6-21-89

Mark Wood –

Here is some stuff I had LADEQ copy for us under the FOIA request. I thought it may be useful to us in our effort to understand their WQ Std development process. Please have Carolyn send them a check.

ALLEN J. TOLMSOFF

Allen –

SL 105926

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VI
1445 ROSS AVENUE, SUITE 1200
DALLAS, TEXAS 75202

September 21, 1988

Mr. Dugan Sabins
Water Pollution Control Division
Department of Environmental Quality
P.O. Box 44091
Baton Rouge, Louisiana 70804-4091

Dear Mr. Sabins:

Enclosed is some additional material regarding EPA's Integrated Risk Information System (IRIS). Let me know if you have any questions or need additional information.

Sincerely yours,

Karen H. Young

Karen H. Young
Louisiana WQM Coordinator (6W-QS)

Enclosure

cc: (w/out copy of enclosure)
Maureen O'Neill
Assistant Secratery, OWR, LDEQ

Mike Schurtz
Program Manager, WPCD, OWR, LDEQ

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Enclosed are some background information and accessing instructions for the U.S. EPA's Integrated Risk Information System (IRIS) that you requested. The National Technical Information Service (NTIS) offers the IRIS data base on floppy disks at a price of $125.00 for the high density disks and $225.00 for the low density disks. The disks are updated quarterly and must be purchased quarterly for the most current information. If you wish to purchase the disks from NTIS, contact Stu Wiseman at 703/487-4763. If you wish to use IRIS on-line, see the enclosed Dialcom information. If you have any questions, please feel free to call IRIS User Support at 513/569-7254.

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
RESEARCH AND DEVELOPMENT

APR 15 1988

Dear Risk Assessor:

I am very pleased to announce the availability of the U.S. Environmental Protection Agency's (EPA) Integrated Risk Information System (IRIS). IRIS is an on-line database of chemical-specific risk information on the relationship between chemical exposure and estimated human health effects. IRIS was developed for EPA staff and contractors to serve as a guide for EPA risk assessments, but because many other parties have indicated how useful IRIS information would be to them, EPA is making the database available outside the Agency.

IRIS provides chemical-specific risk data that represents an EPA scientific consensus. The database presents a summary of information on chemical hazard identification and dose-response assessment, thus, IRIS is not an exhaustive toxicological database.

IRIS translates chemical health effects data into a form which is useful in taking action to protect public health. Thus, IRIS bridges a significant gap in the transmission of information needed to reduce risks to human health. The database provides quantitative risk values and necessary qualitative health effects information which can act as guidance for deciding what action is necessary to protect the public health. Without this combined quantitative and qualitative information, it is often difficult for a risk manager to make decisions on how to best protect human health.

The information in IRIS is an authoritative interpretation of chemical health effects data. The quantitative risk values and supporting explanation has been reviewed and agreed upon by scientists from across the Agency using available studies on a substance. Thus, the information in IRIS represents an expert Agency consensus. This Agency-wide agreement on risk information is one of the most valuable aspects of IRIS.

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Currently, there are risk summaries in IRIS for 260 chemicals. IRIS is regularly updated -- new chemicals are added, and existing information on the chemicals is updated as new scientific data is reviewed. Additional risk information will be included on the chemicals to best meet the needs of EPA users. Thus, to ensure use of the most up-to-date chemical information, IRIS is only available on-line. There are several ways to establish on-line access to IRIS. An enclosure explains how to access the IRIS database and who to contact for IRIS training.

We at EPA are encouraged by the demand for IRIS and hope that you find the database useful as you perform risk assessments.

Sincerely,

William H. Farland, Ph.D.
Acting Director
Office of Health and Environmental Assessment

SL 105931

IRIS

INTRODUCTION

OVERVIEW OF IRIS

The Integrated Risk Information System (IRIS), prepared and maintained by the U.S. Environmental Protection Agency (EPA), is an electronic data base containing health risk and EPA regulatory information on specific chemicals. IRIS was developed for EPA staff in response to a growing demand for consistent risk information on chemical substances for use in decision-making and regulatory activities. Although IRIS is designed for EPA staff, it is also accessible to state and local environmental health agencies. IRIS is available to libraries, private citizens, and other organizations by means of Dialcom, Inc.'s Electronic Mail telecommunications system. The information in IRIS is intended for EPA staff without extensive training in toxicology, but with some knowledge of health sciences.

The heart of the IRIS system is its collection of computer files covering individual chemicals. These chemical files contain descriptive and quantitative information in the following categories:

- Oral and inhalation reference doses (RfDs) for chronic noncarcinogenic health effects
- Oral and inhalation slope factors and unit risks for chronic exposures to carcinogens
- Drinking water health advisories from EPA's Office of Drinking Water
- EPA regulatory action summaries
- Supplementary data on acute health hazards and physical/chemical properties

To aid users in accessing and understanding the data in the IRIS chemical files, the following supportive documentation is provided:

- Alphabetical list of the chemical files in IRIS and list of chemicals by CAS (Chemical Abstracts Service) number.
- Background documents describing the rationales and methods used in arriving at the results shown in the chemical files.
- A user's guide that represents step-by-step procedures for using IRIS to retrieve chemical information.
- An example exercise in which the use of IRIS is demonstrated.
- Glossaries in which definitions are provided for the acronyms, abbreviations, and specialized risk assessment terms used in the chemical files and in the background documents.

RISK ASSESSMENT AND RISK MANAGEMENT

The information in IRIS is intended for use in protecting public health through risk assessment and risk management. These two processes are briefly explained below.

Risk assessment has been defined as "the characterization of the potential adverse health effects of human exposures to environmental hazards (NRC, 1983, p. 18). In a risk assessment, the extent to which a group of people has been or may be exposed to a certain chemical is determined, and the extent of exposure is then considered in relation to the kind and degree of hazard posed by the chemical, thereby permitting an estimate to be made of the present or potential health risk to the group of people involved.

Risk assessment information is used in the risk management process in deciding how to protect public health. Examples of risk management actions include: deciding how much of a chemical a company may discharge into a river; determining which substances may be stored at a hazardous waste disposal facility; deciding to what extent a hazardous waste site must be cleaned up; setting permit levels for discharge, storage, or transport of hazardous waste; establishing levels for air emissions; and determining allowable levels of contamination in drinking water.

Essentially, risk assessment provides **information** on the health risk, and risk management is the **action** taken based on that information.

A complete risk assessment consists of the following four steps:

1. Hazard identification,

2. Dose-response assessment,

3. Exposure assessment, and

4. Risk characterization,

with risk characterization being the transitional step to risk management.

The following discussion of the four steps of risk assessment was excerpted from "Principles of Risk Assessment: A Nontechnical Review" (U.S. EPA, 1985).

> Hazard identification involves gathering and evaluating data on the types of health injury or disease that may be produced by a chemical and on the conditions of exposure under which injury or disease is produced. It may also involve chararacterization of the behavior of a chemical within the body and the interactions it undergoes with organs, cells, or even part of cells. Data of the latter types may be of value in answering the ultimate question of whether the forms of toxicity known to be produced by a substance in one population group or in experimental settings are also likely to be produced in humans. Hazard identification is not risk assessment; we are simply determining whether it is scientifically correct to infer that toxic effects observed in one setting will occur in other settings (e.g., whether substances found to be carcinogenic or teratogenic in experimental animals are likely to have the same results in humans).
>
> Dose-response assessment involves describing the quantitative relationship between the amount of exposure to a substance and the extent of toxic injury or disease. Data are derived from animal studies, or less frequently, from studies in exposed populations. There may be many different toxic effects under different conditions of exposure.
>
> The risks of a substance cannot be ascertained with any degree of confidence unless dose-response relationships are quantified, even if the substance is known to be toxic.
>
> Exposure assessment involves describing the nature and size of the population exposed to a substance and the magnitude and duration of their exposure. The evaluation could concern past or current exposures, or exposures anticipated in the future.
>
> Risk characterization generally involves the integration of the

assessment proce: s (hazard identification, dose-response assessment, and e :posure assessment) to determine the likelihood that hu ians will experience any of the various forms of toxicity associa :d with a substance. (In cases where exposure data are ot available, hypothetical risk can be characterized by t e integration of hazard identification and dose-response ass ssment data alone.) A framework to define the significance of he risk is developed, and all of the assumptions, unc rtainties, and scientific judgments of the preceding three st ps are presented.

THE ROLE OF IRIS IN ISK ASSESSMENT/RISK MANAGEMENT

IRIS is a tool tha provides hazard identification and dose-response assessment informatio , but does not provide situational information on instances of exposure. **ombined with specific exposure information, th data in IRIS can be use l for characterization of the public health risks of a given chemical in given situation, which can then lead to a risk management decision esigned to protect public health.**

The information c ntained in Section I (Chronic Health Hazard Assessment for Noncarc nogenic Effects) and Section II (Carcinogenicity Assessment for Lifetime Exposure) of the IRIS chemical files **represents a consensus judgment** of EPA's Reference Dose (RfD) Work Group or Carcinogen Risk Assess ment Verification Endeavor (CRAVE) Work Group, respectively. These two Agency-wide work groups include high-level scientists from EPA's program offic es (hazardous waste, air, pesticides) and the Office of Research and Developm nt. Individual EPA offices have conducted comprehensive scientific reviews of the literature available on the particular chemical, and have perf rmed the first two steps of risk assessment: hazard evaluation and dose-res onse assessment. These assessments have been summarized for IRIS an reviewed and revised by the appropriate work group. As new information bec nes available, these work groups will re-evaluate their work and revise IRIS file accordingly. For more information, contact IRIS User Support in EPA's E vironmental Criteria and Assessment Office, Cincinnati, OH (513/56)-7254 or FTS 684-7254).

REFERENCES

NRC (National Research Council). 1983. The Nature of Risk Assessment. In: Risk Assessment in the Federal Government: Managing the Process. National Academy Press, Washing on, DC. p. 18.

U. S. EPA. 1985. Princ les of Risk Assessment: A nontechnical review. Prepared for a risk asses sment workshop. Easton, MD, March 17-18.

LIMITATIONS OF IRIS INFORMATION

The information in the Integrated Risk Information System (IRIS) is most useful if applied in the larger context of risk assessment as outlined by the National Academy of Sciences. IRIS supports the first two steps of the risk assessment process [as summarized in Service Code (menu option) 4]: namely, the hazard identification and dose-response assesssment steps. The primary qualitative and quantitative risk data in IRIS, the reference doses (RfDs) and carcinogen assessments, can serve as guides in evaluating potential health hazards and selecting a response to alleviate a potential risk to human health.

The **reference dose (RfD)** can be used to estimate a level of environmental exposure at or below which no adverse effect is expected to occur. The RfD is an **estimate** (with uncertainty spanning perhaps an order of magnitude) of a daily exposure to the human population (including sensitive subgroups) that is likely to be without appreciable risk of deleterious effects during a lifetime. RfDs are based on an assumption of lifetime exposure and may not be appropriately applied to less-than-lifetime exposure situations. RfDs are also derived for the noncarcinogenic effects of chemicals that are carcinogenic.

The **carcinogen assessments** in IRIS begin with a qualitative weight-of-evidence judgment in the form of a classification as to the likelihood that a chemical may be a carcinogen for humans. This judgment is made independent of consideration of the agent's potency. A quantitative assessment, including slope factor and unit risk, is then presented. The slope factor is an upper-bound **estimate** of the human cancer risk per mg of agent/kg body weight/day. The unit risk, which is calculated from the slope factor, is an **estimate** in terms of either risk per ug/L drinking water, or risk per ug/cu.m air concentration.

In general, risk values, such as those in IRIS, cannot be validly used to predict the incidence of human disease or the type of effects that chemical exposures may have on humans. This is due to the numerous **uncertainties** involved in risk assessment, including those associated with extrapolations from animal data to humans and from high experimental doses to lower environmental exposures. The organs affected and the type of adverse effect resulting from chemical exposure may differ between study animals and humans. In addition, many factors besides exposure to a chemical influence the occurrence and extent of human disease.

Any change to an RfD, slope factor or unit risk as they appear in IRIS (for example, the use of more or fewer uncertainty factors than were applied to arrive at an RfD) invalidates and distorts their application in estimating the potential health risk posed by chemical exposure.

Each reference dose and carcinogen assessment is derived by an interdisciplinary work group of EPA scientists using consistent chemical hazard identification and dose-response assessment methods. These methods are outlined in Background Documents 1 and 2 (Service Code 5). It is important to note that the risk information in IRIS will be revised by these work groups when additional health effects data become available and new developments in risk assessment methods arise.

pursuant to section 311 of the Natural Gas Policy Act of 1978 (NGPA).

Texas Eastern states that Tejas in its May 2, 1988 motion for emergency clarification of the order issued on April 22, 1988 in Docket No. RP88-81-000, failed to enlighten the Commission on the specific details of the transportation desired by Tejas which Texas Eastern determined did not qualify for implementation under section 311 of the NGPA. Texas Eastern states that the Tejas transportation request sets forth a transaction structure which, Texas Eastern submits, has not been directly addressed by the Commission in prior cases.

Texas Eastern states that the Commission has previously determined that a single person or corporate entity can qualify as both an interstate and intrastate pipeline for purposes of self-implementing transportation. Similarly Texas Eastern submits that an entity which is qualified as an intrastate pipeline in one state (e.g., Texas) may not necessarily be acting in that intrastate pipeline capacity when it conducts business in another state (e.g., Louisiana). Texas Eastern states that in the factual circumstances of the Tejas transaction, the intrastate pipeline entity is not acting in its capacity as an owner of an intrastate pipeline.

Any person desiring to be heard or to protest said filing should file a motion to intervene or a protest with the Federal Energy Regulatory Commission, 825 North Capitol Street, N.E., Washington, DC 20426, in accordance with Rules 214 and 211 of the Commission's Rules of Practice and Procedure (18 CFR 385.214, 385.211 (1987)). All such motions or protests should be filed on or before June 6, 1988. Protests will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make protestants parties to the proceeding. Any person wishing to become a party must file a motion to intervene. Copies of this filing are on file with the Commission and are available for public inspection.

Lois D. Cashell,

Acting Secretary.

[FR Doc. 88-12630 Filed 6-1-88; 8:45 am]

BILLING CODE 6717-01-M

ENVIRONMENTAL PROTECTION AGENCY

[FRL-3300-8]

Georgia, Mississippi, South Carolina, and Tennessee; FY 88 Grant Performance Reports

AGENCY: Environmental Protection Agency.

ACTION: Notice of availability of grantee performance evaluation reports.

SUMMARY: EPA's grant regulations (40 CFR 35.150) require the Agency to evaluate the performance of agencies which receive grants. EPA's regulations for regional consistency (40 CFR 56.7) require that the Agency notify the public of the availability of the reports of such evaluations. EPA recently performed midyear evaluations of three state air pollution control programs (Georgia Environmental Protection Division, Mississippi Bureau of Pollution Control and South Carolina Department of Health and Environmental Control), and of one local program in Tennessee (Knox County Department of Air Pollution Control). These midyear audits were conducted to assess the agencies' performance under the grants made to them by EPA pursuant to section 105 of the Clean Air Act. The audits were also conducted as part of the National Air Audit System (NAAS) established by EPA in an effort to assure nationwide consistency in the evaluation of state and local air pollution programs. EPA Region IV has prepared reports for the four agencies identified above and these NAAS/§105 reports are now available for public inspection.

ADDRESS: The reports may be examined at the EPA's Region IV office, 345 Courtland Street NE., Atlanta, GA 30365, in the Air, Pesticides & Toxics Management Division.

FOR FURTHER INFORMATION CONTACT: Walter Bishop at 404/347-2864 (FTS: 257-2864).

Dated: May 23, 1988.

Jon R. Franmouth,

Acting Regional Administrator.

[FR Doc. 88-12265 Filed 6-1-88; 8:45 am]

BILLING CODE 6560-50-M

[FRL-3300-9]

Integrated Risk Information System (IRIS); Health Risk Assessments; Guidelines, etc.

AGENCY: U.S. Environmental Protection Agency.

ACTION: Notice; availability of the Integrated Risk Information System (IRIS).

SUMMARY: The Integrated Risk Information System (IRIS) is an electronic on-line database of the U.S. Environmental Protection Agency (EPA) that provides risk assessment and regulatory information on chemical substances. This notice describes IRIS and provides information on how to access this health risk information database.

EFFECTIVE DATE: April 15, 1988.

FOR FURTHER INFORMATION CONTACT: IRIS User Support, USEPA, Office of Research and Development, Environmental Criteria and Assessment Office, MS-114, Cincinnati, OH 45268, Telephone (513) 569-7254 or FTS 684-7254.

SUPPLEMENTARY INFORMATION:

Description

IRIS is a primary source of EPA health hazard assessment and related information on chemicals of environmental concern. It is intended to serve as a guide for the hazard and dose-response assessment steps of EPA assessments. IRIS was created in response to requests for Agency risk information; its purpose is to provide a vehicle for the communication of chemical-specific information necessary to develop EPA risk assessments. IRIS is intended to make chemical-specific risk information readily available to those who must perform risk assessments and also to increase consistency in risk management decisions. EPA staff and EPA contractors are expected to use the risk information for those chemicals in the IRIS database. The information contained in IRIS is intended for users without extensive training in toxicology, but with some knowledge of health science. Therefore, IRIS is not an exhaustive toxicological database, nor a risk assessment methodology resource. IRIS presents only summaries of hazard and dose-response assessments, but provides reference citations and EPA contacts for further information.

The IRIS database includes the following sections (Service Codes); these Service Codes are menu options:

(1) Chemical files which summarize data on each chemical

(2) Alphabetical and CAS number listings of chemicals in IRIS

(3) *List* of revisions made to existing chemical files

(4) Introductory overview of IRIS and IRIS User's Guide

(5) Background documents on methodologies

(6) Instructional case study and sample chemical files

(7) Glossary of terms and acronyms used in IRIS

(8) Status of chemicals scheduled for the IRIS review process.

Each of the chemical files contains a chronic health hazard assessment for noncarcinogenic effects and/or for

carcinogenic effects as relevant. Information on less-than-lifetime health hazard assessments, established in Drinking Water Health Advisories, is included in the chemical files. The chemical files also provide summaries of EPA regulatory decisions, such as Water Quality Criteria, Clean Air Act regulations, Pesticide Registration Standards, and Reportable Quantities developed for Superfund. Supplementary information, such as acute toxicity summaries and physical-chemical properties data, are included when available. Apart from the chemical files, background documents in the database describe the basic concepts and limitations of IRIS, as well as the risk assessment procedures and assumptions used in developing the IRIS health hazard database assessment information.

The health assessment information contained in IRIS, except as specifically noted, has been reviewed and agreed upon by inter-disciplinary review groups of EPA scientists. These scientists have extensive experience in risk assessment. Thus, the information in IRIS represents and expert Agency consensus. This Agency-wide agreement on risk information is one of the most valuable aspects of IRIS.

As the inter-disciplinary review groups of EPA scientists continue to review and verify risk assessment information, additional chemical files will be added to IRIS. If you wish to obtain information on the status of this review for a particular chemical, call IRIS User Support at (513) 569–7254 or FTS 684–7254.

Accessing IRIS

IRIS is available electronically from the following three sources:

(1) DIALCOM Inc. IRIS is on DIALCOM Inc.'s Electronic Mail, the computer-based electronic communication system to which EPA subscribes. To obtain a DIALCOM Inc. account, contact Mike McLaughlin, (202) 488–0580, or write to: DIALCOM Inc., 600 Maryland Avenue SW., Suite 307, Washington DC 20024.

