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EPA

Water Quality Criteria and Standards

Newsletter

ADVANCE NOTICE OF PROPOSED RULE MAKING

EPA is preparing to publish an advance notice of proposed rule making (ANPRM) seeking views and recommendations from interested parties on possible revisions to the Water Quality Standards Regulation at 40 CFR Part 131. States and EPA have developed functional water quality standards programs under the current regulations and these programs generally work. Simply put, the current regulation is not broken. Rather, with the renewed interest in watershed management combined with improved methods for water quality assessment, a comprehensive evaluation of this regulation is appropriate at this time. We need to examine whether changes in the regulation could enhance water quality management on a watershed basis. A review of the regulation will also compliment similar outreach discussions EPA is currently undertaking for the purposes of reviewing the water quality planning and management and TMDL programs as well as the NPDES program. EPA is committed to ensuring that these programs, combined, ultimately form an integrated basis for water quality planning, priority setting and implementation on a watershed basis.

Changes may be needed to the water quality standards regulation to better reflect the environmental priorities and issues we face going into the 21st century. EPA believes the challenges presented by increasingly complex threats to water quality and competition for limited resources require us to consider revisions which re-emphasize and strengthen our water quality decisionmaking. A review of the water quality standards regulation could identify opportunities to integrate new science into a basin management approach that enables flexible, sensible decisions.

The ANPRM process allows EPA to begin this work by consulting with all interested parties to find out what, if any, changes are necessary and desirable to make the water quality standards regulation more responsive to current needs and to identify

opportunities for further clarifications of policy and guidance by EPA. In the twelve years since EPA last revised the water quality standards regulation, interested parties have gained considerable experience in developing and implementing water quality standards. This experience will provide valuable information for review of these regulations.

The most significant shift in water quality management programs in recent years has been the increased emphasis on the use of watershed based programs. It is increasingly apparent that we share a common view that water quality programs, including water quality standards, can be better tailored to the characteristics, problems, risks and chances for success in individual watersheds or basins with meaningful involvement of the local communities. The water quality standards regulation should ensure that States and Tribes have the flexibility to define the water quality standards and hence the environmental objectives of a waterbody according to the characteristics of the ecosystem and the needs of the water's users. The regulation must allow the states to tailor waterbody use designations and criteria to protect these uses within individual basins or watersheds based on environmental and social needs in the basin. The present use of broad, statewide use classifications and lists of associated chemical criteria may be too general, lacking the refinement necessary to tailor water quality management actions to specific watersheds. Additionally, it should be made clearer that States and Tribes have the flexibility to adjust use designations as information improves about whether a designated use can be attained and to reflect natural and human caused changes in water quality that may have occurred. We must identify opportunities to make water quality standards more flexible and at the same time more integrated to address multiple stressors and their cumulative impacts in order to more effectively protect designated uses.

Significant scientific advancements over the last twelve years have added to our ability to assess environmental impacts and risks related to changes in water quality. As they are further developed, new and emerging sophisticated and integrated analytical tools such as bioassessment, bioaccumulative chemical criteria, sediment quality criteria and toxicity assessments will increasingly allow us to better characterize the ecological condition of water resources. At present, this improving capability, utilized in a tailored watershed planning and management framework, can enhance the States' ability to characterize and protect locally agreed upon goals for maintaining and protecting chemical, physical and biological integrity of individual basins. At the same time, we must concede that at any given time, no matter how good our assessment methods, our knowledge about natural and social systems is imperfect and incomplete. In the long term, chemical, physical and biological assessment methods will continue to improve. As they do, we need to ensure that the standards program can effectively accommodate the new science and what it can tell us. In the meantime, we should not allow progress to be stalled by incomplete knowledge.

The water quality standards program must protect the nation's waters as envisioned in the Clean Water Act. It must establish requirements that are necessary to attain and maintain healthy, sustainable ecosystems. It must be flexible enough for

States to ensure that standards are protecting water quality in a way that makes sense. We must avoid a program that results in costly requirements that have little or no environmental benefit. We can utilize the experience gained by EPA, States, Tribes, municipalities, the regulated community and environmental groups implementing water quality standards over the last twelve years, to assess the regulation and determine if changes are needed to better reflect local environmental needs in a sensible, environmentally beneficial way.

