQB filed on June 23, 2003, the Chamber has pointed out to the EQB that West Virginia is under no federal mandate to adopt USEPA’s default criteria for toxic pollutants. Our comments called the EQB’s attention to USEPA’s rules that require the adoption of numerical criteria for toxic pollutants only in those cases where

- (1) a toxic pollutant is present in a stream; and
- (2) the presence of that pollution can be reasonably expected to interfere with a designated use.

The Chamber also pointed out in our comments to the EQB, that the Legislature had established a significant legislative policy statement related to the adoption of water quality standards that the EQB had completely failed to implement. That policy is as follows:

It is declared to be the public policy of the state of West Virginia to maintain reasonable standards of purity and quality of the waters of the state consistent with (1) public health and public enjoyment thereof; (2) the propagation and protection of animal, bird, fish, aquatic and plant life; and (3) the expansion of employment opportunities, maintenance and expansion of agriculture and the provision of permanent foundation for healthy industrial development.

W.Va. Code § 22-11-2(a)

We will now respond to the EQB position that the approach urged by the Chamber be ignored in favor of the default approach that has been historically used by the EQB.

#### a. Timing of Implementation

The EQB would have the Legislature conclude that by adopting default criteria, permit limits could be established more quickly and public health better protected. The fallacy in this rationale, is that the EQB’s default approach skips the process that allows the Legislature to make an informed determination about whether a particular toxic pollutant even exists in our streams much less creating a human health risk. In any case, our water quality standards and NPDES permits already contain a prohibition against discharging any toxic pollutant in toxic amounts.

#### b. Difficulty of Task

The EQB offers the difficulty and cost of performing a more refined analysis of toxic pollutant criteria, to justify its use of default values. The Chamber is concerned about this response because it suggests that the EQB is not concerned about the difficulty and cost of

implementing the default criteria. The EQB has a statutory duty to determine water quality criteria for the state based upon the policy established by the Legislature. If additional resources are needed to accomplish that task, the EQB should request these resources. To our knowledge, the EQB has never made such a request to the Legislature.

c. Relief from Unnecessarily Stringent Standards

Finally, the EQB seems to concede the potential for the default approach resulting in “unnecessarily stringent” standards, but suggests that such a problem would be addressed by the EQB as problems arise. What the EQB has failed to note, is that the process for relaxing a water quality standard is very much more difficult than adopting a standard in the first place. One need only look to the controversy before the Committee over the proposed relaxation of the aluminum standard to appreciate the significance of this point. The time to address the merit of a new water quality standard is at the time of its adoption – not when the problem occurs and few options exist for solving the problem.

USEPA Action

Even though the EQB has been unwilling to consider alternatives to adopting default criteria for toxic pollutants, we notice that USEPA used the more refined approach earlier this year in reaching the conclusion that West Virginia was under no obligation to adopt a water quality standard for 3-methyl-4-chlorophenol.

Invoking the same regulatory authority which is relied upon by the Chamber in support of its position, USEPA concluded that 3-methyl-4-chlorophenol “cannot reasonably be expected to interfere with designated uses related to taste and odor and human health in West Virginia” and that “a numeric criteria value ... is not required in West Virginia’s WQS.” 69 Fed. Reg. 18075 (April 6, 2004).

USEPA reached this conclusion after examining:

1. the description and use of the pollutant;
2. human health effects literature;
3. technology based effluent guidelines;
4. permit information for discharges; and
5. several monitoring data bases.

USEPA has offered a West Virginia specific case study on how to perform this more refined analysis. In doing so, USEPA concluded that no water quality standard should be adopted for that pollutant in West Virginia.

We ask that the Committee direct the EQB to perform the same type of analysis on any new toxic pollutant being considered for the establishment of a water quality standard.

Conclusion

The establishment of a water quality criteria is one of the most significant regulatory events that occurs in environmental rulemaking. Adoption of such standards causes immediate action to be undertaken to revise permits to implement those standards. Once the standard is adopted, it is much more difficult to get it adjusted.

The only course of action that is consistent both with the federal Clean Water Act and the state policy for the adoption of water quality standards is for the EQB to gather the scientific data to justify those standards in the first place.

We urge that such a result be directed by the Committee.