(2) Public Health Network (PHN). PHN is the communication network of the Public Health Foundation. The Foundation serves member state health departments and will provide IRIS on PHN to state and local health departments. Contact Paul Johnson, (202) 898–5600.

(3) National Technical Information Service (NTIS). Although IRIS accounts will not be available through NTIS, a floppy disk version of IRIS will be provided by NTIS for a fee. Write to: Stu Wiseman, NTIS, 5285 Port Royal Road, R32, Springfield, VA 22161, or call (703) 487–4807.

There are two hardware-software options accessing IRIS. Both options use common hardware and software. The first option requires a personal computer (PC), as standard 1200 baud Bell 212A compatible or 2400 baud asynchronous modem, a phone line, and PC communication software as CROSSTALK XVI. Many other communication software packages may also be used. To determine if your communication software is compatible, contact Mike McLaughlin at (202) 488–0580. The second option requires an ASCII communicating dumb computer terminal, a standard 1200 baud Bell 212A compatible or 2400 baud asynchronous modem, and a phone line. The necessary communication settings are: parity—NO; 8 bits, 1 stop bit; full duplex.

At this time, IRIS chemical files are only available electronically. Users are strongly encouraged to view or print on-line information to ensure use of the most up-to-date chemical information.

Cost

The user must pay only for the cost of accessing IRIS. The user will be billed by DIALCOM, Inc. there is a $65.00 monthly minimum which is applied against a usage fee of $25.00 per hour. In addition to the usage fee, there is a $.08 charge per computer screen accessed. There is no EPA charge for using IRIS.

Those choosing to access IRIS via the Public Health Network will be charged under a different set of fees. Contact the Public Health Foundation at (202) 898–5600 for information.

Limitations of IRIS Information

The information in IRIS is most useful if applied in the larger context of risk assessment as outlined by the National Academy of Sciences [National Research Council, 1983]. IRIS supports the first two steps of the risk assessment process (as summarized in Service Code 4); namely, the hazard identification and dose-response assessment steps. The primary qualitative and quantitative risk data on IRIS, the reference dose and carcinogenicity assessments, can serve as guides in evaluating potential health hazards and selecting a response to alleviate a potential risk to human health.

The REFERENCE DOSE (RfD) can be used to estimate a level of environmental exposure at or below which no adverse effect is expected t occur. The RfD is an ESTIMATE (wit uncertainty spanning perhaps an orde of magnitude) of a daily exposure to t human population (including sensitive subgroups) that is likely to be withou appreciable risk of deleterious effect during a lifetime. The RfDs are based an assumption of lifetime exposure a may not be appropriately applied to less-than-lifetime exposure situations RfDs are derived for the noncarcinogenic effects of substance that may also be carcinogenic.

The CARCINOGENICITY ASSESSMENTS on IRIS begin with a qualitative weight-of-evidence judgme in the form of a classification as to th likelihood that an agent may be a carcinogen for humans. This judgmen made independent of consideration o the agent's potency. A quantitative assessment, including slope factor an unit risks, is then presented. The slop factor is an upper-bound ESTIMATE the cancer risk for humans per mg of agent/kg body weight/day. The unit risk, which is calculated from the slop factor, is an ESTIMATE in terms of either risk per μg/L of drinking water, risk per μg/cu.m of air concentration.

In general, risk values, such as thos on IRIS, cannot be used to predict the acutal incidence of human disease or the type of effects chemical exposures may have on humans. This is due to th numerous UNCERTAINTIES involved risk assessment, including those associated with extrapolations from animal data to humans and from high experimental doses to lower environmental exposures. The organs affected and the types of adverse effec resulting from chemical exposure may differ between study animals and humans. In addition, many factors besides exposure to a chemical influence the occurrence and extent of human disease.

Each RfD and carcinogen assessmen is derived by using consistent chemica hazard identification and dose-respons assessment methods. These methods a outlined in Background Documents 1 and 2, found in Service Code 5. The application of altered IRIS RfD or carcinogen assessment values (for example, the use of more or fewer Uncertainty Factors than were applied to arrive at an RfD) in estimating the potential health risk posed by a chemical exposure is not endorsed by

SL 105938

EPA scientists. The risk information in IRIS will be REVISED by these work groups when additional health effects data become available and new developments in risk assessment methods arise.

Information Submission

The IRIS Information Submission Desk (address provided at the end of *this notice*) will receive all information submissions regarding IRIS. To facilitate the handling of this information, all submissions must adhere to the following format. All submissions must include a cover letter and issue page, as well as any supporting documents.

The cover letter should:

- State that the correspondence is an IRIS information submission. If the issue raised in an information submission is not chemical-specific, this should be clearly stated;
- Describe in general terms the purpose of the information submission for each issue about IRIS being addressed (if more than one issue is being raised, each should be described); and
- Include the name, address and phone number of the individual sending the information submission.

The issue page should:

- Identify the chemical by name and CAS number;
- State the type of IRIS information (for example, oral reference dose, inhalation carcinogenicity assessment, etc.) that is being addressed;
- State, in appropriate detail, the issue being addressed;
- Describe briefly the information and/or supporting documents being provided;
- Explain how and why the information submission could change what is in IRIS; and
- State any claims for confidential treatment of part or all of the submission, with appropriate justification for such claims.

If more than one chemical or type of IRIS information is being addressed, prepare a separate issue page for each chemical.

Notes regarding supporting documents:

- Parties submitting health effects studies for existing chemicals on IRIS should include, for each study submitted, a specific explanation of how and why the study results could change a quantitative risk value or relevant IRIS narrative.
- Parties submitting health effects studies for those chemicals scheduled for consideration by the inter-disciplinary review groups of EPA scientists should include, for each study, an explanation of the significance of the study results to a potential RfD, carcinogen assessment value, etc.
- Two copies of all documents referenced should be included in the submission.
- Documents (or sections thereof) claimed to be confidential should be so marked. Any documents not marked may be made available to the public without further notice to the submitter. Any claim to confidentiality should be explained on the relevant issue page.

Because IRIS is designed to be a publicly available database, any submitted studies or documents considered by EPA and used to revise any part of IRIS will be summarized and cited in IRIS. This information may be made available to an external peer review panel and to the public upon request.

- Any material that cannot be made available to a peer review panel or to the public upon request may receive limited consideration.

Comments on Drinking Water Health Advisories will not be considered by the IRIS Information Submission Desk unless they identify an inconsistency between the Health Advisory summarized in IRIS and the actual USEPA Office of Drinking Water Health Advisory. Questions about the substance of Drinking Water Health Advisories should be addressed to the Safe Drinking Water Hotline, 1-800-426-4791. Although EPA regulations are summarized in IRIS, comments on the content of regulations will not be considered by the IRIS Information Submission Desk, but should be addressed to the EPA program office with the statutory responsibility for the regulatory action.

Questions about IRIS should be made to IRIS User Support, (513) 569-7254 or FTS 684-7254, and not the IRIS Information Submission Desk.

Information submissions should be sent to: IRIS Information Submission Desk, USEPA, Environmental Criteria and Assessment Office, MS-114, 26 Martin Luther King Drive, Cincinnati, OH 45268.

Date: May 26, 1988.

Carl R. Gerber,

Acting Assistant Administrator for Research and Development.

[FR Doc. 88-12370 Filed 6-1-88; 8:45 am]

BILLING CODE 6560-50-M

[FRL-3349-4]

Science Advisory Board; Radiation Advisory Committee, Dose and Risk Subcommittee, and Sources and Transport Subcommittee; Three Open Meetings

Under the Federal Advisory Committee Act, Pub. L. 92-463, notice is hereby given of meetings of the Science Advisory Board's Radiation Advisory Committee and two of its Subcommittees. The Dose and Risk Subcommittee will meet June 20, 1988. The Radiation Advisory Committee will meet June 27-28, 1988. The Sources and Transport Subcommittee will meet July 13-15, 1988. All three meetings will be held at the U.S. Environmental Protection Agency in the Administrator's Conference Room 1103 West Tower. The meetings will begin at 9:00 a.m. on the first day and adjourn no later than 5:30 p.m. of the last day.

On June 20, 1988 the Dose and Risk Subcommittee will review risk estimates for radiation developed by the Agency. The estimates are for different types of radiation and are presented in terms of ranges of risk. The Agency is considering using the new estimates for a variety of applications including the regulation of radionuclides as a hazardous air pollutant and possible regulations for the disposal of low-level radioactive waste. The risk estimates are set forth in "ORP Low-LET Risk Estimate for Regulatory Purposes", February 25, 1988 and "EPA Radon Risk Estimates" expected shortly. Both documents are available from Dr. Jerome Puskin at the Office of Radiation Programs (ANR-461), U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460 (202/475-8340).

The Radiation Advisory Committee meeting June 27-28, 1988 will have four purposes: To hear the report of the Dose and Risk Subcommittee, to hear the report of the Radon Measurement Subcommittee, to discuss issues relevant to the Sources and Transport Subcommittee review, and to be briefed on other radiation-related activities of the Environmental Protection Agency.

On July 13-15, 1988 the Sources and Transport Subcommittee meeting will review those portions of the technical basis for the revised radionuclides NESHAP (national emissions standard for hazardous air pollutants) which relate to relevant source of radiation and its transport through the environment. Most of this technical basis is set forth in *Radionuclides: Background Information Document for*

IRIS Questions & Answers

1) **HOW CAN I GET ACCESS TO IRIS?**

To obtain an IRIS account call Mike McLaughlin of DIALCOM, Inc. at (202) 488-0550 or write to:

Mike McLaughlin
DIALCOM, Inc.
Federal Systems Division
600 Maryland Avenue SW
Washington DC 20024

IRIS is also available through the Public Health Network (PHN) of the Public Health Foundation. Call Paul Johnson at (202) 898-5600 for more information. PHN is only available to local, state, and federal public health officials.

2) **HOW MUCH DOES IRIS COST?**

The user must pay only for the cost of accessing IRIS. Th user will be billed by DIALCOM, Inc. There is a $25.00 monthly minimum which is applied against a usage fee of $25.00 per hour. In addition to the usage fee, there is a $.05 charge per computer screen accessed. There is no EPA charge for using IRIS.

Those eligible to access IRIS via the Public Health Network will be charged under a different set of fees. Contact the Public Health Foundation at (202) 898-5600 for more information.

3) **WHO DO I CALL IF I HAVE A QUESTION ABOUT USING IRIS?**

Call IRIS User Support at (513) 569-7254 or FTS 684-7254.

4) **WHO DO I CALL IF I HAVE A SCIENTIFIC OR TECHNICAL QUESTION ABOUT THE REFERENCE DOSES?**

Call the EPA Contact listed at the end of the reference dose section in the IRIS chemical file.

5) **WHO DO I CALL IF I HAVE A SCIENTIFIC OR TECHNICAL QUESTION ABOUT THE CARCINOGEN (CANCER) ASSESSMENTS?**

Call the EPA Contact listed at the end of the carcinogen assessment section in the IRIS chemical file.

6) **WHO DO I CALL IF I HAVE A SCIENTIFIC OR TECHNICAL QUESTION ABOUT DRINKING WATER HEALTH ADVISORIES?**

Call the Safe Drinking Water Hotline at 1-800-426-4791.

7) **WHO DO I CALL IF I HAVE A POLICY OR GENERAL QUESTION ABOUT IRIS?**

Call Rick Picardi at (202) 382-7315 or FTS 382-7315.

8) **HOW CAN MY ORGANIZATION GET TRAINING IN IRIS?**

Call IRIS User Support at (513) 569-7254 or FTS 684-7254.

9) **WHEN WILL (CHEMICAL NAME) BE INCLUDED IN IRIS?**

WHEN WILL THE REFERENCE DOSE FOR (CHEMICAL NAME) BE ADDED TO IRIS?

WHEN WILL THE CARCINOGEN ASSESSMENT FOR (CHEMICAL NAME) BE ADDED TO IRIS?

Call IRIS User Support at (513) 569-7254 or FTS 684-7254.

Chemicals on the Integrated Risk Information System
(April 15, 1988)

Sections Available:
RfD = Chronic noncarcinogenic assessment (Reference Dose)
CAR = Chronic carcinogenicity assessment
HA = Drinking Water Health Advisories

Acetone; 67-64-1 ....RfD
Acetonitrile; 75-05-8 ....RfD
Acrylic Acid; 79-10-7 ....RfD
Acrylonitrile; 107-13-1 ....CAR
Alachlor; 15972-60-8 ....RfD, HA
Aldicarb; 116-06-3 ....RfD, HA
Aldrin; 309-00-2 ....RfD, CAR
Allyl Alcohol; 107-18-6 ....RfD
Aluminum Phosphide; 20859-73-8 ....RfD
Amdro; 67485-29-4 ....RfD
Ametryn; 834-12-8 ....RfD
Ammonium Sulfamate; 7773-06-0 ....RfD
Antimony; 7440-36-0 ....RfD
Apollo; 74115-24-5 ....RfD
Arsenic, inorganic; 7440-38-2 ....CAR
Atrazine; 1912-24-9 ....RfD

Barium; 7440-39-3 ....RfD
Barium Cyanide; 542-62-1 ....RfD
Baygon; 114-26-1 ....RfD
Bayleton; 43121-43-3 ....RfD
Baythroid; 68359-37-5 ....RfD
Benefin; 1861-40-1 ....RfD
Benomyl; 17804-35-2 ....RfD
Bentazon; 25057-89-0 ....RfD
Benzene; 71-43-2 ....CAR, HA
Benzidine; 92-87-5 ....CAR
Benzo[a]pyrene (BaP); 50-32-8 ....CAR
Beryllium; 7440-41-7 ....RfD
Bidrin; 141-66-2 ....RfD
1,1-Biphenyl; 92-52-4 ....RfD
Bis(2-ethylhexyl)phthalate (BEHP); 117-81-7 ....RfD
Bis(chloroethyl)ether (BCEE); 111-44-4 ....CAR
Bromodichloromethane; 75-27-4 ....RfD
Bromoform; 75-25-2 ....RfD
Bromomethane; 74-83-9 ....RfD
Bromoxynil Octanoate; 1689-99-2 ....RfD
1,3-Butadiene; 106-99-0 ....CAR
n-Butanol; 71-36-3 ....RfD
Butylate; 2008-41-5 ....RfD
Butylphthalyl Butylglycolate (BPBG); 85-70-1 ....RfD

Cadmium; 7440-43-9 ....CAR
Calcium Cyanide; 592-01-8 ....RfD

Captafol; 2425-06-1 ....RfD
Captan; 133-06-2 ....RfD
Carbaryl; 63-25-2 ....RfD
Carbofuran; 1563-66-2 ....RfD, HA
Carbon Disulfide; 75-15-0 ....RfD
Carbon Tetrachloride; 56-23-5 ....RfD, CAR, HA
Carbosulfan; 55285-14-8 ....RfD
Carboxin; 5234-68-4 ....RfD
Chloramben; 133-90-4 ....RfD
Chlordane; 57-74-9 ....RfD, CAR, HA
Chlorine Cyanide; 506-77-4 ....RfD
Chloroform; 67-66-3 ....RfD
Chloromethyl Methyl Ether (CMME); 107-30-2 ....CAR
Chlorothalonil; 1897-45-6 ....RfD
Chlorpyrifos; 2921-88-2 ....RfD
Chlorsulfuron; 64902-72-3 ....RfD
Chromium(III); 16065-83-1 ....RfD, HA
Chromium(VI); 7440-47-3 ....RfD, CAR, HA
Copper Cyanide; 544-92-3 ....RfD
Cyanazine; 21725-46-2 ....RfD
Cyanide, free; 57-12-5 ....RfD, HA
Cyanogen; 460-19-5 ....RfD
Cyclohexanone; 108-94-1 ....RfD
Cyromazine; 66215-27-8 ....RfD

Dalapon; 75-99-0 ....RfD
Danitol; 39515-41-8 ....RfD
Decabromodiphenyl Ether (DBDPE); 1163-19-5 ....RfD
Demeton; 8065-48-3 ....RfD
1,4-Dibromobenzene; 106-37-6 ....RfD
Dibromochloromethane; 124-48-1 ....RfD
Dibutyl Phthalate; 84-74-2 ....RfD
Dicamba; 1918-00-9 ....RfD
Dichlorodifluoromethane; 75-71-8 ....RfD
p,p'-Dichlorodiphenyltrichloroethane (DDT); 50-29-3 ....RfD
1,2-Dichloroethane; 107-06-2 ....CAR, HA
1,1-Dichloroethylene; 75-35-4 ....RfD, CAR
Dichloromethane; 75-09-2 ....RfD, CAR, HA
2,4-Dichlorophenol; 120-83-2 ....RfD
4-(2,4-Dichlorophenoxy)butyric acid (2,4-DB); 94-82-6 ....RfD
2,4-Dichlorophenoxyacetic acid (2,4-D); 94-75-7 ....RfD
1,3-Dichloropropene (Telone II); 542-75-6 ....RfD
Dichlorvos; 62-73-7 ....RfD
Diethyl Phthalate; 84-66-2 ....RfD
Diflubenzuron; 35367-38-5 ....RfD
Dimethipin; 55290-64-7 ....RfD
Dimethoate; 60-51-5 ....RfD
Dimethyl Terephthalate (DMT); 120-61-6 ....RfD
N-N-Dimethylaniline; 121-69-7 ....RfD
2,4-Dinitrophenol; 51-28-5 ....RfD
Dinoseb; 88-85-7 ....RfD
Diphenamid; 957-51-7 ....RfD
Diphenylamine; 122-39-4 ....RfD
1,2-Diphenylhydrazine; 122-66-7 ....CAR

Diquat; 85-00-7 ....RfD
Disulfoton; 298-04-4 ....RfD
Diuron; 330-54-1 ....RfD
Dodine; 2439-10-3 ....RfD

Endosulfan; 115-29-7 ....RfD
Endothall; 145-73-3 ....RfD
Epichlorohydrin; 106-89-8 ....RfD, CAR, HA
Ethion; 563-12-2 ....RfD
Ethyl Acetate; 141-78-6 ....RfD
S-Ethyl dipropylthiocarbamate (EPTC); 759-94-4 ....RfD
Ethyl p-nitrophenyl phenylphosphorothioate (EPN); 2104-64-5 ....RfD
Ethylbenzene; 100-41-4 ....RfD, HA
Ethylene Glycol; 107-21-1 ....RfD
Ethylphthalyl Ethylglycolate (EPEG); 84-72-0 ....RfD

Fenamiphos; 22224-92-6 ....RfD
Fluometuron; 2164-17-2 ....RfD
Fluorine (soluble fluoride); 7782-41-4 ....RfD
Fluridone; 59756-60-4 ....RfD
Folpet; 133-07-3 ....RfD
Fonofos; 944-22-9 ....RfD
Formic Acid; 64-18-6 ....RfD
Fosetyl-al; 39148-24-8 ....RfD
Furan; 110-00-9 ....RfD

Glufosinate-ammonium; 77182-82-2 ....RfD
Glyphosate; 1071-83-6 ....RfD

Heptachlor; 76-44-8 ....RfD, CAR, HA
Heptachlor Epoxide; 1024-57-3 ....RfD, CAR, HA
Hexabromobenzene; 87-82-1 ....RfD
Hexachlorobutadiene; 87-68-3 ....RfD, CAR
alpha-Hexachlorocyclohexane (alpha-HCH); 319-84-6 ....CAR
beta-Hexachlorocyclohexane (beta-HCH); 319-85-7 ....CAR
delta-Hexachlorocyclohexane (delta-HCH); 319-86-8 ....CAR
epsilon-Hexachlorocyclohexane (epsilon-HC); 6108-10-7 ....CAR
gamma-Hexachlorocyclohexane (gamma-HCH); 58-89-9 ....RfD, HA
technical Hexachlorocyclohexane (t-HCH); 00-01-0 ....CAR
Hexachlorocyclopentadiene (HCCPD); 77-47-4 ....RfD
Hexachlorodibenzo-p-dioxin, mixture (HxCDD); 19408-74-3 ....CAR
Hexachloroethane; 67-72-1 ....RfD, CAR
Hexazinone; 51235-04-2 ....RfD
Hydrogen Cyanide; 74-90-8 ....RfD, HA
Hydrogen Sulfide; 7783-06-4 ....RfD