EPA may learn through the ANPRM process that the concepts described above can be better integrated into water quality management decisionmaking through development of new or revised policies and guidance rather than revisions to the regulation. Because of this possibility, EPA is reserving its decision whether to propose and finalize revisions to the regulation. EPA will revise the regulation if it is necessary based on stakeholder recommendations. At minimum, EPA believes that any revisions to the water quality standards regulation should result in reasonable compliance costs for the regulated community, as well as reasonable implementation costs for States and EPA and be as simple or simpler to implement than the existing regulation.

The ANPRM is intended to initiate discussions on the current regulation, and provide a basis for proceeding with any revisions. EPA will consider all comments before deciding whether to revise the regulation or formulating any proposed revisions to the regulation.

- EPA plans to publish the Advance Notice of Proposed Rule Making (ANPRM) on its water quality standards regulations in mid-1996. The ANPRM will present and solicit comment on a collection of issues with the intent of identifying necessary and desirable changes to the water quality standards program that will ensure that the program remains consistent with the concepts of watershed protection and that it remains flexible enough to evolve as ecological health assessment techniques become more sophisticated. Issues that the ANPRM will address include:

  - refining designated uses,
  - utilizing new criteria science,
  - antidegradation policies and procedures,
  - the policy on independent applicability,
  - mixing zone policies and procedures,
  - variances,
  - compliance schedules,
  - endangered species,
  - wetlands and water quality standards, and
  - environmental justice.

- EPA is currently developing the draft ANPRM. Our next steps are to distribute the draft for comment to all interested parties in October, and then to revise the October draft to incorporate the views of stakeholders.

- After publication of the ANPRM in the Federal Register in mid-1996, EPA will hold public meetings in the ten cities where EPA Regional Offices are located. EPA will accept public comments through the completion of the public meetings.

- For further information on the ANPRM or to be included in the distribution of the October 1995 draft, please call Rob Wood, Manager Water Quality Standards Regulation Development at (202) 260-9536.

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WATER QUALITY STANDARDS ACADEMY EXPANDS

The formal training program on the development of water quality criteria and standards known as the Water Quality Standards Academy continued to prove successful in FY1995. More people attended the Academy in FY95 that in FY94. Four hundred and twenty-seven completed the course, including representatives of 28 States, and Territories, and 39 different Indian Tribes. Other participants represented EPA headquarters and regional offices, municipalities, regional governments, industrial organizations, environmental groups, other Federal Agencies, Foreign Governments and consultants. A total of 1077 people are "graduates" of the Academy. The training was held in eight different cities around the country and included a special session for the U.S. Fish and Wildlife Service personnel.

The Academy provides a basic foundation in the criteria and standards program for people with six months or less in the program. In practice, however, much more experienced people attending the Academy were very complimentary. They find the program to be extremely useful as it is the first time they have had the benefit of discussing the entire criteria to standards program as a whole entity and had real-life experience upon which to apply the concepts presented during the Academy discussions.

FY96 plans for the Academy are unclear given the lack of a budget for the upcoming fiscal year. The most optimistic outlook right now is that we will continue to present the Academy in FY96 but only about half as many sessions. It may be that the Academy becomes a casualty of reduced funding levels and resulting decisions on program priorities. Frances Desselle 202-260-1320 is responsible for administering the Academy.

MORE INDIAN TRIBES ASSUME PROGRAM

In FY95, 7 more Tribes were authorized to administer the water quality standards program and 4 Tribal standards were approved. At the end of FY95, 12 Tribes were authorized to administer the standards program and six of those Tribes now have approved standards.