Very truly yours,



Thomas M. Boggs  
Vice President

C: Senator Joseph M. Minard  
Senator Herb Snyder  
Senator John Unger, II  
Senator Donna J. Boley  
Senator Sarah M. Minear

Delegate Richard Thompson  
Delegate Steven K. Kominar  
Delegate Samuel J. Cann  
Delegate Tim Armstead  
Delegate Larry Faircloth

**Liz Garland**  
**Expectative Director**  
**West Virginia Rivers Coalition**  
**August 23, 2004**  
**Legislative Rule Making Review Committee**

### **Adoption of Pollutant Parameters**

***The most simple, efficient, and protective approach to 69 toxic pollutants with new criteria guidance from EPA, is to adopt each pollutant's numeric criterion into the state's water quality standards.***

West Virginia is obligated, as are all states, to adopt specific numeric criterion for each toxic pollutant for which criteria guidance is published. The criteria adopted for toxic pollutants must protect water quality for designated uses. The criteria must be based on sound scientific rationale.

The Clean Water Act (CWA) provides three mechanisms to meet the obligation to establish numeric criteria for toxic pollutants. For the 2004 general legislative session, the Environmental Quality Board (EQB) presented criteria for a slate of toxic pollutants that the Environmental Protection Agency (EPA) had recently published criteria guidance. The EQB opted to adopt statewide numeric criteria based on EPA's recommendations, regardless of whether or not each pollutant is known to be present in West Virginia.

Alternative methods of adopting criteria for the list of toxic pollutants require identifying the presence of a pollutant, and may require establishing procedures to translate narrative water quality standards to numeric when a pollutant's toxicity may affect a water body's ability to meet its designated use. At the least, these alternative means are time consuming and potentially costly.

Additionally the alternative methods leave the potential for the discharge of toxic pollutants to slip through the cracks unnoticed when new industries or new industrial processes are introduced to West Virginia. Most important, at this time, West Virginians are now unprotected by an array of toxic pollutants, recognized by EPA, but not adopted by the 2004 West Virginia legislature as required by the Clean Water Act.

### **Revised List of Trout Waters**

***The 'trout list', Appendix A, is a tool for agency personnel. The reference list expedites any agency review, particularly for NPDES permit applications.***

The trout list, in Appendix A, provides support, but does not replace the definition of trout waters, a designated use, Category B2. Waters meeting the definition, in Section 2.2 of the state's Water Quality Standards, are to be protected as the trout waters designated use. An assortment of parameters, such as dissolved oxygen, temperature and turbidity, and associated criteria are defined in the Water Quality Standards in order to protect the trout water use.

These protections are applicable only to waters meeting the trout water definition in Section 2.2, which reads, "streams or stream segments which sustain year-round trout populations". The associated list in Appendix A serves to assist permit writers. Without such a list, a Department of Environmental Protection (DEP) permit writer would need to either have intimate knowledge, including a long history, of trout habitat in affected streams, or would need to verify whether or not a stream sustains year-round trout populations through a very lengthy study.

Permit writing without a trout water list is both impractical and inefficient for the agency and the industry served by DEP. Indeed the list may never be completely inclusive, but with the expertise of the Division of Natural Resources (DNR), and with periodic (perhaps triennially) review and update, the list will serve DEP to efficiently and appropriately administer permits.

### **Selenium Criterion for Chronic Aquatic Life**

***The proposed selenium criterion is based on a technically flawed study and does not account for the need to protect habitat dependent upon aquatic life.***

The present selenium criterion for chronic aquatic life was established nearly 20 years ago. During those years, numerous studies have indicated that the criterion has not been sufficiently protective of aquatic life and aquatic life dependent habitat. Thus, since 1997, EPA has undergone extensive review of the selenium criterion.

The goal was to address the highly bioaccumulative nature of selenium and to recognize the implication of selenium toxicity on habitat protected by the Endangered Species Act (ESA). EPA contracted with the Great Lakes Environmental Center (GLEC) and required that the chronic criterion recommendation for selenium be based on fish tissue measures rather than water column measures. The study was released as a draft in 2002, and immediately criticized as flawed by the U.S. Fish and Wildlife Service (FWS). Thus, EPA has not published the study's recommendations.

Adopting the draft numeric criteria presents immediate concerns because 1) the study is flawed, 2) the study examined fish but did not look at species dependent upon fish, and 3) introduces the use of a criterion based upon fish tissue for which EPA has issued no implementation guidance.