Imazalil; 35554-44-0 ....RfD
Imazaquin; 81335-37-7 ....RfD
Isobutyl Alcohol; 78-83-1 ....RfD
Isophorone; 78-59-1 ....RfD
Isopropalin; 33820-53-0 ....RfD

Lead; 7439-92-1 ....RfD
Linuron; 330-55-2 ....RfD

Londax; 83055-99-6 ....RfD

Malathion; 121-75-5 ....RfD
Maleic Hydrazide; 123-33-1 ....RfD
Metalaxyl; 57837-19-1 ....RfD
Methamidophos; 10265-92-6 ....RfD
Methomyl; 16752-77-5 ....RfD
Methyl Ethyl Ketone (MEK); 78-93-3 ....RfD
Methyl Isobutyl Ketone (MIBK); 108-10-1 ....RfD
Methyl Mercury; 22967-92-6 ....RfD
Methyl Parathion; 298-00-0 ....RfD
2-Methyl-4-chlorophenoxy acetic acid (MCPA); 94-74-6 ....RfD
2-(2-Methyl-4-chlorophenoxy)propionic acid (MCPP); 93-65-2 ....RfD
Metolachlor; 51218-45-2 ....RfD
Metribuzin; 21087-64-9 ....RfD
Mirex; 2385-85-5 ....RfD

Naled; 300-76-5 ....RfD
Nickel Carbonyl; 13463-39-3 ....CAR
Nickel Refinery Dust; 00-02-0 ....CAR
Nickel Subsulfide; 12035-72-2 ....CAR
Nickel, soluble salts; 7440-02-0 ....RfD
Nitrapyrin; 1929-82-4 ....RfD
Nitrate; 14797-55-8 ....RfD, HA
Nitric Oxide; 10102-43-9 ....RfD
Nitrite; 14797-65-0 ....RfD, HA
Nitrobenzene; 98-95-3 ....RfD
Nitrogen Dioxide; 10102-44-0 ....RfD
N-Nitroso-di-n-butylamine; 924-16-3 ....CAR
N-Nitroso-N-methylethylamine; 10595-95-6 ....CAR
N-Nitrosodi-N-propylamine; 621-64-7 ....CAR
N-Nitrosodiethanolamine; 1116-54-7 ....CAR
N-Nitrosodiethylamine; 55-18-5 ....CAR
N-Nitrosodimethylamine; 62-75-9 ....CAR
N-Nitrosodiphenylamine; 86-30-6 ....CAR
N-Nitrosopyrrolidine; 930-55-2 ....CAR
Norflurazon; 27314-13-2 ....RfD

Octabromodiphenyl ether; 32536-52-0 ....RfD
Oryzalin; 19044-88-3 ....RfD
Oxadiazon; 19666-30-9 ....RfD
Oxamyl; 23135-22-0 ....RfD, HA
Oxyfluorfen; 42874-03-3 ....RfD

Paclobutrazol; 76738-62-0 ....RfD
Paraquat; 1910-42-5 ....RfD
Pentabromodiphenyl ether; 32534-81-9 ....RfD
Pentachlorobenzene; 608-93-5 ....RfD
Pentachloronitrobenzene (PCNB); 82-68-8 ....RfD
Pentachlorophenol; 87-86-5 ....RfD, HA
Permethrin; 52645-53-1 ....RfD
Phenol; 108-95-2 ....RfD
m-Phenylenediamine; 108-45-2 ....RfD
Phenylmercuric Acetate; 62-38-4 ....RfD

Phosmet; 732-11-6 ....RfD
Phosphine; 7803-51-2 ....RfD
Picloram; 1918-02-1 ....RfD
Pirimiphos-methyl; 29232-93-7 ....RfD
Potassium Cyanide; 151-50-8 ....RfD, HA
Potassium Silver Cyanide; 506-61-6 ....RfD
Prometon; 1610-18-0 ....RfD
Prometryn; 7287-19-6 ....RfD
Pronamide; 23950-58-5 ....RfD
Propachlor; 1918-16-7 ....RfD
Propanil; 709-98-8 ....RfD
Propazine; 139-40-2 ....RfD
Propham; 122-42-9 ....RfD
Pydrin; 51630-58-1 ....RfD
Pyridine; 110-86-1 ....RfD

Quinalphos; 13593-03-8 ....RfD

Radon 222; 14859-67-7 ....CAR

Selenious Acid; 7783-00-8 ....RfD
Selenourea; 630-10-4 ....RfD
Sethoxydim; 74051-80-2 ....RfD
Silver; 7440-22-4 ....RfD
Silver Cyanide; 506-64-9 ....RfD
Simazine; 122-34-9 ....RfD
Sodium Acifluorfen; 62476-59-9 ....RfD
Sodium Azide; 26628-22-8 ....RfD
Sodium Cyanide; 143-33-9 ....RfD, HA
Sodium Diethyldithiocarbamate (Dithiocarb); 148-18-5 ....RfD
Strychnine; 57-24-9 ....RfD
Styrene; 100-42-5 ....RfD

Tebuthiuron; 34014-18-1 ....RfD
Terbacil; 5902-51-2 ....RfD
1,2,4,5-Tetrachlorobenzene; 95-94-3 ....RfD
1,1,1,2-Tetrachloroethane; 630-20-6 ....RfD
1,1,2,2-Tetrachloroethane; 79-34-5 ....CAR
Tetrachloroethylene; 127-18-4 ....RfD, HA
2,3,4,6-Tetrachlorophenol; 58-90-2 ....RfD
Tetrachlorovinphos; 961-11-5 ....RfD
Tetraethyl Lead; 78-00-2 ....RfD
Thallic Oxide; 1314-32-5 ....RfD
Thallium Acetate; 563-68-8 ....RfD
Thallium Carbonate; 6533-73-9 ....RfD
Thallium Chloride; 7791-12-0 ....RfD
Thallium Nitrate; 10102-45-1 ....RfD
Thallium Selenite; 12039-52-0 ....RfD
Thallium(I) Sulfate; 7446-18-6 ....RfD
Thiobencarb; 28249-77-6 ....RfD
Thiophanate-methyl; 23564-05-8 ....RfD
Thiram; 137-26-8 ....RfD
Toluene; 108-88-3 ....RfD
Triallate; 2303-17-5 ....RfD

1,2,4-Tribromobenzene; 615-54-3 ....RfD
1,1,2-Trichloro-1,2,2-trifluoroethane (CFC-113); 76-13-1 ....RfD
1,2,4-Trichlorobenzene; 120-82-1 ....RfD
1,1,1-Trichloroethane; 71-55-6 ....RfD
1,1,2-Trichloroethane; 79-00-5 ....RfD, CAR
Trichloroethylene; 79-01-6 ....CAR
Trichlorofluoromethane; 75-69-4 ....RfD
2,4,5-Trichlorophenol; 95-95-4 ....RfD
2,4,6-Trichlorophenol; 88-06-2 ....CAR
1,2,3-Trichloropropane; 96-18-4 ....RfD
Tridiphane; 58138-08-2 ....RfD
Trifluralin; 1582-09-8 ....RfD

Uranium, natural; 7440-61-1 ....CAR

Vanadium Pentoxide; 1314-62-1 ....RfD
Vernam; 1929-77-7 ....RfD
Vinclozolin; 50471-44-8 ....RfD

Warfarin; 81-81-2 ....RfD

Xylenes; 1330-20-7 ....RfD

Zinc Cyanide; 557-21-1 ....RfD
Zinc Phosphide; 1314-84-7 ....RfD
Zineb; 12122-67-7 ....RfD

IRIS CHEMICAL FILE STRUCTURE

I. CHRONIC HEALTH HAZARD ASSESSMENT FOR NONCARCINOGENIC EFFECTS

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___I.A.4. ADDITIONAL COMMENTS (ORAL RfD)

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___I.A.6. EPA DOCUMENTATION AND REVIEW OF THE ORAL RfD

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(structure not available at this time although will be very similar to the structure of the oral reference dose section)

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(content and structure to be determined)

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__IV.B. SAFE DRINKING WATER ACT (SDWA)

__IV.C. CLEAN WATER ACT (CWA)

__IV.D. FEDERAL INSECTICIDE, FUNGICIDE AND RODENTICIDE ACT (FIFRA)

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_VI. **REFERENCES**

SYNONYMS:

United States
Environmental Protection
Agency

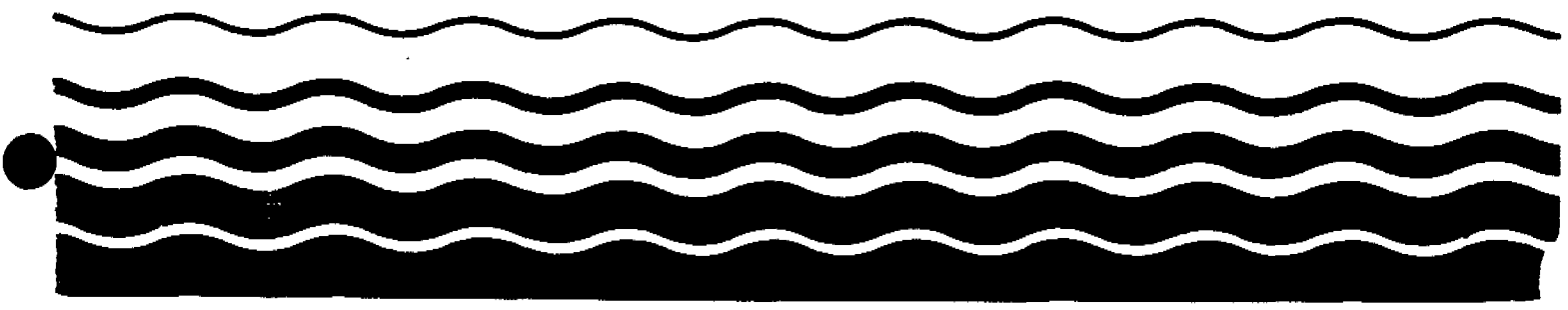
Office of Water
Regulations and Standards
Washington, DC 20460

EPA 440/5 89-002

Water

EPA

STATE ADOPTION/PROPOSAL OF NUMERIC CRITERIA FOR PRIORITY POLLUTANTS AS OF AUGUST 1988



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Introduction

One of the nation's most important water pollution control problems is the identification and control of toxic pollutants in surface waters. The Clean Water Act (CWA), as amended, attacks this problem by setting forth ambitious goals for the existing surface water toxics control program. The Act's requirements place emphasis on control of the CWA Section 307(a) toxic pollutants,[1] and the States on an accelerated schedule for compliance.

This report will present information pertaining to ongoing State efforts to address the CWA Section 303(c)(2)(B) requirement to include priority pollutant numeric criteria, where appropriate, in State water quality standards (WQS). The information presented is current as of August, 1988. Since many States are still in the process of addressing this requirement, the information should be considered a "snap shot" of ongoing State activities. Where the report does not indicate any numeric criteria for a State, or for a designated use within a State, it should not be concluded that such criteria are not needed. It may be that the State is planning to adopt criteria but has not yet issued the proposed standards, or that additional pollutants needing criteria may be identified from an analysis of 304(l) lists.

EPA has completed final interim guidance which is intended to help States meet the CWA Section 303(c)(2)(B) requirement. The guidance discusses three options available to the States for complying with this requirement. The three options available are as follows:

1. Adopt Statewide numeric water quality standards for all EPA criteria for Section 307(a) toxic pollutants regardless of whether the pollutants are known to be present;

2. Adopt specific numeric water quality standards for Section 307(a) toxic pollutants as necessary to support designated uses where such pollutants are discharged or are present in the affected waters and could reasonably be expected to interfere with designated uses;

3. Adopt a procedure to be applied to a narrative water quality criterion. This procedure shall be used by the State in calculating derived numeric criteria, which shall be used for all purposes of water quality criteria under Section 303(c) of the CWA. Such criteria need to be developed for Section 307(a) toxic pollutants, as necessary to support designated uses, where these pollutants are discharged or present in the affected waters and could reasonably be expected to interfere with designated uses.

EPA believes that the CWA requirement can be met by any of the above scientifically and technically sound ways (or some combination thereof). For a more detailed discussion of the above options, refer to EPA's final guidance on implementing Section 303(c)(2)(B).

Objectives

As stated previously, this report will summarize information pertaining to ongoing State activities in response to CWA Section 303(c)(2)(B) requirements. The specific objectives are to:

1. Summarize on a national and Region-by-Region basis the option(s) - as described above - the States are likely to use to comply with 303(c)(2)(B) requirements, and

2. Summarize on a national and Region-by-Region basis the number and purpose (i.e., the designated use supported) of the priority pollutant numeric criteria which have been adopted or proposed by the States.

This report ***will not*** draw conclusions about whether States are in compliance with CWA Section 303(c)(2)(B) requirements. Such a determination would, in many cases, require knowledge of the priority pollutants which can reasonably be expected to be impairing designated uses. Although States are currently compiling such information pursuant to CWA Section 304(l) requirements,

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[1] The CWA Section 307(a) list contains 65 compounds and families of compounds, which potentially include thousands of specific compounds. EPA has identified 126 priority pollutants from this larger group which it is using to represent the Section 307(a) list for regulatory purposes.

their final analyses are not due until February, 1989. Thus, this report will summarize information on the priority pollutant criteria which have been adopted or proposed, without addressing the important question of the additional criteria which are needed to comply with Section 303(c)(2)(B). It also will not address the issue of which criteria need to be revised/updated based on new or revised EPA criteria guidance.

Method

This report was compiled based on information provided by EPA Regional Water Management Divisions. Guidance for compiling the needed information was developed, including readily available existing information, and distributed to the Regional water quality standards coordinators to ensure national consistency. The available information primarily consisted of a report on State toxics criteria originally compiled in 1986 from State standards published by the Bureau of National Affairs (BNA). More recent data from a project currently underway to update the 1986 compilation were provided to the Regions to the extent available.

The guidelines used in compiling the list of priority pollutant numeric criteria for each State are summarized below:

- Indicate which option or combination of options the State will use to comply with the requirements of CWA Section 303(c)(2)(B). Refer to February draft guidance for description of the available options.
- Compile a list of the priority pollutants for which State numeric criteria have been adopted or proposed. Classify each pollutant based on whether it is an organic or non-organic pollutant.
- For each priority pollutant, indicate the uses supported (i.e., freshwater aquatic life, marine aquatic life, human health, other).
- For the purposes of this survey, "proposed" criteria are defined as criteria which are included in a current draft WQS document. It is not necessary for the criteria to have been subjected to a public hearing.
- Focus on Section 307(a) priority pollutants. Numeric criteria for other toxic pollutants (e.g., chlorine, ammonia, etc.) should not be included.
- Include criteria which support uses other than aquatic life support or human health, (e.g., agricultural, industrial) in the "other" category.
- Indicating the actual criterion limit (i.e., < 2 ug/l) is not necessary.
- Include criteria which have been adopted for a limited area (e.g., a single waterbody).

The information supplied by the Regional Offices was compiled in a nationally consistent manner. Where a general class of pollutants was listed, the State was credited with addressing all of the priority pollutants from that class which are included on the list of 126 priority pollutants (e.g., where an endosulfan numeric criterion was listed as adopted, it was concluded that the criterion covers alpha endosulfan, beta endosulfan, and endosulfan sulfate).

National Findings

Which options are States using to comply with CWA Section 303(c)(2)(B)?

Regional standards coordinators were asked to report the State option(s) which will be used or which are anticipated to comply with CWA Section 303(c)(2)(B). The findings are displayed in Figure 1. In general, most States are expected to use options 1 or 2. Of the fifty-seven States and Territories, 72% will use options 1 or 2, 23% will use a combination of options 1 or 2 with option 3, and 5% will use option 3 exclusively.

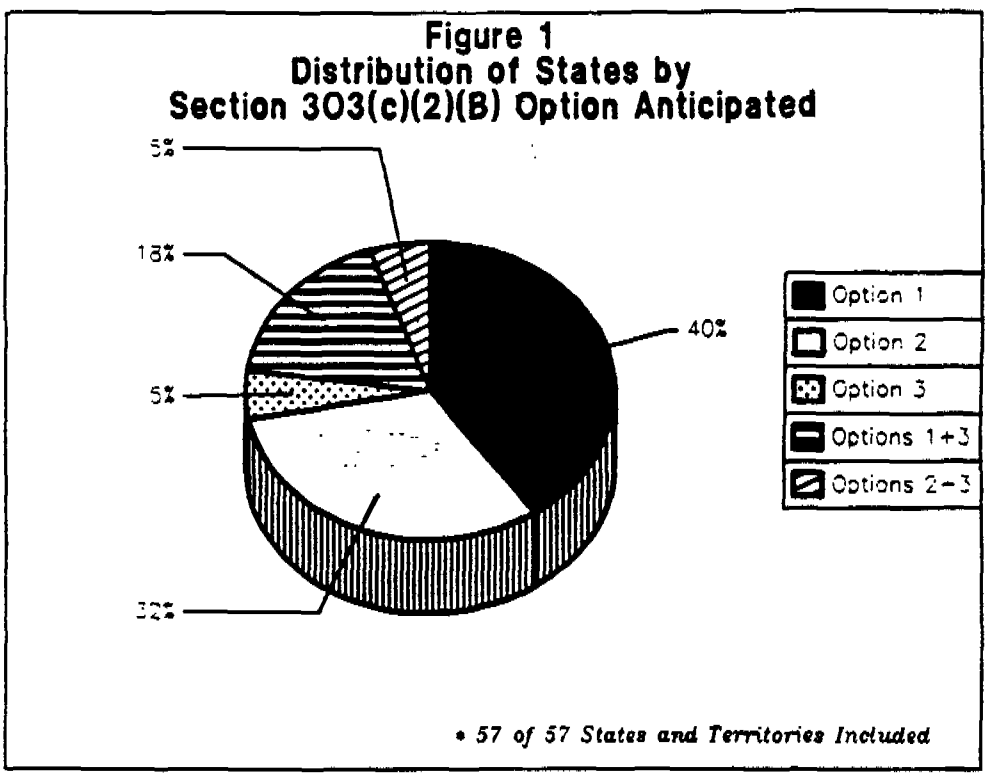

Figure 1. Distribution of States by Section 303(c)(2)(B) Option

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For how many priority pollutants have the States adopted or proposed numeric criteria?

Summarizing the status of the States in adopting priority pollutant numeric criteria is complicated by the fact that the States and Territories use different systems for assigning numeric criteria to protect their designated uses. Some States assign a separate set of numeric criteria to protect each designated use, with the most stringent criterion for a given waterbody used as the standard, while others assign one set of numeric criteria to protect each waterbody class (which often includes various designated uses). For the purpose of providing a general (simplified) overview, Figure 2 addresses only the total number of priority pollutants for which one or more numeric criteria have been adopted or proposed. The percentage of State waters and number of designated uses supported by each "priority pollutant numeric criterion" varies from State to State.