Tribes authorized to administer the program include:
1. Pueblo of Isleta *
2. Pueblo of Sandia *
3. Pueblo of San Juan *
4. Puyallup
5. Seminole
6. Miccosukee
7. Salish-Kootenai
8. Chehalis
9. Santa Clara Pueblo *
10. Picuris *
11. Nambe Pueblo *
12. Sokaogon Chippewa

The Tribes above marked with * have approved water quality standards. Please note that several other Tribal standards are actively under review by EPA and may be approved by the time

this newsletter is actually distributed. Karen Gourdine 202-260-1328 is the standards program contact with regard to Tribal questions.

We are still researching the possibility of promulgating a generic or basic or limited (pick your own term) set of standards that would be applicable to Tribes until such time as a Tribe decides to adopt their own standards. Working in cooperation with our Office of Indian Affairs, we are seeking Tribal input as to whether they support that promulgation. Once the threshold question of whether we should undertake that approach is answered, the Agency would have several different options as to how to proceed.

ANTIDEGRADATION IMPLEMENTATION PROCEDURES BEING REVIEWED

A project in which a contractor is reviewing existing draft and final State antidegradation implementation plans to identify common approaches to antidegradation issues and innovative solutions was expected to be completed by now. However, end of year funding problems have caused a delay in finishing that project. We believe the project can be completed during the first quarter of FY96. Bob Shippen 202-260-1329 is managing this project.

ENDANGERED SPECIES CONSULTATIONS GO MAINSTREAM

Endangered Species Act consultations with the Fish and Wildlife Service and the National Marine Fisheries Service have become an integral part of the standards program. We developed a system to track the number of consultations ongoing and the issues being discussed. By the end of FY95, 38 informal consultations have been started and 7 completed. Six formal consultations were started and 5 completed. Karen Gourdine 202-260-1328 keeps track of these consultations.

INTERIM ECONOMIC GUIDANCE RELEASED

The Interim Economic Guidance for use in the water quality standards program was published in August. BUDGET PROBLEMS PROHIBITED US FROM PRINTING VERY MANY COPIES. IF YOU DON'T HAVE ONE NOW, PLEASE DO NOT CALL US. WE DON'T HAVE ANY MORE. All the States and EPA Regional Offices have copies. Assuming the budget allows, we will print additional copies in FY96.

RISK ASSESSMENT AND MANAGEMENT BRANCH/SASD
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NATIONAL SEDIMENT BIOACCUMULATION CONFERENCE

Distribution of the second meeting notice for the National Sediment Bioaccumulation Conference that will be held November 29-December 1 in Crystal City resulted in a surge of registrations. At least 220 people to date have registered for the conference including representatives from 17 states and 8 other federal agencies. If you are interested in seeing the agenda and/or

registering for the conference, please call Leanne Stahl at (202) 260-7055. Anyone planning to attend the conference should register as soon as possible.

SASD PUBLICATIONS AVAILABLE

a. Risk Communication Guidance

The Risk Assessment and Management Branch within the Office of Science and Technology has distributed the final guidance document related to fish consumption advisories. This document is titled *Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories,* ***Volume IV: Risk Communication, Publication #: EPA 823-R-95-001.***

The main goal of this document is to assist professionals working for state agencies and other interested parties with their approaches to the complex area of risk communication. The Risk Communication volume starts with sound risk communication principles and adapts them to the fish consumption advisory process. The document first provides an overview of the risk communication process and its major components. Subsequent sections provide in-depth discussions of such topics as: problem analysis and program objectives; audience identification and needs assessment; communication strategy design and implementation; program evaluation; responding to public inquiries; and other topics. The discussions are illustrated frequently with "real life" examples drawn from numerous state or regional fish advisories. The document is part of EPA's four volume fish advisory guidance series titled *Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories.*

b. Mercury Proceedings Document

In July, OST distributed copies of the document titled ***National Forum on Mercury in Fish, Proceedings***, EPA 823-R-95-002, June 1995.