*For further information, read "EPA's Draft Tissue-Based Selenium Criterion: A Technical Review" by Skorupa, Presser, Hamilton, Lemly, and Sample.*

### **Emergency Ruling to Change the Aluminum Criterion**

***Aluminum has a very complicated behavior in water, yet it is known to present serious toxicity to aquatic life. Moving to a less protective standard is counter to the Clean Water Act's mandate to adopt conservative and protective standards for such complicated pollutants.***

At present, the recommendation is to eliminate the present chronic aquatic life aluminum criterion, and replace it with a less protective and insufficient numeric value. In 1998, EPA disapproved removal of the present criterion. It would be counter-productive to present EPA with another scenario to weaken the aluminum standard.

Aluminum has complex toxic reactions in water: increased toxicity at low pH, some increases at high pH, increased toxicity in tributaries meeting neutral pH, toxicity to a variety of fish species,

and impairment to species with limited ability to acclimate. Such complexity requires water quality standards to be sufficiently conservative to address the array of potentially toxic situations to our stream's aquatic life.

Any change to our present chronic aquatic life criterion for aluminum must be more protective, not less. If there is any dispute as to what numeric value is most appropriate, the present, approved by EPA value should be retained.

### **Manganese Criterion Change Submitted to EPA**

***The change, as submitted to EPA, is inadequate to protect human health, neglects the proper process for changing a water quality standard and is nearly identical to criterion revision for manganese that was recently disapproved by EPA.***

Void of the public participation process and scrutiny afforded under the normal triennial review of West Virginia's Water Quality Standards, industry presented the 2004 legislature a revised manganese criterion for human health. This revision was carried by the legislature and presented to EPA for approval in June of this year.

Although, West Virginia Rivers Coalition objects to the process by which the manganese criterion was revised, it is more critical to note that the new criterion is insufficient to protect human health. The threat to human health by manganese is often downplayed. Yet, in November 2003, the Department of Health and Human Resources found drinking water contamination in Mingo County. The study was conducted because residents were concerned about numerous cases of cancer, Alzheimer's, and respiratory problems. Contaminated well water exceeded human health levels recommended for children and adults.

***The manganese criterion should be protective for West Virginia residents. Selenium and aluminum criterion should protect the fish and wildlife in our waterways. Parameters should be adopted, as available, in order to minimize the introduction of new toxins into our environment. And, we should always strive for efficient and complete protection of our waterways designated uses, including our trout waters.***

*Comments presented by Liz Garland, Executive Director, West Virginia Rivers Coalition*

*Additional comments have been previously presented to EQB on the subjects of aluminum and manganese. These comments can be made available to the legislative committee.*



# U.S. Environmental Protection Agency Water Quality Criteria

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## Human Health

### Fact Sheet: Revised National Recommended Water Quality Criteria

EPA-822-F-03-012; December 2003

- [Summary](#)
- [What are human health water quality criteria?](#)
- [How were the fifteen human health water quality criteria updated?](#)
- [What are the updated human health water quality criteria?](#)
- [Where can I find more information on the updated human health water quality criteria?](#)

#### Summary

EPA is publishing 15 updated national recommended water quality criteria for the protection of human health:

chlorobenzene cyanide 1,2-dichlorobenzene 1,4-dichlorobenzene 1,1-dichloroethylene	1,3-dichloropropene endrin ethylbenzene hexachlorocyclopentadiene lindane	thallium toluene 1,2-transdichloroethylene 1,2,4-trichlorobenzene and vinyl chloride
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These updated criteria are based on EPA's new methodology for deriving human health water quality criteria (i.e., the 2000 Human Health Methodology) and supercede criteria for these chemicals that the Agency had published earlier.

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#### What are human health water quality criteria?

Human health water quality criteria are numeric values that protect human health from the harmful effects of pollutants in ambient water. Under section 304(a) of the CWA, water quality criteria are based solely on data and scientific judgments about the relationship between pollutant concentrations and environmental and human health effects: they do not consider economic or social impacts.

EPA's national recommended water quality criteria are guidance to states and authorized tribes in adopting water quality standards in support of the CWA. They also provide guidance to EPA when it promulgates Federal regulations under the CWA. They are not regulations in themselves and do not impose legally binding requirements on EPA, states, authorized tribes or the public.

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#### How were the fifteen human health water quality criteria updated?

EPA revised the 15 human health water quality criteria based on the Agency's methodology for deriving national recommended water quality criteria for the protection of human health (see Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (2000), EPA-822-B-00-004, October 2000). This methodology incorporates significant scientific advances made in the last two decades, particularly in the areas of cancer and noncancer risk assessments, exposure assessments, and methodologies to estimate bioaccumulation in fish.