It can be seen from Figure 2 that of the fifty-seven States and Territories, five have still not adopted or proposed to adopt a numeric criterion for a priority pollutant, while three have adopted/proposed between 1 and 10 priority pollutant numeric criteria, twenty-five have adopted/proposed between 10 and 50, and twenty-four have adopted/proposed more than 50 numeric criteria for priority pollutants.

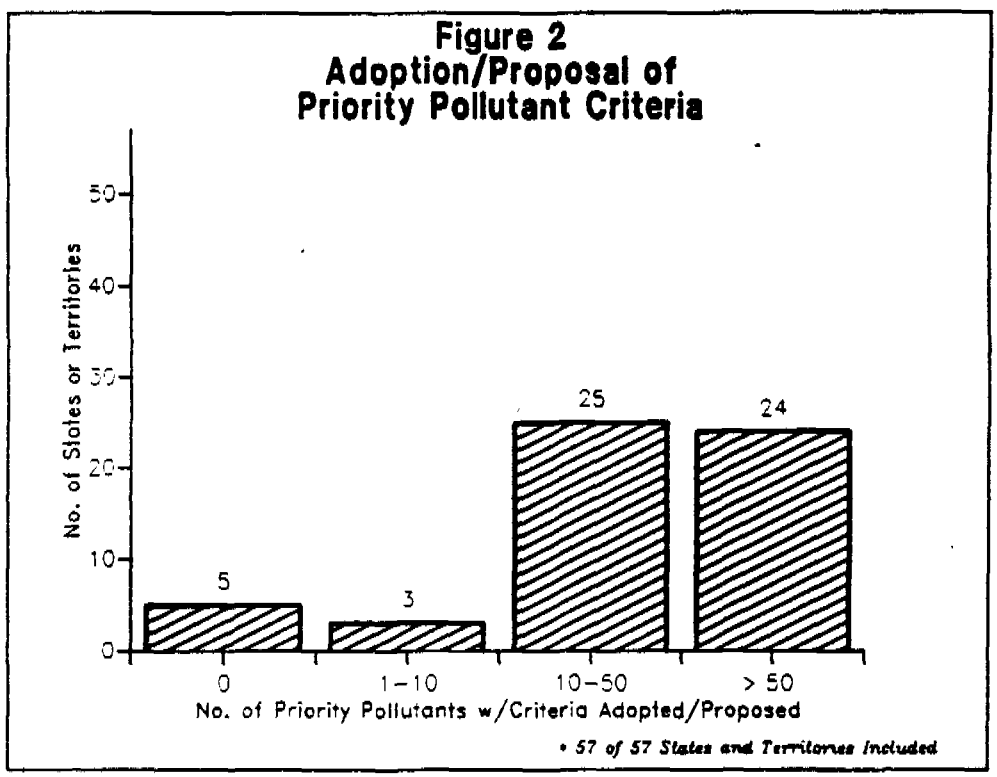

Figure 2. Adopted/Proposed Priority Pollutant Criteria

Figure 3 provides a more detailed status (i.e., by designated use). Of the fifty-seven States and Territories, a total of forty-nine have adopted/proposed at least one priority pollutant numeric criterion to support freshwater aquatic life uses, twenty States have adopted/proposed at least one for marine aquatic life uses, forty-two States have adopted/proposed at least one to protect human health, and seven States have adopted/proposed at least one in support of other uses.

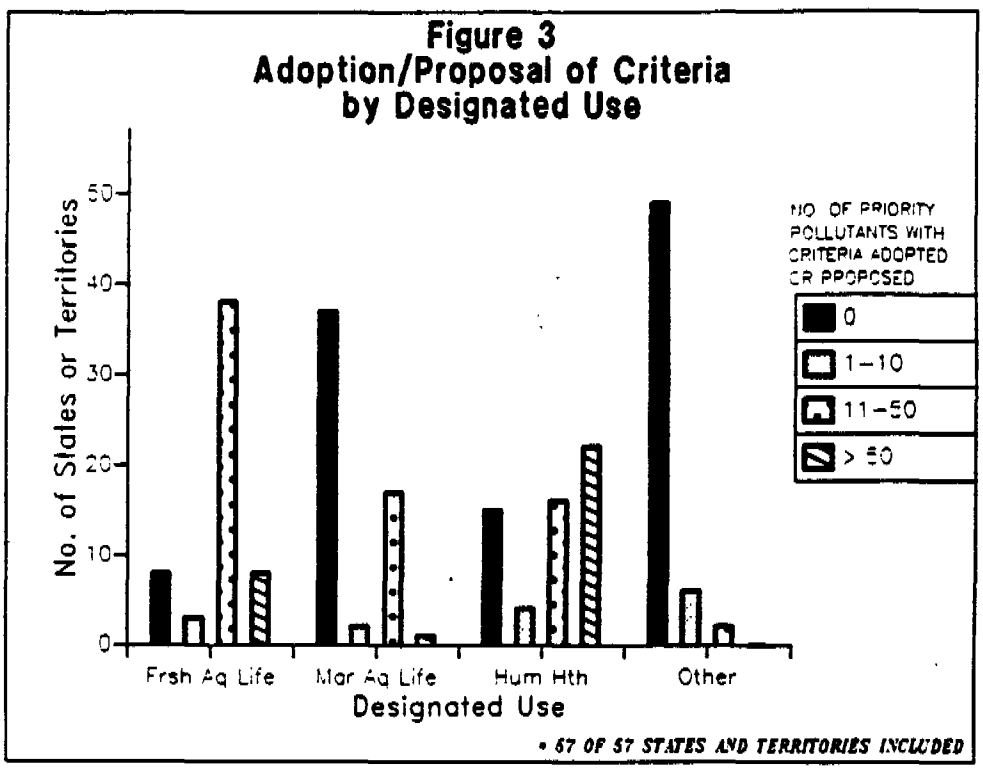

Figure 3. Adoption/Proposal of Criteria by Designated Use

For which priority pollutants have the States adopted or proposed numeric criteria?

The 126 priority pollutants are listed in the Appendix; for each priority pollutant, the total number of States where one or more numeric criteria have been adopted or proposed is noted. Table 1 lists the 30 priority pollutants for which numeric criteria have been adopted/proposed in 35 or more States. Of the remaining 96 priority pollutants, there are a total of 81 for which numeric criteria have been adopted/proposed in more than 10 but less than 35 States, and 15 for which criteria have been adopted/proposed in less than 10 States. Numeric criteria have been adopted or proposed for all 126 priority pollutants in at least one State or Territory.

PRIORITY POLLUTANT	# OF STATES ADOPTED/PROPOSED
Aldrin	41
Arsenic	45
Cadmium	45
Chlordane	42
Chromium (Hex)	43
Chromium (Tri)	44
Copper	42
Cyanide	40
DDT	39
Dieldrin	40
Alpha Endosulfan	38
Beta Endosulfan	38
Endosulfan Sulfate	40
Endrin	44
Heptachlor	39
Hexachlorocyclohexane-gamma (lindane)	41
Lead	45
Mercury	44
Nickel	39
PCB's (7)	41
Phenol	39
Selenium	45
Silver	41
Toxaphene	40
Zinc	43

Table 1. Priority Pollutants Adopted/Proposed: Priority pollutants for which numeric criteria have been adopted or proposed in thirty-five or more States.

Regional Factsheets

REGION I

STATE	OP-TION	307(a) Criteria Adopted				307(a) Criteria Proposed			
		Fresh Aquatic Life	Ma-rine Aquatic Life	Hu-man Health	Other	Fresh Aquatic Life	Ma-rine Aquatic Life	Hu-man Health	Other
CT	3	-	-	-	-	-	-	-	-
ME	1	1	-	-	-	34	31	109	-
MA	1	-	-	-	-	36	36	-	-
NH	1	-	-	-	-	23	21	21	-
RI	1	30	29	-	-	-	-	-	-
VT	1	-	-	-	-	-	-	-	-

Table 2. Region I Factsheet

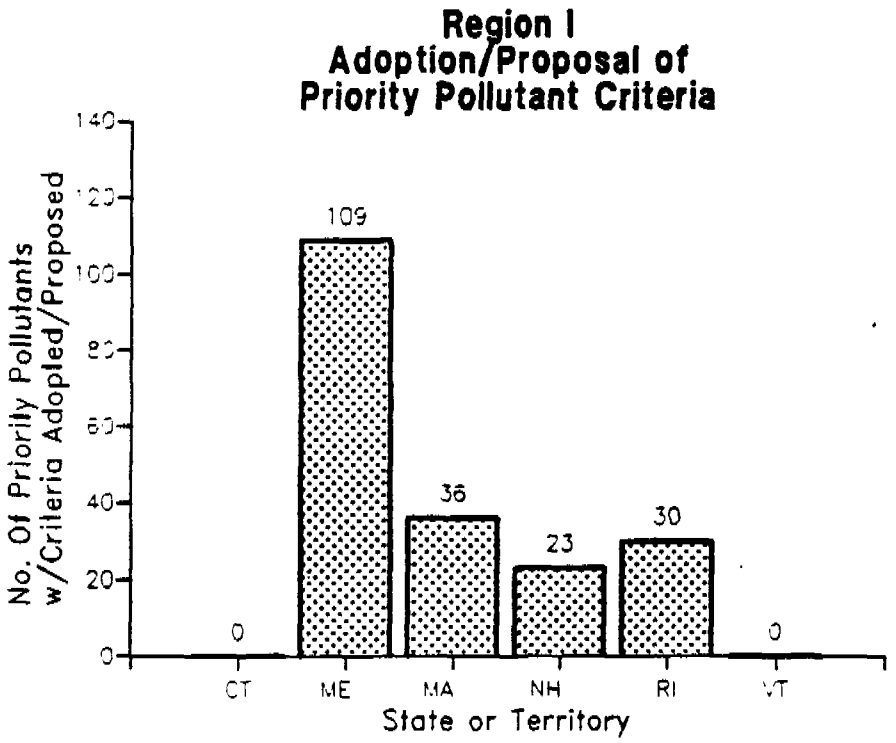

Figure 4. Region I Adopted/Proposed Priority Pollutant Criteria

REGION II

STATE	OP-TION	307(a) Criteria Adopted				307(a) Criteria Proposed			
		Fresh Aquatic Life	Ma-rine Aquatic Life	Hu-man Health	Other	Fresh Aquatic Life	Ma-rine Aquatic Life	Hu-man Health	Other
NJ	2	19	19	8	-	-	-	14	-
NY	2	49	33	41	13	-	-	-	-
PR	2	12	20	8	-	-	-	-	-
VI	2	-	-	-	-	-	-	-	-

Table 3. Region II Factsheet

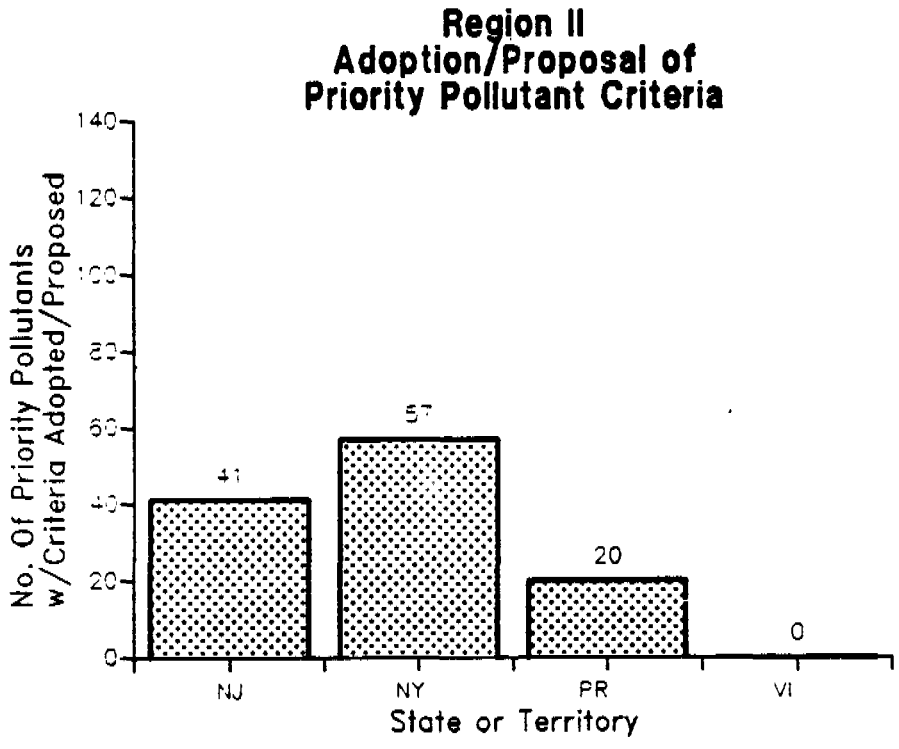

Figure 5. Region II Adopted/Proposed Priority Pollutant Criteria

REGION III

STATE	OP-TION	307(a) Criteria Adopted				307(a) Criteria Proposed			
		Fresh Aquatic Life	Ma-rine Aquatic Life	Hu-man Health	Other	Fresh Aquatic Life	Ma-rine Aquatic Life	Hu-man Health	Other
DE	2	1	1	-	-	-	-	-	-
DC	1	116	-	107	-	-	-	-	-
MD	2	13	-	13	-	-	-	-	-
PA	1/3	8	-	5	-	98	-	110	-
VA	2	35	35	16	-	-	-	-	-
WV	2	25	-	24	1	18	-	18	-

Table 4. Region III Factsheet

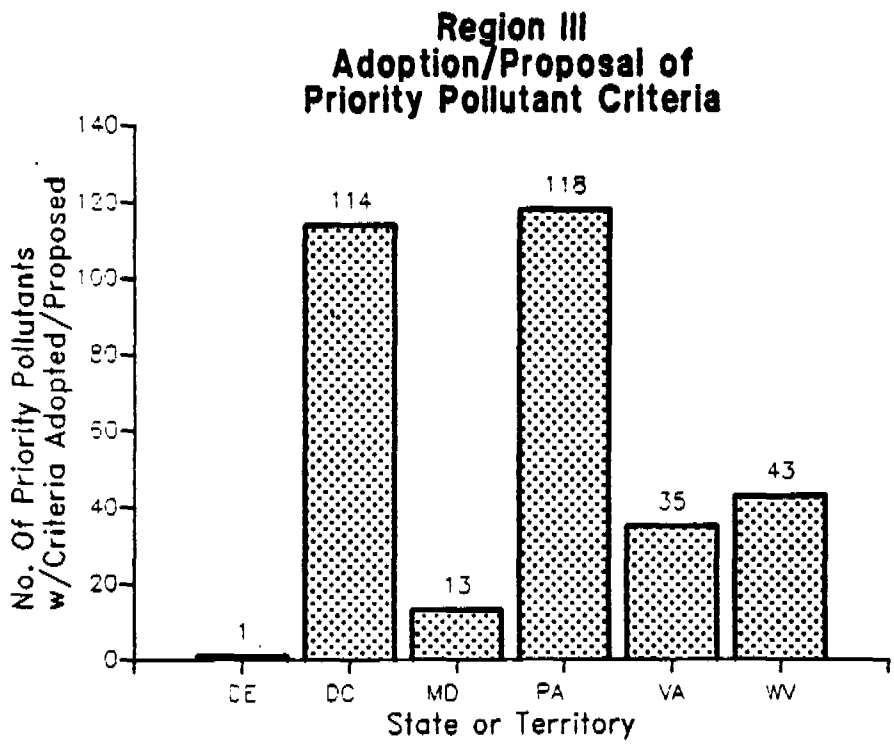

Figure 6. Region III Adopted/Proposed Priority Pollutant Criteria

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REGION IV

STATE	OPTION	307(a) Criteria Adopted				307(a) Criteria Proposed			
		Fresh Aquatic Life	Marine Aquatic Life	Human Health	Other	Fresh Aquatic Life	Marine Aquatic Life	Human Health	Other
AL	1	-	-	-	-	-	-	-	-
FL	2	41	1	40	-	-	-	-	-
GA	1+3	9	-	-	-	-	-	-	-
KY	1 or 2	23	-	8	-	-	-	-	-
MS	1	1	-	9	-	-	-	-	-
NC	1+2	32	28	6	-	-	-	-	-
SC	1 or 2	-	-	-	-	-	-	-	-
TN	1 or 2	11	-	-	-	-	-	-	-

Table 5. Region IV Factsheet

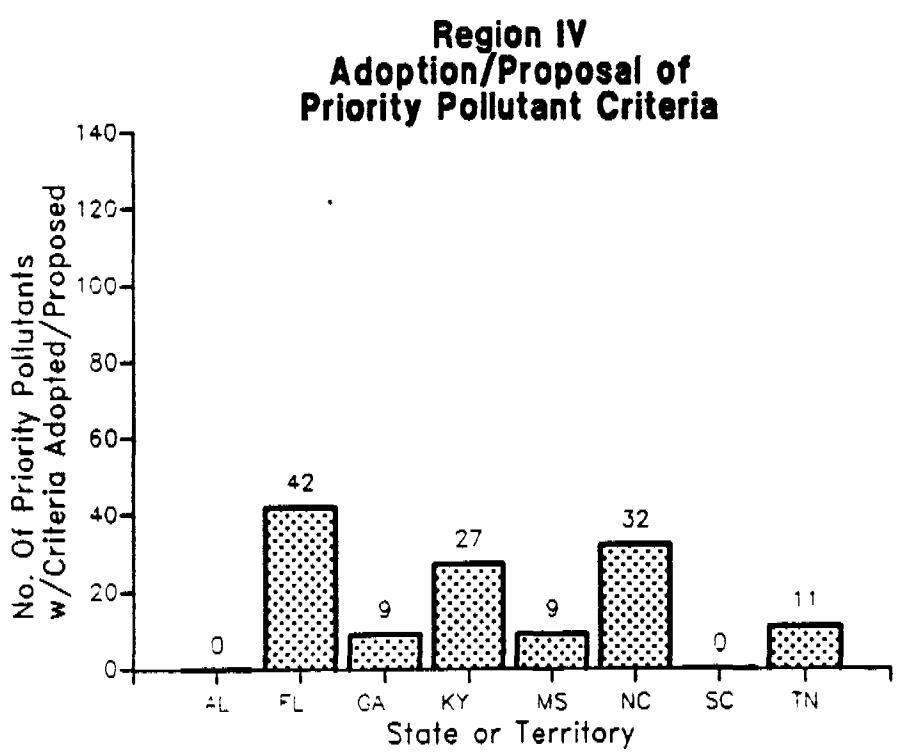

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Figure 7. Region IV Adopted/Proposed Priority Pollutant Criteria

REGION V

STATE	OP-TION	307(a) Criteria Adopted				307(a) Criteria Proposed			
		Fresh Aquatic Life	Ma-rine Aquatic Life	Hu-man Health	Other	Fresh Aquatic Life	Ma-rine Aquatic Life	Hu-man Health	Other
IL	1+3	20	-	-	-	33	-	92	-
IN	1+3	-	-	-	-	31	-	91	-
MI	3	23	-	24	2	-	-	-	-
MN	1+3	5	-	-	-	31	-	92	-
OH	1+3	63	-	31	19	-	-	73	-
WI	1	-	-	-	-	22	-	71	9