The primary purpose of the EPA-sponsored conference, held last year, was to transfer "state of the art" information about mercury to states and other parties involved with risk assessment and fish consumption advisories. A variety of topics were presented in several sessions: Mercury Overview and Background; Occurrence in Fish and Wildlife; Watershed Effects; Florida Studies; Toxicity and Risk Assessment; Risk Management & Risk Communication; State Program Needs; National Mercury Study; and Mercury Control Strategies. Within each session, there were individual presentations followed by questions from the audience and responses by the speaker's. The Proceedings document contains a summary of each speakers presentation, a selection of key graphics, and a summary of audience questions and responses.

c. To Order a Copy of either document:

Mail, Call, FAX, or Email a request to: OW Resource Center (RC4100), 401 M St., S.W., Washington, DC 20460. **Phone Recording Order:** (202) 260-7786, **FAX Order:** (202) 260-0386, EMail: waterpubs@epamail.epa.gov - include

the document title and publication number. For more in depth information about either of these publications, contact Rick Hoffmann at (202) 260-0642.

EDUCATIONAL SOFTWARE:

Chemical Contamination in Fish

During FY 95, OST worked with Purdue University and EPA Region 5 to develop an environmental education software program titled ***Chemical Contamination in Fish***. The final program is now available. This overview program covers such topics as bioaccumulation, information on specific contaminants and fish consumption advisories, risk reduction, fish species and collection methods, survey approaches, etc. OST provided much of the information for the program by modifying information from existing EPA guidance documents to suit an educational audience. Purdue University developed this program and numerous others as part of a cooperative effort funded by EPA to produce software for environmental awareness. There are several ways to obtain the EPA/Purdue software program including:

▸**Via FTP from the GLNPO Gopher:** The Great Lakes National Program Office (GLNPO) Gopher/World Wide Web site now carries the software listed above and other educational programs. The files are in compressed form and can be uncompressed using PKUNZIP version 2.04c or later. Anonymous FTP is not yet available at this site, so point your gopher at host *glnpogis2.r05.epa.gov* or use *URL=gopher://glnpogis2.r05.epa.gov:7070/11%2Fedu*.
Follow the menus to **Educational Resources in the Great Lakes** and **Software for Environmental Awareness.** The GLNPO gopher is also listed under the Great Lakes Information Network (GLIN) gopher and under U.S. Government Gophers, including EPA Public Access Gopher (earth1.epa.gov). For help via GLIN, call (319) 665-9135 or send electronic mail to *glin-help@great-lakes.net*. For help via GLNPO, send electronic mail to *reshkin@epamail.epa.gov* or *njalli@glnpogis5.r05.epa.gov* for technical questions.

▸**On Diskette from US EPA Region 5.** Send three (3) formatted 3 ½" HIGH DENSITY diskettes for each software program order; **DO NOT SEND MONEY.** Mail the request to: Karen Reshkin, USEPA Region 5, 77 W. Jackson, S-14J, Chicago, IL 60604-3590; [Tel. (312) 353-6353]

EXPOSURE ASSESSMENT BRANCH/SASD
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BASINS - A GIS-LINKED WATERSHED ANALYSIS AND MODELING TOOL

Background - Better Assessment Science Integrating Point and Nonpoint Sources (BASINS) is a GIS based tool developed by EPA's Office of Water to help States target and evaluate waterbodies that are not meeting water quality standards. BASINS brings together data on water quality and quantity, land uses, point and nonpoint source loadings, with

supporting nonpoint and water quality models, allowing for comprehensive assessments to be performed on any watershed in the continental U.S. BASINS was developed to support implementation of Section 303(d) of the Clean Water Act, which requires states to develop TMDLs (Total Maximum Daily Load) for waterbodies not meeting water quality standards by allocating pollutant loads among point and nonpoint sources. The system will be distributed on CD ROM to the user community, and will require ArcView-2 software. BASINS has three major modules - screening and targeting, nonpoint source modeling to estimate loadings to receiving waters, and point-nonpoint integration.

Screening and targeting - The screening and targeting module helps the user characterize a watershed by looking at river monitoring and status data from several sources, including:

1. Aggregated STORET data for the entire U.S. These data are from individual monitoring stations and have been aggregated over time for approximately 50 chemicals.