The updated water quality criteria integrate the national default freshwater/estuarine fish consumption rate of 17.5 grams/day. Thirteen of the criteria integrate a relative source contribution value from the national primary drinking water standards for the same chemicals. EPA also incorporated a new cancer potency factor for 1,3-dichloropropene and vinyl chloride and a new reference dose for 1,1-dichloroethylene, hexachlorocyclopentadiene, and lindane. These values have already been published in the Agency's Integrated Risk Information System. The bioconcentration factors (BCFs) used in deriving today's criteria are consistent with the BCFs used to promulgate human health water quality criteria for priority toxic pollutants in rules such as the 1992 National Toxics Rule and the 2000 California Toxics Rule.

(top of page)

**What are the updated human health water quality criteria?**

The following table presents the fifteen updated human health water quality criteria:

Pollutant	Human Health Criteria for Consumption of:		Pollutant	Human Health Criteria for Consumption of:	
	Water + Organism (ug/L)	Organism Only (ug/L)		Water + Organism (ug/L)	Organism Only (ug/L)
chlorobenzene	130	1,600	hexachlorocyclopentadiene	40	1,100
cyanide	140	140	lindane (gamma-BHC)	0.98	1.8
1,2-dichlorobenzene	420	1,300	thallium	0.24	0.47
1,4-dichlorobenzene	63	190	toluene	1,300	15,000
1,1-dichloroethylene	330	7,100	1,2-transdichloroethylene	140	10,000
1,3-Dichloropropene	0.34	21	1,2,4-trichlorobenzene	35	70
Endrin	0.059	0.060	vinyl chloride	0.025	2.4
Ethylbenzene	530	2,100			

(top of page)

**Where can I find more information on the updated human health water quality criteria?**

For more information, contact Cindy Roberts, Health and Ecological Criteria Division (4304T), U.S. EPA, Ariel Rios Building, 1200 Pennsylvania Ave., N.W., Washington, D.C., 20460; (202) 566-1124 or send an email to [roberts.cindy@epa.gov](mailto:roberts.cindy@epa.gov).

You can find the Federal Register notice or updated national recommended water quality criteria on the Office of Science and Technology's webpage at <http://www.epa.gov/waterscience/standards/wqcriteria.html>.

EPA also established an official public docket for this action under Docket ID No. OW-2002-0054. The official public docket contains the documents specifically referenced in this action, any scientific views

received in response to the December 2002 Federal Register notice, and EPA's responses to the scientific views submitted by the public. An electronic version of the public docket is available at <http://www.epa.gov/edocket/>.

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# U.S. Environmental Protection Agency Water Quality Criteria

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## Human Health

### Fact Sheet: Methodology

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United States  
Environmental Protection  
Agency

Office of Water  
4304

EPA-822-F-00-005  
October 2000

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## Revised Methodology for Deriving Health-Based Ambient Water Quality Criteria (2000)

### Abstract

The U.S. Environmental Protection Agency is publishing revisions to the 1980 Ambient Water Quality Criteria National Guidelines to better protect human health. The 1980 Ambient Water Quality Criteria National Guidelines outline the methodology used by states and tribes to develop human health water quality criteria. Revisions to the 1980 guidelines incorporate significant scientific advances in key areas such as cancer and non-cancer risk assessments, exposure assessments, and bioaccumulation in fish. The revised methodology will provide more flexibility for decision-making at the state, tribal and EPA regional levels. It is most likely that the methodology will result in more stringent criteria for bioaccumulatives and generally similar values of nonbioaccumulatives.

### Human Health Water Quality Criteria

Human health ambient water quality criteria (AWQC) are numeric values limiting the amount of chemicals present in our nation's waters. Human health criteria are developed under Section 304(a) of the Clean Water Act of 1972 and are designed to protect human health. Water quality criteria are developed by assessing the relationship between pollutants and their effect on human health and the environment. These criteria are used by states and Indian tribes to establish water quality standards and ultimately provide a basis for controlling discharges or releases of pollutants.

The Clean Water Act (CWA) requires EPA to develop, publish and revise ambient water quality criteria (AWQC). In 1980, EPA published AWQC for 64 pollutants/pollutant classes and provided a methodology for deriving the criteria. These national guidelines addressed three types of endpoints: noncancer, cancer and organoleptic (taste and odor) effects.