Table 6. Region V Factsheet

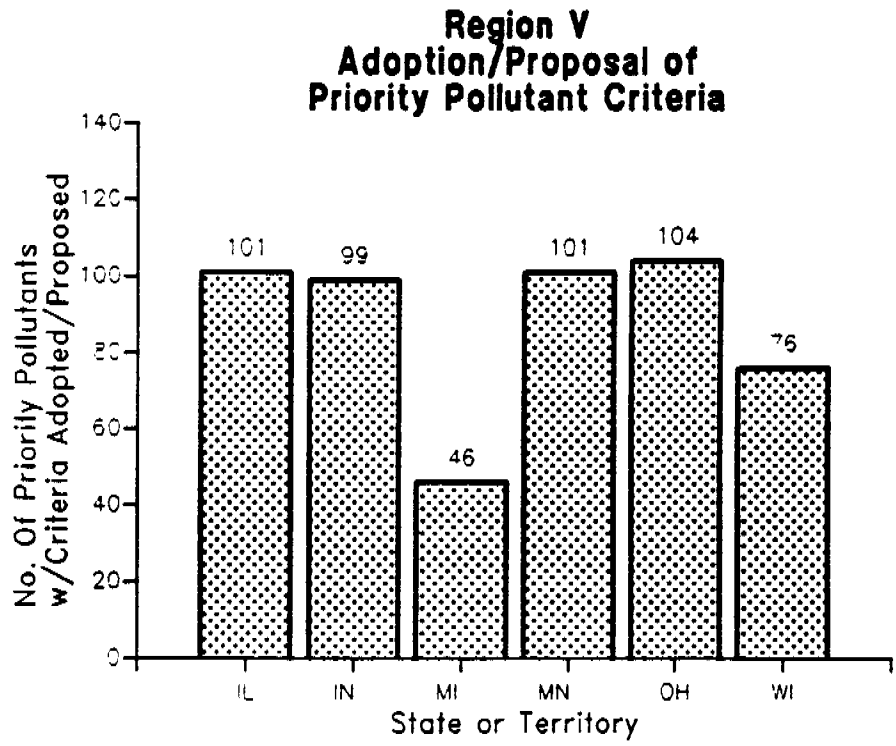

Figure 8. Region V Adopted/Proposed Priority Pollutant Criteria

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REGION VI

STATE	OPTION	307(a) Criteria Adopted				307(a) Criteria Proposed			
		Fresh Aquatic Life	Marine Aquatic Life	Human Health	Other	Fresh Aquatic Life	Marine Aquatic Life	Human Health	Other
AR	1	21	-	-	-	-	-	-	-
LA	1	16	16	24	-	45	41	52	-
NM	2	-	-	14	-	-	-	-	-
OK	1	31	-	19	-	-	-	-	-
TX	1	30	29	-	-	-	-	-	-

Table 7. Region VI Factsheet

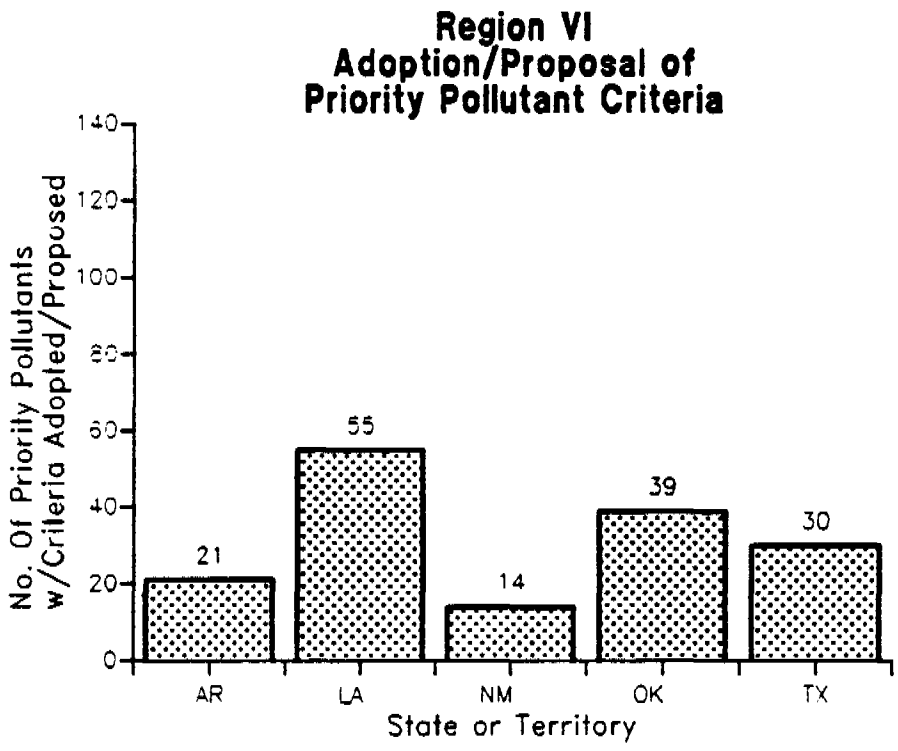

Figure 9. Region VI Adopted/Proposed Priority Pollutant Criteria

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REGION VII

STATE	OP-TION	307(a) Criteria Adopted				307(a) Criteria Proposed			
		Fresh Aquatic Life	Ma-rine Aquatic Life	Hu-man Health	Other	Fresh Aquatic Life	Ma-rine Aquatic Life	Hu-man Health	Other
IA	2	9	-	11	-	35	-	11	-
KS	2	22	-	-	8	-	-	-	-
MO	1 or 2	39	-	56	7	-	-	-	-
NE	1	-	-	10	-	98	-	19	-

Table 8. Region VII Factsheet

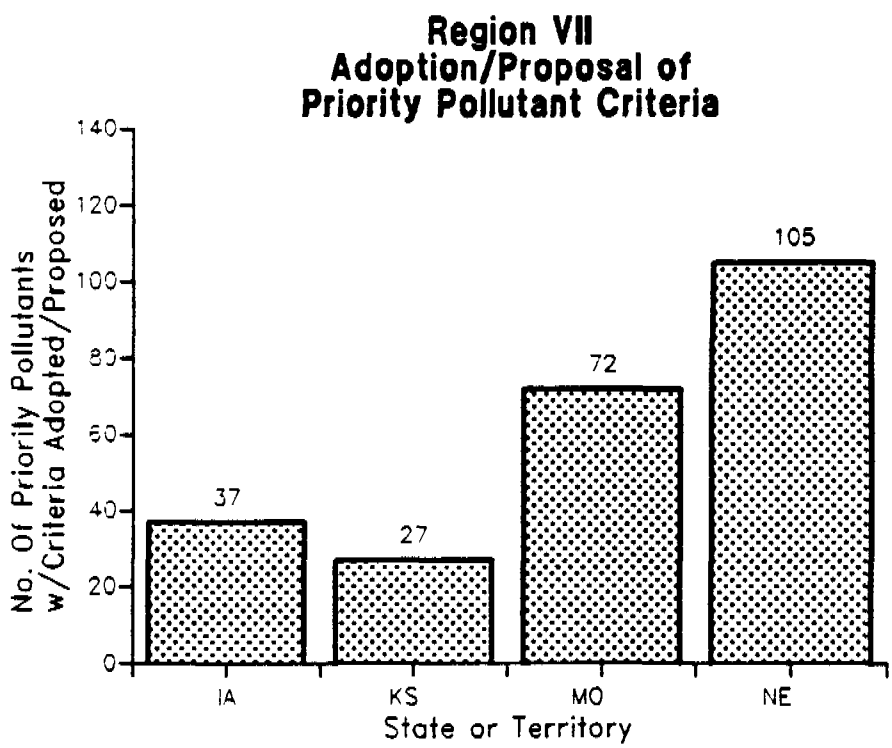

Figure 10. Region VII Adopted/Proposed Priority Pollutant Criteria

REGION VIII

STATE	OP-TION	307(a) Criteria Adopted				307(a) Criteria Proposed			
		Fresh Aquatic Life	Ma-rine Aquatic Life	Hu-man Health	Other	Fresh Aquatic Life	Ma-rine Aquatic Life	Hu-man Health	Other
CO	2/3	32	-	17	-	27	-	58	-
MT	1/3	34	-	109	-	-	-	-	-
ND	2/3	1	-	16	-	16	-	-	-
SD	1/3	34	-	109	-	-	-	-	-
UT	2/3	23	-	11	7	-	-	-	-
WY	1/3	-	-	-	-	29	-	74	-

Table 9. Region VIII Factsheet

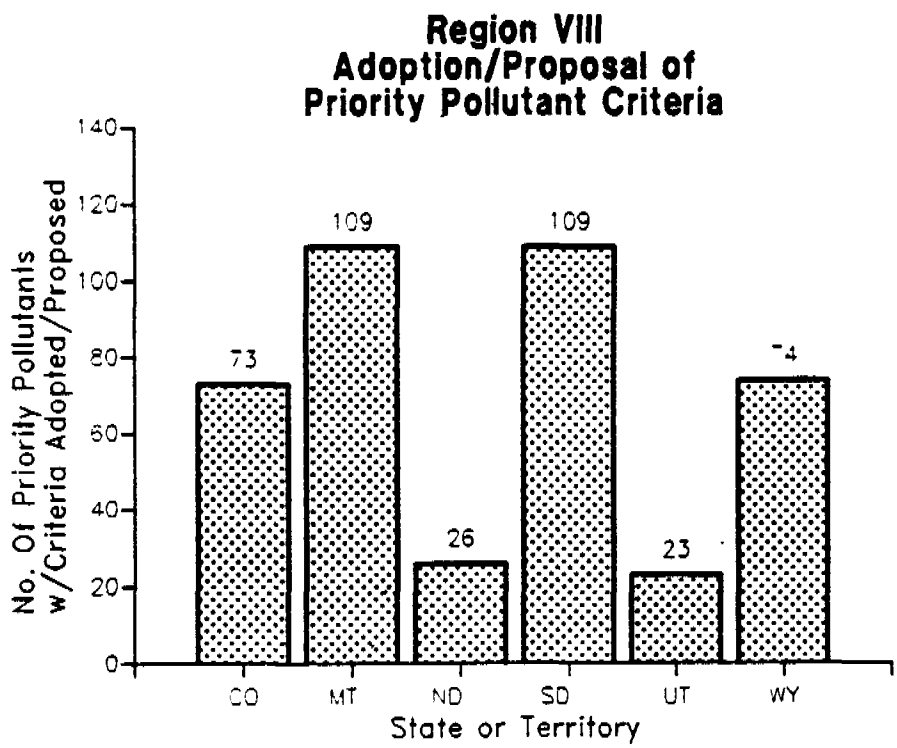

Figure 11. Region VIII Adopted/Proposed Priority Pollutant Criteria

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REGION IX

STATE	OP-TION	307(a) Criteria Adopted				307(a) Criteria Proposed			
		Fresh Aquatic Life	Ma-rine Aquatic Life	Hu-man Health	Other	Fresh Aquatic Life	Ma-rine Aquatic Life	Hu-man Health	Other
AZ	1	26	-	26	-	126	-	126	-
AS	1	-	-	-	-	34	31	109	-
CA	1	19	30	20	-	34	31	109	-
GU	1	34	31	109	-	-	-	-	-
HI	1	-	-	-	-	34	31	109	-
NV	1	24	-	22	-	34	-	109	-
CM	1	28	28	-	-	-	-	-	-
TT	1	32	32	-	-	-	-	-	-

Table 10. Region IX Factsheet

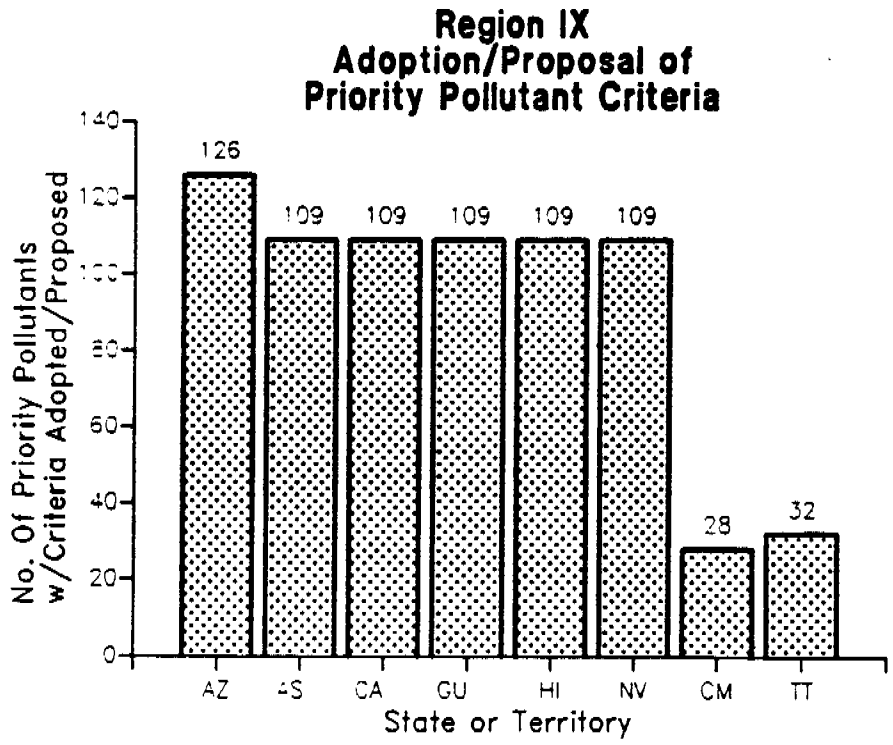

Figure 12. Region IX Adopted/Proposed Priority Pollutant Criteria

REGION X

STATE	OP-TION	307(a) Criteria Adopted				307(a) Criteria Proposed			
		Fresh Aquatic Life	Ma-rine Aquatic Life	Hu-man Health	Other	Fresh Aquatic Life	Ma-rine Aquatic Life	Hu-man Health	Other
AK	1,3	34	31	109	-	-	-	-	-
ID	3	-	-	11	-	-	-	-	-
OR	1	106	99	92	-	-	-	-	-
WA	2	28	28	-	-	-	-	-	-

Table 11. Region X Factsheet

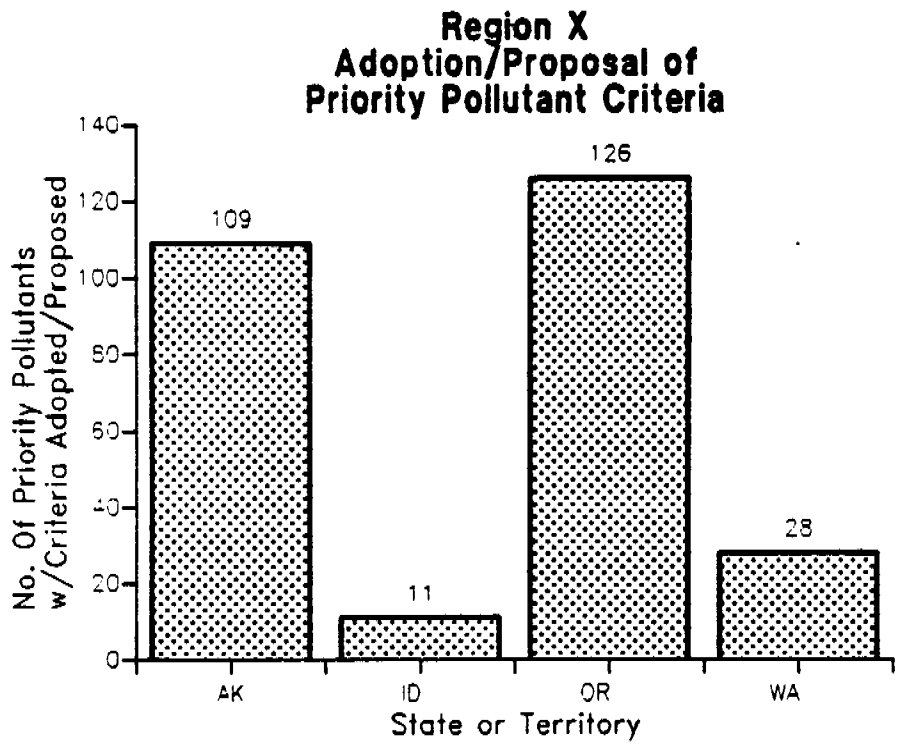

Figure 13. Region X Adopted/Proposed Priority Pollutant Criteria

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Appendix A. List of 126 Priority Pollutants

PRIORITY POLLUTANT	NO. OF STATES WHERE A NUMERIC PRIORITY POLLUTANT CRITERION IS ADOPTED OR PROPOSED
ACENAPHTHENE	18
ACENAPTHYLENE (PAH)	15
ACROLEIN	24
ACRYLONITRILE	23
ALDRIN	41
ANTIMONY	24
ANTHRACENE	5
ARSENIC	45
ASBESTOS	19
1,2 BENZANTHRACENE (PAH)	20
BENZENE	29
BENZIDINE	28
BENZO (A) PYRENE (3,4-BENZOPYRENE) (PAH)	20
3,4 BENZOFLUORANTHENE (PAH)	19
BENZO(K)FLUORANTHENE (PAH)	20
1,12 BENZOPERYLENE (PAH)	19
BERYLLIUM	29
BROMOFORM (TRIBROMOMETHANE)	23
BROMOMETHANE (METHYL BROMIDE)	19
4-BROMOPHENYL PHENYL ETHER	6
CADMIUM	45
CARBON TETRACHLORIDE (TETRACHLOROMETHANE)	27
CHLORDANE	42
CHLOROBENZENE (MONOCHLOROBENZENE)	28
CHLORODIBROMOMETHANE (HALOMETHANE)	22
CHLOROETHANE (MONOCHLOROETHANE)	3
CHLOROETHYL ETHER (BIS-2)	24
1 CHLOROETHOXY METHANE (BIS-2)	19
2 CHLOROETHYL VINYL ETHER	5
4-CHLORO-3-METHYLPHENOL	15
CHLOROMETHANE (METHYL CHLORIDE)	21
CHLOROFORM (TRICHLOROMETHANE)	26
2 CHLOROPHENOL	27
CHLOROISOPROPYL ETHER (BIS-2)	20
2 CHLORONAPHTHALENE	6
4 CHLOROPHENYL PHENYL ETHER	4

CHROMIUM (HEX)	43
CHROMIUM (TRI)	44
CHYRSENE (PAH)	15
COPPER	42
CYANIDE	40
4,4 DDT	39
4,4 DDE	21
4,4 DDD	21
DIBENZO(a,h)ANTHRACENE (PAH)	19
1,2 DICHLOROBENZENE	25
1,3 DICHLOROBENZENE	25
1,4 DICHLOROBENZENE	25
3,3 DICHLOROBENZIDINE	21
DICHLOROETHANE 1,1	3
DICHLOROETHANE 1,2	30
1,1 DICHLOROETHYLENE	28
1,2-TRANS-DICHLOROETHYLENE	6
DICHLOROBROMOMETHANE (HALOMETHANES)	22
DICHLOROMETHANE (HALOMETHANES)	22
2,4-DICHLOROPHENOL	16
DICHLOROPROPANE 1,2	17
DICHLOROPROPENE 1,3	16
DIELDRIN	40
DIMETHYLPHENOL 2,4	15
DIETHYLPHTHALATE	27
DIMETHYLPHTHALATE	27
DINITROTOLUENE 2,4	19
DINITROTOLUENE 2,6	4
2,4-DINITROPHENOL	21
DIOXIN (2,3,7,8-TCDD)	22
DIPHENYLHYDRAZINE 1,2	22
ALPHA ENDOSULFAN	38
BETA ENDOSULFAN	38
ENDOSULFAN SULFATE	40
ENDRIN	44
ENDRIN ALDEHYDE	16
ETHYLBENZENE	25
FLUORENE (PAH)	18
FLUORANTHENE	23
HEPATACHLOR	39
HEPATACHLOR EPOXIDE	16