2. The National Sediment Inventory. The NSI contains sediment chemistry, tissue residue, benthic invertebrate, toxicity, fish abundance, and histopathology data for freshwater and coastal sediments. The NSI includes data extracted from the following sources: STORET, Ocean Data Evaluation System (ODES), NOAA's Coastal Sediment Inventory (COSED), Permit Compliance System (PCS), and Toxic Release Inventory (TRI).

3. Pollutant loading data from permitted dischargers extracted from the Permit Compliance System (PCS).

4. Any existing datasets describing 305(b) or 303(d) waters, where available.

Region VIII added some funding to this part of the project to add more of their States' 303(d), 305(b), and 319 waters to the GIS coverages, so this area will be better mapped. The program will include some prepared queries to make it easier for novice Arcview users to identify hydrologic units and waterbodies with potential water quality problems. Future work will focus on the inclusion of additional data sources, such as the Fish Consumption Advisory Database, which contains information on fish consumption advisories issued by the States, and on augmenting existing data sources.

Nonpoint source modeling - The nonpoint source model helps the user estimate nonpoint source loadings of nutrients, sediment, bacteria and toxics at a cataloging unit level anywhere in the country using data provided by the system. The model predicts loadings in mixed land use watersheds, including agricultural, forested and urban areas. At a catalog unit (USGS 8 digit) level, all data required for modeling are provided by the system. The properties of the nonpoint source model are: **Time step:** Variable user defined time step; **Spatial:** Initially single watershed, optional sub-watersheds; **Pollutants:** Nutrient species, sediment, bacteria, and

toxics; **Urban:** Dust and dirt accumulation on impervious area; **Rural:** Water balance using ET and infiltration calculation; **Base Flow:** Baseflow recession curve - optional two stage upper and lower zone; **Output:** User defined location and time step.

All data needed to run the model will be available to the user from within the system. In addition, the data used in calculations will be presented to the user in a series of screens that allow override of default values.

Work will continue to develop the screening level sediment transport assessment technique - described separately This model will provide relative indices of erosion and deposition potential in river beds and can be graphically displayed within Arc-View.

Point-nonpoint source integration - Integration of nonpoint and point source loadings is done by a modified version of P-Route (Pollutant Route), a screening level stream routing model that performs simple dilution calculations under mean and low flow conditions for entire watersheds. The model integrates the nonpoint source loadings described above with point source loadings, obtained from permit limits stored in the PCS (Permit Compliance System). There are some basic problems with combining a continuous nonpoint loading with a design streamflow, so we have put in a variety of options for how the load integration is done. This allows the user to combine any percentile of nonpoint loading from a years simulation with either mean or 7Q10 flow. Some pollution problems require a more detailed modeling approach than the simple dilution used by P-Route, but can still utilize a steady state water quality model. For these situations, BASINS can use the nonpoint and point source data with QUAL2E, an EPA water quality model.

Status - A final version should be done by Sept 30, 1995 and 100 CD's for each region will be pressed within a month or so. For more information call Jerry LaVeck at 202-260-7771, (email laveck.jerry@epamail.epa.gov), or Marge Coombs at 202-260-9821 (email coombs.marge@epamail.epa.gov)

GREAT LAKES WATER QUALITY INITIATIVE

A workshop was held in Chicago on July 31 - August 1 with representatives of EPA Headquarters and Regions, the Great Lakes States, and the Council of Great Lakes Governors. The purpose of the workshop was to discuss implementation of the final Water Quality Guidance for the Great Lakes System.

Eight organizations have filed petitions for review of the Agency's issuance of the final Guidance. The organizations are: the American Iron and Steel Institute, the Association of Metropolitan Sewerage Agencies, the Great Lakes Coalition, the Chemical Manufacturers Association, the National Wildlife Federation, the American Forest and Paper Association, General Electric, and the Edison Electric Institute. The deadline has passed for filing any more petitions in the Court of Appeals. The Department of Justice has requested the organizations to submit papers describing their issues. For more information, contact Mark Morris (202-

260-0312) or Fred Leutner (202-260-1542).