The states and tribes use these criteria to develop water quality standards for each water body. EPA is required to review periodically criteria adopted by states and tribes. The revisions to the EPA's 1980 methodology will help states and tribes establish water quality criteria and standards that protect human health. They provide detailed means for developing water quality criteria, including systematic procedures for evaluating cancer risk, noncancer health effects, human exposure, and bioaccumulation potential in fish.

## EPA Methodology for Deriving Criteria

States and tribes must develop water quality standards that include designated uses and water quality criteria necessary to support those uses. The Methodology is the guidance for states and tribes to help them establish water quality criteria and standards to protect human health. It provides detailed means for developing the water quality criteria, including systematic procedures for evaluating cancer risk, noncancer health effects, human exposure, and bioaccumulation potential in fish.

Risk assessment practices have evolved significantly since 1980, particularly in the areas of cancer and noncancer risk assessments (with new information, procedures, and numerous published Agency guidelines), exposure assessments (with new studies on human intake and exposure patterns, and new science policy guidelines) and methodologies on accounting for bioaccumulation in fish.

## General Background of the Revision Process

Revisions began with a national workshop in 1992, where participants discussed critical issues. Based on individual expertise, attendees were assigned to technical workgroups including cancer risk, noncancer risk, exposure, and bioaccumulation in fish.

EPA submitted recommendations from the workshop for review and comment by the EPA Science Advisory Board. EPA created a workgroup in 1994, including program office and regional participants, to revise the methodology. Numerous stakeholder participation activities were conducted between 1995 and 1998, including presentations to the Federal-State Toxicology and Risk Analysis Committee and several multi-regional water quality coordinator's meetings in 1996 and 1997, which included participants from EPA regions, states, tribes and some industry.

Following publication of the draft Methodology revisions, written public comments were accepted. Further presentations included the 1998 Annual Meeting of the Society For Risk Analysis and the 1999 Annual Meeting of the Society of Toxicology. In May 1999, a peer review workshop was held. A public stakeholders meeting was also held then. EPA received extensive input on the Methodology from each of these groups. EPA considered all comments and incorporated a substantial portion of them into the final AWQC Methodology Revisions.

## Major Methodology Revisions

Publication of final revisions satisfies the requirements of the CWA that EPA periodically revise criteria for water quality to reflect accurately the latest scientific knowledge on the kind and extent of all identifiable effects on health and welfare that may be expected from the presence of pollutants in any body of water. These Final AWQC Methodology Revisions to the 1980 AWQC National Guidelines are necessitated by the many significant scientific advances made during the past 20 years in the key areas of cancer and noncancer assessments, exposure assessments, and bioaccumulation in fish.

The major revisions are in four assessment areas: cancer, non-cancer, exposure, and bioaccumulation.

For carcinogen (cancer) risk assessment:

- Recommend more sophisticated methods to comprehensively determine the likely mechanism of human carcinogenicity.
- Recommend a mode of action (MOA) approach to determine the most appropriate low- dose extrapolation for carcinogenic agents.

For noncarcinogens:

- Use EPA guidance on assessing noncarcinogenic effects of chemicals and for the Reference Dose (RfD) derivation.

- Recommend consideration of other issues related to the RfD process including: integrating reproductive/ developmental, immunotoxicity, and neurotoxicity data into the calculation.
- Recommend the use of quantitative dose-response modelling for the derivation of RfDs.
- Provide guidance for states and tribes on the use of an alternative value from the RfD point estimate, within a limited range, to reflect the inherent imprecision of the RfD.

For exposure assessment:

- Encourage states and tribes to use local studies on fish consumption that better reflect local intake patterns and choices.
- Recommend default fish consumption values for the general population, recreational fishers and subsistence fishers.
- Account for other sources of exposure, such as food and air, when deriving AWQC for noncarcinogens and nonlinear carcinogens.

For bioaccumulation:

- Focus on the use of bioaccumulation factors (BAFs), instead of bioconcentration factors (BCFs) for estimating potential human exposure to contaminants via the consumption of contaminated fish and shellfish.
- Use high quality field data over laboratory or model-derived estimates for deriving BAFs, since field data best reflect factors which can affect the extent of bioaccumulation (e.g., chemical metabolism, food web structure).