HEXACHLOROETHANE	20
HEXACHLOROBENZENE	26
HEXACHLOROBUTADIENE	24
HEXACHLOROCYCLOHEXANE (LINDANE)	41
HEXACHLOROCYCLOHEXANE (ALPHA)	20
HEXACHLOROCYCLOHEXANE (BETA)	20
HEXACHLOROCYCLOHEXANE (DELTA)	5
HEXACHLOROCYCIOPENTADIENE	23
IDENO (1.2,3-cd) PYRENE (PAH)	19
ISOPHORONE	23
LEAD	45
MERCURY	44
NAPHTHALENE	9
NICKEL	39
NITROBENZENE	24
2 NITROPHENOL	6
4 NITROPHENOL	6
4,6-DINITRO-2-METHYLPHENOL	14
NITROSODIMETHYLAMINE N	21
NITROSODIPHENYLAMINE-N	21
NITROSODI-N-PROPYLAMINE-N	5
PCB 1242	41
PCB 1254	41
PCB 1221	41
PCB 1232	41
PCB 1248	41
PCB 1260	41
PCB 1016	41
PHENOL	39
PENTACHLOROPHENOL	28
PHENANTHRENE (PAH)	20
BIS(2 ETHYL HEXYL) PHTHALATE	27
BUTYL BENZYL PHTHALATE	12
DI-N-BUTYL PHTHALATE	26
DI-N-OCTYL-PHTHALATE	10
PYRENE (PAH)	20
SELENIUM	45
SILVER	41
TETRACHLOROETHANE 1,1,2,2	23
TETRACHLOROETHYLENE	25
THALLIUM	24

TOLUENE	25
TOXAPHENE	40
1,2,4 TRICHLOROBENZENE	8
TRICHLOROETHANE 1,1,1	25
TRICHLOROETHANE 1,1,2	24
TRICHLOROETHYLENE	26
TRICHLOROPHENOL 2,4,6	25
VINYL CHLORIDE (CHLOROETHYLENE)	24
ZINC	43

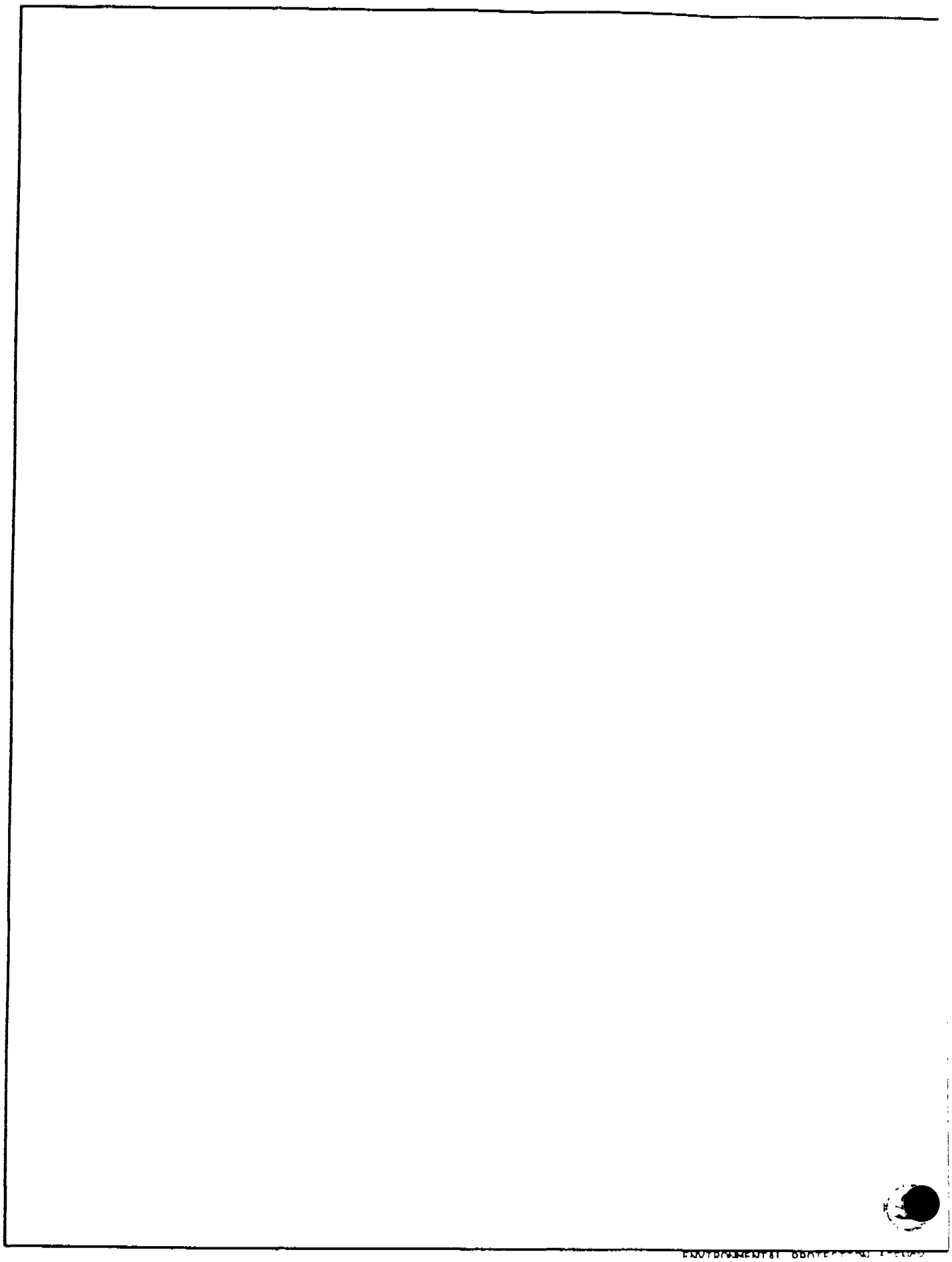
SL 105976

DRAFT FRAMEWORK FOR THE WATER QUALITY STANDARDS PROGRAM

November 8th, 1988

U.S. Environmental Protection Agency
Office of Water
Office of Water Regulations and Standards
401 M Street, S.W.
Washington, DC 20460

11-8-88 DRAFT



Preface

The *Framework for the Water Quality Standards Program* describes a long-term plan for the water quality standards program It defines national program objectives (Section II) and specific activities (Section III) necessary to support each objective. The objectives include those that build on the traditional elements of many State water quality standards and others that broaden the standards program into new types of criteria such as those designed to protect wildlife, those based on the resident biological community, and sediment quality criteria.

Historically, we encourage States to adopt new methods for designing water quality standards as well as measures for judging attainment of those standards. This created some confusion in the multi-year process by which States assess problems, adopt standards, and write permits. In this long-term plan, we are committing to an announcement a year before a triennium begins as to what our specific objectives will be in that triennium. We are also committing to the availability of the necessary guidance material well in advance of each triennium.

We hope that this description of broad program priorities will improve the understanding of our mission by Environmental Protection Agency (EPA) and State personnel as well as members of the public Understanding the mission will hopefully lead to additional support for our efforts, a sense of purpose among those working on the activities required to achieve these goals and ultimately success in achieving a solid federal/State partnership in the water quality standards program. Additionally we hope that the organizations and individuals affected will share with us their views and suggestions on the nature and scope on specific guidance that may be needed

The objectives described in this document do not create any new directions or obligations for the Regions and National Programs (e g. Great Lakes) for the current fiscal year. These are set by The Agency Operating Guidance and are reflected in this document. This framework document will be used to develop Agency operating guidance for future fiscal years.

The document also communicates program priorities of the water quality standards program to ORD and will be used in the ORD budget planning process. The Office of Water and ORD recently signed (April 22, 1988) a Technology Transfer Agreement that describes nine priority program areas for the Office of Water.

The reader should note that this is a planning document and is therefore subject to change since we cannot clearly foresee our program needs far into the future. Therefore, the dates shown should be considered "targets" rather than firm commitments. We plan to update this document periodically. Questions or comments regarding this document may be directed to me.

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Office of Water Regulations and Standards
U S Environmental Protection Agency
401 M Street S.
Washington, D. C. 20460

Table of Contents

Introduction

EPA is responsible for reviewing and approving State water quality standards. EPA also provides guidance and support aimed at encouraging States to adopt new methods for standards as they became technically feasible. This document is designed to assist in the multi-year process by which States assess problems, adopt standards, and write permits. By specifically describing EPA's objectives for the future of the water quality standards program, this document should help to minimize potential disagreements between EPA and the States concerning the timing of standards initiatives. In some States, the standards adoption process takes well over a year to complete. Because the Clean Water Act requires States to review their standards at least once every three years, this *Framework for the Water Quality Standards Program* organizes the objectives of the standards program into three-year intervals, triennia. The current triennium is FY 1988-1990

As identified in the FY 1989 Operating Guidance the goal of this triennium in the water quality standards program is to ensure that States: reflect the identification of stream segments where the discharge or presence of a toxic pollutant is interfering or is likely to interfere with the attainment of the designated uses, revise water quality standards to address toxic pollutants and toxicity, and develop and implement State antidegradation policies and procedures. EPA will assist States in these efforts by providing technical assistance and guidance, conducting seminars to help States and Tribal governments incorporate water quality criteria for all necessary pollutants, and toxicity and to review State water quality standards to ensure compliance with the CWA and the Water Quality Standards regulation.

EPA will continue to develop information on toxics hazardous chemicals that constitute potentially significant hazards to surface water uses, with emphasis on bioaccumulative pollutants and other chemicals. EPA will improve regulatory controls to reduce toxics in sediment, and study ways to make the standards fully adequate to address nonpoint source pollution and the need for extension of the water quality criteria development effort to include impacts on wildlife.

This document presents separate objectives for this triennium (as identified in the Operating Guidance) and the next two triennia and identifies the guidance materials to be available to States at least one year before a triennium begins. Each objective includes a short discussion of the information used to establish the objective as a program priority (Rationale) and a summary of existing documents available that relate to the objective (Pertinent Documents).

In addition, Table 1 summarizes scheduled program activities that relate, either directly or indirectly, to the establishment of objectives for the standards program These activities provide additional background for the establishment of program objectives. They include scheduled activities for implementation of the Water Quality Act of 1987, development of regulations and guidance, and reports under development for Congress.

For each triennium a plan for the completion of program activities necessary to meet the program objectives is presented. It includes activities primarily for the Criteria and Standards Division (CSD) and the Office of Research and Development (ORD). There are also activities that will involve the leadership and participation of the Regions and other Headquarters offices; e.g., Monitoring and Data Support Division (MDSD), the Office of Water Enforcement and Permits (OWEP) and the Office of Wetlands Protection (OWP). Activities are numbered according to the objective they support and specify the approximate date of completion and the responsible organization. Supporting organizations are listed parenthetically.

The activities for OWRS(CSD) include those designed to communicate information between Headquarters, the Regions and the States. These "outreach" activities will be used to monitor the progress of the Regions and the States in achieving the objectives and to help Headquarters in providing timely and effective guidance and technical assistance The Regions and States will benefit from these outreach activities through technology transfer and interaction with other Regions and States.

Table 2 summarizes all the activities by fiscal year Table 2 can be used to plan for the completion of the activities within each fiscal year. The reader should note that there are relatively few activities for FY 88 compared to FY 89 due to the few months remaining in the year The number of different activities for FY

89 reflects the broadening of the water quality standards program.

There are only a few activities identified beyond FY 89 due to the long time frame and the difficulty in identifying activities that are currently undergoing program development. Activities will be added in annual revisions to this document as research and related programs are developed. This will result in an accurate presentation of program activities.

Full development of research and program guidance for the objectives in the FY 91-93 and FY 94-96 Triennia will require several years. However, considerable research and program development has been completed that supports several of the objectives. It is important that interim guidance based on existing information be developed while research is underway to fully obtain the objectives. Therefore, some of the activities listed for future triennia include the development of interim guidance over the next few years based on existing data and information.

All of the objectives presented are priorities for the water quality standards program. The objectives are divided into three time frames. In general, objectives in the FY 88-90 Triennium are taken from the Agency Operating Guidance and do not require additional research. The objectives for the FY 91-93 Triennium require research and development and will be part of Agency Operating Guidance and will be completed within the next 2-4 years. The objectives for the FY 94-96 Triennium are also priorities for the program but will require research and program development over the next 5-7 years and will also be part of developed Operating Guidance

The States and EPA do not have the resources to develop guidance and implement all these program activities at the same time, and some of these activities may not be a high priority for the national program. Therefore, priority must be given to certain activities so that the States are aware in advance of the national program direction, permitting the necessary research and program development to take place.

The States are not limited to the development of programs to meet only the objectives within each time period. If a State has fully developed programs to meet the objectives for the current period, then the State should begin to develop programs to meet future program objectives. Activities are presented for the attainment of certain future objectives based on existing data and information. Therefore, the activities described in this document can be used to accelerate the attainment of future program objectives Also, nothing in this document suggests or prohibits a State from implementing basic program activities such as revising stream uses, or changing water quality criteria to reflect the latest available scientific information, for the State to achieve its own Standards program priorities.

Activities within each time period include those necessary to implement program objectives in current and future time periods. Activities are of two basic types; those that will be carried out by the program offices in Headquarters and the Regions and those that will be carried out by ORD. Most of the activities for Headquarters will be carried out by the CSD.

Summary of Major Standards Related Activities

Overview

- numeric criteria (aquatic life and human health); Section 303(c)(2)(B)
- antidegradation, policy and implementation procedures
- biological criteria
- standards for wetlands/wildlife criteria
- criteria for marine/estuarine systems
- standards and criteria based on ecoregions
- toxicity-based criteria (ambient whole effluent bioassays)
- implementation procedures for the narrative standards
- sediment criteria for toxics
- criteria for nonpoint sources (e.g. biological criteria)
- listing of waters and development of individual control strategies for toxics under Section 304(l).

Framework Objectives By Triennia

Objectives: FY 88-90 Triennium

A1: Identify waters needing toxic criteria.

A2: Adopt numeric criteria for pollutants.

A3: Update State policies and develop implementation procedures for antidegradation

A4: Adopt toxicity-based criteria (ambient whole effluent bioassays), and develop implementation procedures.

A5: Complete state toxic control program reviews and ensure development of state action plans.

Objectives: FY 91-93 Triennium

B1: Establish permanent link between 304(l) listing requirements and triennial reviews.

B2: Establish water quality standards for marine wetland and estuarine systems.

B3: Adopt sediment criteria for toxics.

B4: Adopt biological criteria (biocriteria).

B5: Integrate Standards and Nonpoint Source Control programs.

Objectives: FY 94-96 Triennium

C1: States adopt criteria to protect wildlife

C2: States adopt criteria to protect marine/estuarine ecosystems.

FY 88-90 Triennium

Objectives:

This Section describes the basis for the program objectives identified for the current triennium (FY 88-90). The objectives for this period are taken directly from the Agency Operating Guidance. They do not require require additional research and development to be fully implemented in state programs

The basis for establishing these objectives as priorities is primarily the Agency Operating Guidance for FY 88; "The Guide to the Office of Water Accountability System and Mid-year Evaluations", dated May 1987 The activities pertinent to the water quality standards program are presented in two chapters within this document (Surface Water Toxic Control Initiatives and Water Quality Standards) and paraphrased below. SPMS refers to Strategic Planning and Management System and OWAS refers to Office of Water Accountability System.

Objective A1: Identify waters to determine if toxic criteria are needed to protect uses.

Rationale

Agency Operating Guidance, FY 88.

Section 304(l) of the Clean Water Act establishes a requirement for the States to identify waters impaired due to toxic and other pollutants Section 303(c)(2)(B) requires States to adopt numeric criteria or criteria based on biological monitoring or assessment methods for Section 307(a) toxic pollutants.

The technical basis for numeric criteria is presented under Objective A2.

Pertinent Documents

OWRS and the Office of Water Enforcement and Permits (OWEP) developed final guidance (dated March 1988) on the listing of State waters that is required by Section 304(l) This guidance is being used by the States to identify waters impaired by point (and nonpoint) source discharges of conventional and toxic pollutants and waters requiring numeric criteria under Section 303(c)(2)(B).

Objective A2: Incorporate numeric criteria for toxics into State standards.

Rationale

1. The Agency Operating Guidance, FY 88.
2. Section 303(c)(2)(B) of the Clean Water Act requires States to adopt numeric criteria for Section 307(a) toxic pollutants in their water quality standards. Where such numerical criteria are not available, a State shall adopt criteria based on biological monitoring or assessment methods

The water quality-based program traditionally focused on the development of numeric criteria for individual chemicals and the regulation of dischargers using these criteria; the so-called chemical-specific approach More recently, an approach was developed based on toxicity using either ambient or whole effluent bioassays to determine the need for controls: the so called toxicity-based or whole effluent approach This alternative approach was developed because certain water quality problems could not be dealt with effectively with the chemical-specific approach.

The rationale for each of these approaches is defined in Chapter 1 of the *Technical Support Document for Water Quality-based Toxics Control* (TSD) and related policy: *(49 FR 9018)*. EPA has identified that in some cases an integrated approach, including both chemical and biological techniques (effluent and ambient bioassay testing and biosurveys) could be used to assess water quality and control pollution sources

A water quality-based program cannot rely solely on one approach. There are certain water quality problems that are best dealt with using the chemical-specific approach and numeric criteria for individual chemicals. For example, as defined in the TSD where the toxicity of the discharge is due primarily to certain chemicals (e.g., chlorine) for which EPA or the State has developed a criterion, permit requirements based on these criteria are preferred. The protection of human health is another example where controls are implemented using the chemical-specific approach. On the other hand, biological techniques

using ambient or whole effluent bioassays or biosurveys could be used where effluents are complex or where the combined effects of multiple discharges are of concern and aquatic life protection is the concern. In certain cases, both approaches may be used.

Where toxicity-based limits exist in a permit, chemical-specific limitations are also needed for chemicals that can cause a cumulative impact on the designated uses if discharged from several sources. These pollutants include those that bioaccumulate through the food chain and cause unacceptable concentrations of contaminants in animal tissues, such as lipid soluble organics, chlordane and chemicals that may not readily bioaccumulate but persist in the aquatic environment, such as metals. The use of chronic criteria and the use of "quasi steady state" dilution models for stormwater will be given greater emphasis.

For these reasons, and because of Section 303(c)(2)(B), a chemical-specific approach is a necessary tool in the water quality-based program. Therefore, States need to adopt numeric criteria for individual chemicals in their standards even if they have adopted toxicity-based criteria or biocriteria.

A ranking system has been developed by OWRS CSD that is used for prioritizing contaminants for criteria advisory development. The system scores chemicals based on toxicity to humans and aquatic organisms as well as on persistence and potential exposure. Final selection of chemicals for criteria or advisory development is made from the prioritized list based on information not readily incorporated into the ranking, such as actions taking place in other programs or special interest from Regions or States.

Pertinent Documents

1. The Office of Water Regulations and Standards (OWRS) developed *Guidance for Implementation of Water Quality Standards for CWA Section 303(c)(2)(B)*, dated September 2, 1988.

2. OWRS developed numeric criteria recommendations for 23 toxic chemicals to protect aquatic life and 95 toxic chemicals to protect human health from exposure to contaminants in fish and shellfish. The basic source of criteria information are the individual criteria documents and Quality Criteria for Water, 1986. OWRS also issued a summary listing of these criteria to the Regions; dated March 1988.

3. OWRS plans to issue guidance on the derivation of criteria to protect human health early in FY 1989.

Objective A3: Encourage implementation procedures for antidegradation to be incorporated in State standards.