ECOLOGICAL RISK ASSESSMENT BRANCH
ALAN HAIS
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TWO PAPERS AVAILABLE FROM ORD/DULUTH

John Eaton, from ORD in Duluth, has advised us of a fish temperature tolerance data-base they have been constructing with information from States (Oklahoma and others). From the data-base they are working to develop temperature criteria for fish based on presence/absence of 56 fish species. He also sent copies of two papers that are available:

Eaton, J.G., J.H. McCormick, B.E. Goodno, D.G. O'Brien, H.G. Stefan, M. Hondzo, and R.M. Scheller. 1995. A Field Information-based System for Estimating Fish Temperature Tolerances. Fisheries 20:10-18.

Eaton, J.G., and R.M. Scheller. Effects of Climate Warming on Fish Thermal Habitat in Streams of the United States.

If you have any questions for John on the papers or the data-base, he can be reached at (218) 720-5557.

BIOLOGICAL CRITERIA SERIES

(Each issue of the Water Quality Standards Newsletter will have an article on biocriteria, in an effort to provide a forum for discussion)

BACKGROUND

Biological Criteria: narrative expressions or numerical values that describe the biological integrity of aquatic ecosystems.

EPA's early efforts to meet the Clean Water Act objective of "chemical, physical and biological integrity" focused primarily on chemical integrity. The main focus was on end-of-the-pipe pollutants and chemical criteria were used to reduce or eliminate those contaminants. As a result, chemical pollution levels in waterbodies have gone down dramatically and in many cases people can catch fish in waters which were once visibly polluted. Chemically-based water quality programs have obviously produced great successes.

Ironically, reductions in levels of chemical pollution in waters have revealed other factors which are sometimes less obvious, but which also affect aquatic organisms. Some of these factors include sedimentation, hydrologic modification, the introduction of exotic species, nutrification, habitat alteration, channelization of rivers and streams, etc. These conditions have dramatic effects on the biota living in the waters, yet meeting chemical criteria does not protect the biological community from these sorts of impacts. To address this, EPA decided to support the development of biological criteria as a tool which, when used with existing water quality criteria, result in a more comprehensive strategy to protect water resources.

Biocriteria detect problems other methods may miss or underestimate, and provide a systematic process for measuring progress resulting from the

implementation of water quality programs. For example, Ohio has developed biocriteria based on fish and macroinvertebrate communities as an indicator of aquatic community health and is using them to evaluate the effectiveness of various remediation projects. On the Olentangy River in central Ohio, the construction of advanced wastewater treatment plants reduced the levels of pollutants in the river. Biological surveys done at sites along the river have shown that the aquatic community (ICI-Invertebrate Community Index)(Fig.1) has continued to improve since the construction of the wastewater treatment plants. This illustration clearly demonstrates how the aquatic community responds when a negative impact is removed from the ecosystem, and how this response can provide information on the effectiveness of remediation projects. This is just one example of the many uses of biological criteria in a water quality program.

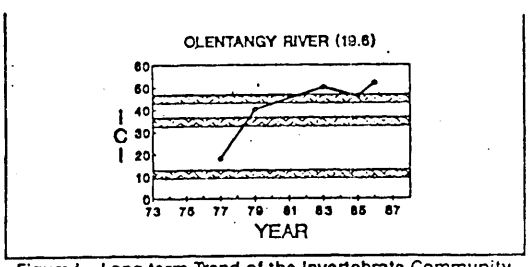

Figure 1. Long-term Trend of the Invertebrate Community Index (ICI) at Ohio EPA Annual Monitoring Stations.

Future articles in the Biological Criteria Series will address field techniques, reference condition, severely impacted areas, ongoing research efforts,and more. For more information on biological criteria, contact Candace Stoughton at (202)260-1737.

Next Topic in Biocriteria Series: What is a Reference Condition?

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