EPA does not plan to completely revise all of the criteria developed in 1980 or those updated as part of the 1992 National Toxics Rule. Partial updates of all criteria may be necessary. EPA will continue to develop and update toxicology and exposure data needed in the derivation of AWQC that may be impractical for the states and regions to obtain.

### **Methodology Revisions Implementation by EPA/States**

EPA's future role in developing AWQC for the protection of human health will include:

- The development of revised criteria for chemicals of high priority and national importance (including, but not limited to, chemicals that bioaccumulate, such as PCBs, dioxin, and mercury).
- The development or revision of AWQC for some additional priority chemicals.
- Technical assistance to states and tribes on the toxicology, exposure and bioaccumulation methods, and review of state/tribal water quality standards.

EPA encourages states and tribes to use the revised methodology to develop or revise AWQC to reflect local conditions appropriately. EPA believes that AWQC inherently require several risk management decisions that are, in many cases, better made at the state and regional level (e.g., fish consumption rates, target risk levels).

### **Effect on State and EPA Regional Offices**

The revised methodology will provide more flexibility for decision-making at state, tribal and EPA regional levels. EPA believes the AWQC require several risk management decisions that are often better made at the state, tribal and regional level. The methodology will probably result in more stringent criteria for bioaccumulatives (due to the use of BAFs instead of BCFs) and generally similar, or less stringent, values

of nonbioaccumulatives.

## Information

For additional information concerning these recommended methodology revisions, contact Denis R. Borum, Health and Ecological Criteria Division (4304), Office of Science and Technology, U.S. Environmental Protection Agency, 1200 Pennsylvania Ave., N.W., Washington, D.C., 20460.

You may view the Federal Register (FR) Notice and the AWQC Methodology revisions on the Internet at: <http://www.epa.gov/waterscience/humanhealth>. The FR Notice explains how to obtain additional information and how to review the complete administrative record for these Methodology revisions.

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**Parameters considered for inclusion in the Water Quality Standards in the  
2004 Legislative Session**

\* Indicates that the parameter is classified by USEPA as a carcinogen

Acenaphthene  
Acrolein  
Anthracene  
Asbestos  
\*Benzidine  
\*Benzo(a)Anthracene  
\*Benzo(a)Pyrene  
\*Benzo(b)Fluoranthene  
\*Benzo(k)Fluoranthene  
\*Bis(2-Chloroethyl)Ether  
Bis(2-Chloroisopropyl)Ether  
\*Bis(2-ethylhexyl)Phthalate  
\*Bromoform  
Butylbenzyl Phthalate  
\*Chlorodibromomethane  
2-Chloronaphthalene  
Chlorophenxy Herbicide (2,4,5-TP)  
Chlorophynoxy Herbicide (2,4-D)  
Chloropyrifos  
\*Chrysene  
\*4,4'-DDD  
\*4,4'-DDE  
Demeton  
\*Dibenzo(a,h)Anthracene  
\*3,3'-Dichlorobenzidine  
\*Dichlorobromomethane  
\*1,2-Dichloropropane  
1,3-Dichloropropene  
Diethyl Phthalate  
Dimethyl Phthalate  
Di-n-Butyl Phthalate  
Dinitrophenols  
\*1,2-Diphenylhydrazine  
alpha-Endosulfan  
beta-Endosulfan  
Endosulfan Sulfate  
Endrin Aldehyde  
\*Ether, Bis(Chloromethyl)  
Fluorene  
Guthion

\*Heptachlor Epoxide  
\*Hexachlorobutadiene  
Hexachlorocyclo-hexane-Technical  
Hexachlorocyclopentadiene  
\*Hexachloroethane  
\*Ideno(1,2,3-cd)Pyrene  
\*Isophorone  
Malathion  
Methyl Bromide  
\*Methylene Chloride  
Mirex  
Nitrobenzene  
Nitrosamines  
\*Nitrosodibutylamine, N  
\*Nitrosodiethylamine, N  
\*N-Nitrosodimethylamine  
\*N-Nitrosodi-n-Propylamine  
\*N-Nitrosodiphenylamine  
\*Nitrosopyrrolidine, N  
Parathion  
Pentachlorobenzene  
Pyrene  
Sulfide-Hydrogen Sulfide  
Tetrachlorobenzene, 1,2,4,5-  
1,2-Trans-Dichloroethylene  
Tributyltin (TBT)  
1,2,4-Trichlorobenzene  
\*1,1,2-Trichloroethane  
Trichlorophenol, 2,4,5-