Rationale

The Agency Operating Guidance, FY 88

> Section 101(a) of the Clean Water Act establishes the overall objective that the chemical, physical and biological integrity of the Nation's waters be restored and ***maintained*** This objective of maintaining the existing quality of the Nations waters resulted in the development of a national policy which was continued in the 1983 water quality standards regulation.

The focus of the water program after enactment of the CWA was to clean-up the most severe and obvious pollution problems. While much of the attention was placed on these clean-up activities, the goal of protecting existing high quality waters has always been a goal of the Clean Water Act. In its entirety, the antidegradation policy represents a three tiered approach to maintaining and protecting various levels of water quality and uses. At its base, all existing uses and the level of water quality necessary to protect those uses must be maintained and protected. Section 303(d)(4)(B) of the Clean Water Act states that permits must be consistent with the antidegradation policy.

Although water quality standards are useful in establishing a target for the improvement of waters impaired by pollution, they may not be sufficient to protect high quality waters; i.e. waters whose quality exceeds that necessary for fishable swimmable uses. An example would be a pristine stream with 8.0 mg l dissolved oxygen compared to a criterion of 6.0 mg l and the concentrations of metals and organics well below existing criteria. In the absence of an antidegradation policy and implementation procedures, this stream's quality would be allowed to be lowered to the criteria with no evaluation of the ecological, economic or social value of the waterbody and with no public involvement. Antidegradation policies are designed to ensure that the ecological value of high quality waters is fully evaluated, any economic growth that will lower water quality is necessary, all alternatives to degradation have been exhausted, and the public has been given an opportunity to comment on actions that will degrade high quality waters.

Outstanding water resource waters are waters of ecological, recreational or ecological significance. Many States specifically designate certain waters for special protection in their water quality standards. There are no criteria specifically designed to protect outstanding national resource waters or ecologicaly unique waters. However, once such waters are designated, no degradation is permitted

Pertinent Documents

1. Questions and Answers on Antidegradation - August 1985.
2. The Federal policy on antidegradation contained in the water quality standards regulation (40 CFR 131.12 dated November 1983.
3. OWRS historical summary of the development of the 1983 Federal antidegradation policy.
4. Regional guidance on antidegradation implementation, Regions 1,5 and 9.
5. Memoranda to Regions issued in FY88 summarizing results of national antidegradation program assessment.

Objective A4: Encourage implementation procedures to be developed on the use of the whole effluent approach to control toxics.

Rationale

The Agency Operating Guidance, FY 88.

The water quality-based program has placed considerable emphasis on the development of numeric criteria for individual chemicals and the regulation of dischargers using these criteria. However, the use of whole effluent toxicity testing procedures is also a strong component of the water quality control program and may be particularly applicable when dealing with mixtures of compounds or as procedure to deal with the general parameter of toxicity itself when dealing with unknown compounds. Whole effluent toxicity testing may also serve as a basis for establishing permit limits for toxics based on state narrative toxic standards.

Pertinent Documents

1. The Technical Support Document and the Permit Writer's Guide.
2. Regional implementation procedures.
3. EPA methods manuals (freshwater and marine) for conducting toxicity testing.

Objective A5: Assess the adequacy of State toxic control programs.

Rationale

The Agency Operating Guidance, FY 88.

The water quality-based program has been developed by the States to varying degrees. Some States fully developed the program while other States rely on the technology-based approach and are just now beginning to develop their capabilities to regulate discharges using the water quality-based approach. Regardless of the sophistication of the State programs, all water quality-based programs can improve in certain areas. In addition, there are certain core elements that must be part of all State water quality-based programs for there to be a consistent national program. This review process was developed to assist the States in the development of their water quality-based programs through the identification of these core program elements.

The result of these program reviews is the development and implementation of State action plans. These plans establish priority activities and completion schedules that are necessary to improve the State program and ensure a nationally consistent toxics control program. The Regions are required to complete the reviews and negotiate State action plans by October 1988. All reviews were completed. All action plans not completed by the end of FY88 are expected to be completed by December 1988

Pertinent Documents: *State Toxic Control Program Review Guidance* (dated December 1987) on how to conduct a review and develop state action plans. (OWRS/OWEP)

Support Activities

Objective A1: Identify waters needing toxic criteria.

Activity A1-1: Evaluate state 304(l) lists (due 2 89) and ensure that states adopt numeric criteria for listed waters. 9/89 **Regions (MDSD/OWRS(CSD))**

Activity A1-2: Prepare state 304(l) lists for states that do not submit lists by 2 89. 6 89 **Regions (MDSD/OWRS(CSD))**

Objective A2: Adopt numeric criteria in state standards.

Activity A2-1: Develop guidance on the implementation of Section 303 (c)(2)(B). 9/88 **OWRS(CSD)**

Activity A2-2: Develop guidance for criteria to prevent human exposure to contaminants in fish and shellfish. 9/88 **OWRS(CSD)**

Activity A2-3: Evaluate site-specific criteria modifications and revise national guidance as appropriate. 9/89 **OWRS(CSD)/Regions**

Activity A2-4: Conduct additional research for the development of numeric criteria (as identified by the OWRS(CSD) ranking system) under Section 304(a) Ongoing **ORD**

Activity A2-5: Conduct water quality standards workshops on the development of water quality criteria Ongoing **OWRS(CSD)**

Activity A2-6: Encourage states to re-evaluate the use of fecal coliform as a indicator organism and to consider the use of enterococci and E. coli as a substitute.

Objective A3: Update state policies and develop implementation procedures for antidegradation.

Activity A3-1: Complete regional antidegradation audits 7/88 **OWRS(CSD)**

Activity A3-2: Develop a summary of Regional and state implementation procedures approaches 5/89 **OWRS(CSD) (Regions)**

Objective A4: Adopt toxicity-based criteria and develop implementation procedures.

Activity A4-1: Develop guidance on the adoption of toxicity-based criteria in state standards 9/88 **OWRS(CSD)**

Activity A4-2: Develop implementation guidance. 9/89 **OWRS(CSD) (OWEP/MDSD)**

Activity A4-3: Assist in the development of guidance on the bioaccumulation potential of complex effluents. 9/89 **OWEP/ORD (OWEP)**

Activity A4-4: Develop procedures for the use of biological criteria in toxicity assessment activities. 8/89 **OWRS(CSD)**

Objective A5: Complete state toxic control program reviews and ensure development of state action plans

Activity A5-1: Track state program reviews and action plans. 9/88 **OWRS(CSD)/OWEP (MDSD)**

Activity A5-2: Develop a summary of state toxic control programs and action plans. 4/89 **OWRS(CSD)/MDSD/OWEP**

FY 91-93 Triennium

Objectives:

This section describes the basis for the program objectives identified for the FY 91-93 Triennium. The activities necessary to develop these program objectives require additional research and program development that can be completed within the next 2-4 years. While several years is required to fully develop these programs, some program development (e.g guidance) can take place in the interim using existing data and research.

Objective B1:

Establish permanent link between 304(l) listing requirements and triennial standards reviews.

Rationale

Section 304(l) of the Water Quality Act of 1987 establishes requirements for the listing of state waters impaired by conventional and toxic pollutants This Section includes a logical link to Section 303(c) of the Act which requires the states to adopt numeric criteria in their water quality standards. This objective is designed to coordinate and formally link these requirements

Pertinent Documents

1. The Monitoring and Data Support Division is developing a regulation to link the 304(l) listing requirements to Sections 303(d) and 305(b) reporting requirements to State standards under Section 303(c). A draft regulation is currently under development.

2. OWRS(CSD) issued draft guidance on the implementation of Section 303(c)(2)(B), dated September 2, 1988. Amendments to the WQS regulation to formally address the new toxics requirements will be proposed in FY89.

Objective B2:

Increased emphasis on the development of water quality standards for marine, wetlands, and estuarine systems and develop operating guidance to ensure those standards are part of regulatory standards.

Rationale

Section 404 of the Clean Water Act requires the issuance of permits by the Army Corps of Engineers, with review and approval of EPA, for dredge and fill activities affecting the Nation's waters, including wetlands. Wetlands are particularly susceptible to these activities because they are flat and generally easily developed, and many are located near population centers. Wetlands represent a unique and finite water resource that are impossible to reclaim once destroyed.

Section 104 authorizes the Administrator to conduct and promote research into the causes, effects, extent, prevention, reduction, and elimination of pollution, and to publish relevant information. Section 104(n)(1) in particular provides for study of the effects of pollution, including sedimentation, in estuaries on aquatic life.

Section 304(a)(1) directs the Administrator to develop and publish "criteria for water quality reflecting the latest scientific knowledge on inter alia, the kind and extent of effects on plankton, fish, shellfish, and wildlife which may be expected from the presence of pollutants in any body of water, including ground water, and on the effects of pollutants on biological community diversity, productivity and stability

Section 304(a)(2) directs the Administrator to develop and publish information on, inter alia the factors necessary for the protection and propagation of shellfish, fish and wildlife for classes and categories of receiving waters

Section 303 authorizes the administrator to provide for states to adopt state standards

There are several States that do not specifically recognize wetlands in their water quality standards. In those States that recognize wetlands as "waters of the State", few States have regulatory procedures for the protection of wetlands. Items that are lacking include numeric or narrative criteria, wasteload allocations

procedures, procedures for permitting discharges to wetlands, and procedures for applying antidegradation to wetlands.

There is considerable public support for the protection of wetlands. Wetlands in the U.S. have been reduced from more than 200 million acres 200 years ago to 95 million acres today. Wetlands provide habitat and are a productive food source for mammals, reptiles and birds that cannot be provided by lakes or streams. On an absolute and per acre basis, they are some of the most productive ecosystems in the world. In some arid regions, wetlands are the primary source of water for wildlife.

The lack of information from the States or EPA on the locations and ecological values of wetlands makes it difficult for the Corp of Engineers to properly assess the impact of develop- ment activities on wetlands. There is also a general lack of guidance from EPA on how to establish designated uses and criteria for wetlands.

Pertinent Documents

Aquatic life criteria developed under Section 304(a).

Section 404 (b)(1) guidelines

Quality Criteria for Water 1986

Objective B3: Adopt sediment criteria for toxics.

Rationale

Existing EPA criteria recommendations are focused on the water column. Certain contaminants, particularly organic and metal contaminants that bind to sediments and can impact designated uses. Impacts caused by contaminated sediments to designated uses is well documented.

The available toxicity data is based on laboratory tests designed to determine the effect on aquatic life of various contaminants in the water column. The existing criteria documents and supporting data need to be evaluated to determine how they should be used in the development of sediment criteria. Data involving the testing of animals usually associated with sediments will be particularly useful in the development of sediment criteria. However, additional research and guidance will likely be needed to supplement the available data and develop defensible criteria for toxics in sediments.

A protocol for the development of sediment criteria has been under development for the last few years. Interim sediment criteria have been developed for 11 contaminants and are now being applied on a pilot basis at several Superfund sites around the country. While considerable research is needed to develop sediment criteria for all types of pollutants, States with sediments contaminated by organics should be able to adopt sediment criteria for selected contaminants over the next few years. Operating guidance will be developed for the incorporation of sediment criteria into regulatory frameworks.

Pertinent Documents

1. Background and Review Document on the Development of Sediment Criteria 6/85
2. Sediment Quality Criteria Development Workshop 2/85
3. National Perspective on Sediment Quality 7/85
4. Protocol for Sediment Toxicity Testing For Nonpolar Organic Compounds 2/86
5. Sediment Quality Criteria Validation: Calculation of Screening Level Concentrations from Field Data 7/86

   Attachment: Recalculation of Screening Level Concentrations for Nonpolar Organic contaminants in Marine Sediments 12/87
6. Guidance for Sampling of and Analyzing for Organic Contaminants in Sediments 1/87
7. Regulatory Applications of Sediment Criteria 6/87
8. Sediment Quality Criteria Methodology Validation: Uncertainty Analysis of Sediment Normalization Theory for Nonpolar Organic Contaminants 11/87
9. Sediment Quality Criteria for Metals. V Optimization of Extraction Methods for Determining the Quantity of Sorbents and Adsorbed Metals in Sediments 12/87
10. Interim Sediment Criteria Values for Nonpolar Hydrophobic Organic Contaminants 5/88

Objective B4: Adopt biological criteria (biocriteria).

Rationale

EPA policy (*49 FR 9018*) states that biological assessment methods are an integral part of a strong water quality-based program. The policy states that biological assessments can include bioassays and ambient monitoring or biosurveys

Biocriteria are based on the measurement of the resident biota, usually fish and invertebrates. They can be numeric or narrative. Numeric biocriteria can be one measurement (e.g biomass of fish) or a combination of measurements (e.g. fish diversity, abundance, habitat quality, etc.) They can also be narrative based on a general statement on biotic in-

tegrity supported by a variety of assessment methods. Approximately 5 States have developed biocriteria in their water quality standards. This interest at the State level attests to the value and feasibility of biocriteria in the water quality standards program.

In some cases there is uncertainty associated with control programs based on laboratory derived information, i.e. chemical specific and whole effluent testing. The measurement of the resident biota provides a direct assessment of the "health" of the biological community. This type of information provides an assessment tool that in some cases can expand the ability of State water quality standards to address the many different types of water quality problems.

The whole effluent approach was developed to address these complex problems. However, neither this approach nor the chemical specific approach directly assesses the status of the resident biological community; both use laboratory testing to simulate biological health. Direct measurement of the biological community can address problems that are more difficult to address using only laboratory-based information and criteria;

1. identifying previously unknown sources of impairment,
2. identifying where site-specific chemical criteria are needed and
3. characterizing the ecological value of high quality waters under antidegradation.

Biological assessment information and biocriteria provide an additional check on laboratory derived information and criteria.

The use of ambient biological monitoring to evaluate the effectiveness of BMPs is a basic element of the nonpoint source control policy; updated SAM-32, dated August 1987. The use of biological monitoring to evaluate nonpoint source control programs is part of certain State water quality standards; e.g. Idaho. In addition, the U.S. Forest Service requires biological monitoring as part of some Forest Plans; e.g. Nez Perce National Forest, Idaho.

There is a lack of criteria to address the effect of habitat destruction on designated uses. Some biological criteria or indexes include factors that address habitat and some state biocriteria include separate criteria for habitat. Biological criteria will likely require the assessment of both the biological community and the physical habitat due to the effects of many nonpoint source pollutants (e g., sediment) on habitat.

Pertinent Documents

1. *Surface Water Monitoring: A Framework for Change* - developed by MDSD; encourages th use of biological monitoring.
2. OWRS Rapid Bioassessment Protocol
3. Nonpoint Source Control Policy; updated SAM-32, dated August 1987.
4. Section 319 of the CWA of 1987 requires states to identify water impaired by nonpoint sources These list of waters will provide information on the types of nonpoint source criteria that are most needed.

Objective B5:

Integrate Standards and Nonpoint Source Control programs

Review of criteria for conventional and non-conventional pollutants (and their implementation) and allocation tools and biologic criteria for developing more effective nonpoint source controls and to develop regulatory tools.

Rationale

Clean Water Act Section 319(a)(1)(A) and (B) require States to identify waters that without additional action to control nonpoint sources of pollution, cannot reasonably be expected to attain or maintain applicable water quality standards. Also States are also required to identify categories and subcategories of nonpoint sources which add significant pollution in amounts which contribute to not meeting water quality standards.

Beneficial uses have long since been established by the States. Similarly, States have antidegradation policies.

However, when it comes to the assessment management of NPS, the criteria for protection of beneficial uses should be closely re-examined to be sure that they are adequate, based on potential differences in

1. Delivery and receiving systems of NPS pollutants,
2. The particular uses in the affected waters, and
3. The particular types of pollutants in, or likely to be in, the effected waters.

The hydrology, uses and pollutant discharges of the subject affected waters must be checked against the actual, existing criteria to see how they fit or whether there are gaps, in which case additional criteria may have to be developed.

Western States with significant amounts of lands devoted to field, orchard, and grazing agricultural and silvicultural uses as well as wilderness and recreation purposes, are finding a need for establishment of cri-

teria to support the ecosystem to take into account for NPS impacts.

While the control of toxics and sediment are important, such criteria should also include the usual DO, coliform, etc., as they affect the establishment and maintenance of healthy breeding habitat for aquatic and wildlife populations.

Pertinent Documents

1 "Organism Response to Time Variable Pollutant Dosages" John Mancini - June 1987

2 "Development of Methods to Define Water Quality Effects of Urban Run-off", Mancini J.L., EPA Cooperative Agreement No 806828

3 "Urban Runoff and Water Quality Criteria", Proceedings Urban Run-off Quality, Engineering Foundation Conference, June 23-27, 1986 - pp. 133-149

4. "Results of National Urban Run-off Program", Volume I, U.S. EPA, Washington, DC, December 1985, PP 5-10, 5-15

5 New Program to Control Nonpoint Sources of Water Pollution Added to the Clean Water Act by the Water Quality Amendments of 1987" Carl Myers, Hal Wise Western Wildlife, November, 1988

6 Draft NPS Monitoring and Evaluation Guide

Support Activities

Objective B1:

Establish permanent link between 304(l), 303(c) and 305(b) listing requirements and triennial standards reviews.

Activity B1-1: Participate in the development of a regulation to link the 304(l) listing requirements to the review of water quality standards under Section 303(c). 9 89 **OWRS - CSD/MDSD)**

Objective B2: Establish environmental standards for marine, wetland and estuarine systems.

Activity B2-1: Develop a national policy on the inclusion of wetlands as "waters of the State" in State standards and the relationship to the Section 401 certification process 9 88 **OWRS(CSD) (OWP)**

Activity B2-2: Develop guidance on the adoption of uses and criteria in State standards. 9 89 **OWRS(CSD) OWP**

Activity B2-3: Develop criteria applicable to marine, wetland and estuarine systems. 9 89 **ORD/OWP**

Activity B2-4: Develop guidance on the use of state antidegradation policies to protect aquatic systems 5 89 **OWRS(CSD)**

Activity B2-5: Conduct research on the identification, location and ecological assessment of wetlands FY 89,90,91 **ORD /OWP**

Activity B2-6: Conduct research on the development of criteria more applicable to a variety of aquatic systems. FY 89,90,91 **ORD**

Activity B2-7: Provide for states recognizing wetlands as waters of the state and adopting appropriate standards.

Objective B3: Adopt sediment criteria for toxics.

Activity B3-1: Develop a protocol for polar organic compounds starting with tributyltin. 2 89 **OWRS(CSD)**

Activity B3-2: Develop guidelines on the derivation of site specific sediment criteria for non-polar organic compounds. 6 89 **OWRS(CSD)**

Activity B3-3: Develop and verify the protocol for the development of sediment criteria for metal contaminants. 3 90 **OWRS(CSD)**

Activity B3-4: Develop and pilot test interim sediment criteria values for metal contaminants at Superfund and other sites 4 90 **OWRS(CSD)**

Activity B3-5: Publish final sediment criteria for non-polar organic contaminants and verify methodology for developing sediment criteria for metal contaminants. 11 90 **OWRS(CSD)**

Objective B4 Adopt biological criteria.

Activity B4-1: Provide program guidance for developing biological criteria 4 89 OWRS(CSD **OWRS(CSD) (ORD)**

Activity B4-2: Evaluate approaches for development of biological criteria based on existing State programs 9 89 **OWRS(CSD)/Regions**

Activity B4-3: Provide preliminary technical guidance for developing and using biological criteria. 9 89 OWRS(CSD)

Activity B4-4: Provide program and technical guidance document for implementation of biological criteria 9 90 OWRS CSD

Objective B5: Integrate Standards and Nonpoint Source Control programs

Activity B5-1: Develop one or more technical reference manuals on NPS monitoring and evaluation techniques, including the role of ecological assessments FY89, revise FY91.

Activity B5-2: Issue guidance on applications of narrative criteria, numeric criteria, and b[illegible] criteria and site-specific criteria to NPS's in a water qua[illegible] based approach. FY89, revise FY91.

Activity B6-3: Conduct targeted monitoring efforts in selected NPS high priority watersheds to evaluate the utility of new lake, biological, marine wetland and estuarine criteria for assessing impacts of NPS implementation activities FY89-91

FY 94-96 Triennium

Objectives

This section describes the program objectives identified for the FY 95-97 Triennium. These objectives have been determined to be necessary for a fully operational standards program. The activities necessary to develop these program objectives require additional research and program development that can be completed within the next 3-5 years. While several years is required to fully develop these programs, some program development (e.g. guidance) can take place in the interim using existing data and research; see Section III activities

Objective C1: States adopt criteria to protect wildlife.

Rationale

The current water quality standards program is focused on the development of water quality criteria for surface waters to protect aquatic life and human health. A variety of types of wildlife (waterfowl, other birds and other terrestrial animals) use surface waters and are not explicitly protected by existing criteria.

The effect of selenium on waterfowl in the Kesterson Marsh, California and the effect of DDT on birds are well publicized examples of the effects on wildlife The effects on wildlife often involve chemicals that may not effect plants and aquatic life, but effect animals higher up in the food chain through bioconcentration. Many top predators, such as eagles, are terrestrial animals not protected by existing criteria

There is considerable uncertainty in the use of existing criteria to protect wildlife. Existing aquatic life criteria are not designed to protect wildlife. Wildlife species are not routinely tested for effects from various contaminants, and collection of such data are not included in the development of aquatic life criteria. Existing human health criteria are based primarily on rodent test data. The extrapolation of these data to humans is necessary due to the lack of human exposure data. While rodent test data could be extrapolated to wildlife, such extrapolations would require safety factors due to differences in the physiological mechanism of many wildlife species, such as birds as compared to rodents.

Considerable additional research through the testing of wildlife species is necessary to fully develop wildlife criteria. Therefore, this objective is included in the long term period (FY 94-96) Wildlife criteria can be developed in the short term period based on existing data provided safety factors are applied.

Pertinent Documents

1. Fish and Wildlife Service Contaminant Hazard Reviews, Patuxent Wildlife Research Center, Laurel, Maryland
2. OWRS criteria documents on selected contaminants.

Objective C2:

States adopt criteria that are more focused toward the protection of marine and estuarine ecosystems.

Rationale

The marine, wetland and estuarine environments need to receive increased attention by the development of applicable water quality standards criteria and guidance This is partly due to the greater complexity of the the physical, chemical and biological interactions of these environments and the greater difficulty in conducting bioassay testing in saltwater

There are several areas where basic research is needed for the marine environment, for example development of saltwater dilution water for bioassay testing, development of chemical-specific criteria to protect marine organisms, and development of wasteload allocation procedures for large systems such as estuaries. While the development of marine criteria is an ongoing OWRS(CSD) activity, the research necessary to fully develop marine criteria for certain parameters, such as dissolved oxygen, and supporting guidance will require 3-5 years

Support Activities

Objective C2:

States adopt criteria that are more focused toward the protection of marine, wetland and estuarine ecosystems.

Activity C2-1

1. Revise the "Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses to incorporate guidelines that are protective of wildlife species 9 89 OWRS(CSD) ORD
2. Develop research protocol for toxicity testing in wildlife species. FY 89-90 OWRS(CSD) ORD
3. Conduct research for the development of numeric criteria protective of wildlife. Ongoing ORD

Activity C2-2: Conduct additional research on marine criteria. Ongoing **ORD**

Operating Guidance for Water Quality Standards - FY 1990

The FY 1990 goals of the water quality standards program are to complete those objectives for the 1988-1990 triennium that have not yet completed and to lay the groundwork with States for the objectives for the 1991-1993 triennium. States submitting their standards review in FY 1991 should complete necessary preparatory work in FY 1990.

To complete the objectives of the 1988-1990 triennium, States should ensure they have adopted numeric criteria for toxic pollutants as specified in the EPA guidance, updated State policies and procedures for implementing antidegradation for point and nonpoint sources, adopted toxicity based criteria (ambient/whole effluent bioassays), and completed any actions required by the State action plans developed from the State Toxic Control Program Reviews.

States submitting their standards reviews in FY 1991 should complete necessary preparatory work in FY 1990 to ensure, their 1991 standards will recognize wetlands as "waters of the State", adopt biological criteria for waters needing protection beyond that provided by the current numeric and narrative standards (particular for protection where nonpoint sources are the dominant source of pollution), and adopt fine sediment criteria for salmonid fisheries where protection is necessary

Headquarters

Headquarters will continue to develop: fresh marine water quality criteria/advisories, sediment criteria, and toxicity testing methods to implement the water quality-based approach; new monitoring and analytic technologies; test procedures/methods for deriving sediment criteria; and will consider initiating development of wildlife criteria.

Headquarters will promulgate WQS in States that fail to establish WQs that meet the requirements of the WQA. (Ongoing)

Regions/States

States, as a part of their triennial reviews, will continue to revise water quality standards to incorporate numeric criteria for toxic pollutants and or a procedure applied to the narrative criterion, which results in numeric criteria (specific toxic pollutants and whole effluent toxicity) to be used as the basis for deriving TMDLs, WLAs, and NPDES permit limits. (Ongoing) (SPMS)

Regions will continue to work with States to ensure that States have clearly documented policies and procedures for implementing antidegradation for both point and nonpoint sources. (Ongoing)

Regions will work with States to revise existing water quality criteria for non-toxic pollutants to reflect latest available scientific information in c304(a) criteria recommendation. (Ongoing)

Regions will review State and Indian water quality standards and/or revisions, emphasizing 307(a) pollutants. (Ongoing)

Glossary

numeric criteria: Criteria defined as a number or set of numbers, e.g., 2.0 mg/l ammonia.

narrative criteria: Criteria defined by a general statement rather than by a number; e.g., "waters shall be free from toxics in toxic amounts" or "the resident biological community shall be as it naturally occurs".

biological criteria: Criteria, either numeric or narrative, that address the quality of the resident biological community. Where there are numeric biological criteria, the criteria are defined by a particular biological assessment procedure or set of procedures; e.g., diversity indexes or index that includes measurement of the resident biota and the habitat, such as the one developed by Karr et.al.. Where there are narrative biological criteria, the criteria are defined by a general statement that requires the protection of the resident biological community at a certain level (e.g., as naturally occurs). These narrative criteria are generally supported by a series of biological assessment procedures that may be used by the State biologists to determine whether a particular site meets or exceeds the narrative standard.

ecoregion approach: A methodology for dividing the landscape into homogeneous areas based on various characteristics of the the physical, chemical and biological characteristics of the land and the water. The Corvallis Oregon Environmental Research Laboratory has developed an ecoregion map for the United States that was developed based on mapped information for soil types, land use, riparian vegetation, land surface form (slope) and climate. Other more site-specific ecoregional maps have been developed based on this information and information on the resident biological community. Ecoregional boundaries allow an investigator to reduce natural variability in the biological community and extrapolate information over a large area. Ecoregional boundaries currently define the water quality standards use classifications in Ohio, Arkansas, and Oregon.

toxicity-based criteria: Criteria based on the measurement of the total toxicity of the ambient water or of an effluent. These criteria use bioassay testing of the receiving water, an effluent or a combination of both to determine whether there is toxicity to aquatic life. These bioassays use test organisms that include invertebrates (generally *ceriodaphnia*) or fish (generally fathead minnow).

wildlife criteria: Criteria based on the testing of wildlife species such as mallard duck or mink.

sediment criteria: Chemical-specific numeric criteria that define the concentration of toxic contaminants in sediments that if exceeded will adversely impact aquatic life, human health and the attainment of related beneficial uses

TABLE 1 - Timetable of Related Program Activities

The following is a timetable of water quality standards related activities There are many activities that are underway or planned that directly or indirectly relate to the water quality standards program These activities provide additional background for the establishment of program priorities.

FY 88

Activity	*Description*
1/88:	"First" report to Congress on Section 319 nonpoint source assessments completed
3/88:	Draft guidance on implementation of Section 303(c)(2)(B) issued for public comment.
4/88:	Preliminary lists under Section 304(l) submitted from the States
9/88:	State toxics control program reviews and State action plans completed.
9/88:	Draft Proposed WQS regulation (Indian Tribes) issued.
FY88:	States complete reviews of their water quality standards under Section 303(c) per SPMS commitments.

FY 89:

Activity	*Description*
11/88:	Final Guidance on Section 303(c)(2)(B) issued.
11/88:	Proposed regulation on Section 304(l) listing issued.
12/88:	305(b) Guidelines completed for the 1990 report to Congress.
12/88:	Interim Final Regulation on grants to Indian tribes issued.
1/89:	"Second" report to Congress on Section 319 completed
2/89:	Final 304(l) lists submitted by the States.
4/89:	Policy on ecological monitoring, including use of biosurvey information and biocriteria, completed.
4/89:	Proposed WQS regulation regarding Indian Tribes published for review and comment.
9/89:	MDSD bioconcentration study completed
9/89:	SARA 313 database becomes available.

FY 90

Activity	*Description*
1/90:	"Final" report to Congress on Section 319 completed.
4/90:	1990 305(b) reports to Congress received from States.
9/90:	End of construction grants, conversion to state revolving fund completed.
10/89:	Publish final Water Quality Standards regulation for Indian Tribes
9/90:	Revision of the national guidelines for the derivation of aquatic life criteria completed.
FY90:	General program guidance on water quality assessments and monitoring completed.

TABLE 2 - Timetable for Completion of Supporting Activities

FY 88 (completed by 9/30/88)

Headquarters (OWRS(CSD)/MDSD/OWEP/OWP) and Regions

Activity	*Description*
A1-1:	Guidance for Section 303(c)(2)(B).
A1-2:	Guidance on human health criteria.
A3-1:	Antidegradation audit
A4-1:	Guidance on toxicity-based criteria.
A5-1:	Track state program reviews and action plans.
B2-1:	National policy on wetland standards

Office of Research and Development

Activity	*Description*
A1-4:	Research under Section 304(a).
C2-2:	Research on marine criteria under Section 304.

FY 89 (completed by 9/30/89)

Headquarters (OWRS(CSD)/MDSD/OWEP/OWP) and Regions

Activity	*Description*
A1-3:	Site-specific criteria evaluations.
A1-5:	Water quality standards workshop
A2-1:	State 304(l) lists review
A2-2:	EPA derived 304(l) list development
A2-3:	304(l) workshop.
A3-2:	Summary of State regional antidegradation approaches.
A4-2:	Guidance on toxicity-based approach implementation.
A4-3:	Guidance on bioaccumulation of complex effluents.
A5-2:	Summary of state toxics control programs and action plans.
B1-1:	304(l) regulation development.
B1-2:	Standards guidance in support of the 304(l) regulation.
B2-2:	Guidance on standards for wetlands
B2-4:	Guidance on use of antidegradation to protect wetlands.
B3-1:	Sediment criteria protocol for polar organics.
B3-2:	Guidelines for sediment criteria for non-polar organics
B4-1:	Fine sediment criteria.
B5-1:	Research plan for biocriteria.
C1-1:	Research plan for wildlife criteria
C2-1:	Research plan for marine criteria development.

Office of Research and Development

Activity	*Description*
A1-4:	Research under Section 304
B2-3:	Criteria applicable to wetlands based on existing data.
B2-5:	Wetland value assessment research
B2-6:	Wetlands criteria research.
B5-2:	Biocriteria, based on existing data

B5-4:	Research on biocriteria.
C1-2:	Wildlife criteria based on existing data.
C1-3:	Research on wildlife criteria.
C2-2:	Research on marine criteria under Section 304.

FY 90 (completed by 9/30/90)

Headquarters (OWRS(CSD)/MDSD/OWEP/OWP) and Regions

Activity	*Description*
B3-3:	Sediment criteria protocol for metals.
B3-4:	Pilot testing of metals criteria.
B3-5:	Final sediment criteria for non-polar organics and metals

Office of Research and Development

Activity	*Description*
A1-4:	Research under Section 304.
B2-5:	Wetland value assessment research.
B2-6:	Wetlands criteria research.
B5-3:	Technical guidance on biocriteria.
B5-4:	Research on biocriteria.
C1-3:	Research on wildlife criteria
C2-2:	Research on marine criteria under Section 304

FY 91-93 (completed by 9/30/93)

Headquarters (OWRS(CSD)/MDSD/OWEP/OWP) and Regions

No specific activities identified at this time

Office of Research and Development

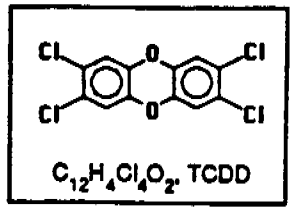
Activity	*Description*
A1-4:	Research under Section 304.
B2-5:	Wetland value assessment research
B2-6:	Wetlands criteria research
B5-4:	Research on biocriteria.
C1-3:	Research on wildlife criteria.
C2-2:	Research on marine criteria under Section 304

TABLE 2 - Timetable for Completion of Supporting Activities

DIOXIN: 2,3,7,8-TCDD

CAS No.: 1746-01-6
CAS Preferred Nomenclature:
Dibenzo[b,e][1,4]dioxin, 2,3,7,8-tetrachloro

Empirical Formula: $C_{12}H_4Cl_4O_2$



$C_{12}H_4Cl_4O_2$, TCDD

Synonyms and Common Names:
- 2,3,7,8-Tetrachlorodibenzo-p-dioxin
- TCDD or TDD

REGULATORY STATUS

Standards and Criteria:

- EPA Water Quality Criteria (for fish consumption only) for a 10^{-6} cancer risk (ATSDR, 1987):
  0.000014 ng/L
- EPA Drinking Water Health Advisories (U.S. EPA, 1988):
  child (10 Kg):
  1-day exposure = 1 ng/L;
  10-day exposure = 0.1 ng/L;
  longer-term exposure = 0.01 ng/L

  adult (70 Kg):
  longer-term exposure = 0.04 ng/L
- EPA Ambient Water Quality Criteria (to protect aquatic organisms):
  None established at present
- FDA (Food and Drug Administration Health Advisory for Fish (U.S. EPA, 1986a):
  <25 parts per trillion (ppt), no serious health concerns
  25-50 ppt, restrict consumption to 1 fish per week
  >50 ppt, no consumption recommended
- EPA Drinking Water Standard Maximum Contaminant Level:
  None established at present
- Center for Disease Control Level of Concern in Soil for residential areas (U.S. EPA, 1987):
  1 ppb

Use Restrictions and Bans:

- Dioxin is an unwanted by-product generated during the manufacture of other organic compounds (e.g., PCBs; 2,4,5-trichlorophenol; and formerly hexachlorophene). The herbicide 2,4,5-T is no longer produced in the U.S. and use of Silvex has been curtailed (ATSDR, 1987).

- EPA has required manufacturers to reduce concentrations of TCDD in chemical products; most chemicals now have less than 0.02 μg/g (ATSDR, 1987).

SOURCES OF DIOXIN

Dioxin Formation:

- No commercial production or importation of dioxin in the U.S., but small quantities are produced for research purposes (NTIS, 1980).

- TCDD is one of 75 types of dioxin formed as unwanted impurities during the manufacture of other organic compounds, particularly chlorinated phenols. Some of these dioxins have been studied, in particular 1,2,3,7,8-PeCDD and two of the HxCDDs (1,2,3,6,7,8- and 1,2,3,7,8,9-HxCDD).

- Dioxin can be generated as a by-product of paper and pulp mill bleaching processes which use chlorine. It can then be released to aquatic systems in various wastewater streams and sludges generated by these industries (U.S. EPA, 1988; NCASI, 1987).

- Recent data have shown correlations between dioxin in streams and nearby petroleum refineries which use chlorine or chlorinated solvents in the catalytic reforming process.

Uses of Dioxin:

- None except for research (ATSDR, 1987).

Other Sources:

- Contaminant of other organic compounds (ATSDR, 1987). Examples are listed below:

  - Until 1960, 2,4,5-T had up to 100 μg/g TCDD, now < 0.1 μg/g
  - Agent Orange had 0.02 to 54 μg/g
  - Hexachlorophene had 0.2 to 0.5 ng/g
  - Pentachlorophenol has < 0.1 μg/g of other dioxin isomers but no TCDD
  - Polychlorinated Biphenyls (PCBs) also contain TCDD. Oil containing PCBs was formerly used in electrical transformers. Utilities are gradually replacing these old transformers.

- Incineration of municipal and industrial wastes at too low a temperature (< 800°C) can produce dioxin. (Verschueren, 1983; ATSDR, 1987; U.S. EPA, 1987b).

- Derivatives of pentachlorophenol and other woodtreating wastes (NCASI, 1987; U.S. EPA, 1987b).

FATE OF DIOXIN IN ENVIRONMENT

Partitioning:

- Based on its physical/chemical properties, dioxin is only slightly soluble in water (Aq. sol. = 0.000317) and strongly sorbs to soil (K_{ow} = 10,500,000). It has a high potential for bioaccumulation.

Persistence:

Because dioxin strongly sorbs to sediment, it persists in soils and aquatic systems. Photolysis can occur, aided by photosensitizers in surface water (half-life 1 to 1.5 years) or in the top few inches of soil (half-life 1 to 3 years) (U.S. EPA, 1985b and Freeman, et al., 1986). Hydrolysis is not thought to be important (Callahan, et al., 1979). Biotransformation of dioxin in soils is slow (ATSDR, 1987).

DIOXIN OBSERVED IN ENVIRONMENT (STORET, 1986)

			Detected Concentrations			
			Concentration Associated With Stated Percentile			
	No. of Samples	No. of Detected Values	25th	50th	75th	Maximum Value
Water (mg/L)	No data available					
Sediment (mg/kg dry)	534	21	0	0	4.3	1,000
Tissue (mg/kg wet)	425	9	$2x10^{-6}$	0.0002	0.07	81
Tissue (ppt wet)*	636	212	1.6	3.0	5.3	85

*National Dioxin Study data (U.S. EPA, 1987b).

Other findings from the National Dioxin Study (U.S. EPA, 1987a)

- < 10 percent of soils near production facilities for 2,4,5-T and other chemicals had >1 μg/kg TCDD
- TCDD detected in 112 fish from 394 Tier 3-7 sites (most < 5 ng/kg)
- TCDD detected at 21 percent of USGS monitoring sites

HEALTH EFFECTS

Carcinogenicity:

- Oral exposure causes increased incidence of tumors in liver, tongue, hard palate and lungs in rats (Kociba et al., 1978a,b) and in thyroid and adrenal glands in mice (NTP, 1982a,b). EPA classification is B2, a probable human carcinogen (IRIS, 1987). IARC classification 2b (IARC, 1982).

- In combination with herbicides such as trichlorophenols, dioxin is classified by the EPA as B1, limited evidence of human carcinogenicity (IRIS, 1987).

Mutagenic Activity:

- Mutagenicity tests have produced inconclusive results. Bacterial tests were negative as were most tests using rats and mice except when bone marrow cells were used (Green et al., 1977; Meyne et al., 1985). Early tests using yeast cells showed positive results (IARC, 1982).

Reproductive Effects:

- Adverse reproductive effects are caused in a variety of animals:

  - fetotoxic in monkeys (U.S. EPA, 1985b)
  - embryotoxic and teratogenic in mice, rabbits, ferrets and rats (IARC, 1977; U.S. EPA, 1985b)
  - reduced fertility and spontaneous abortions in monkeys (ATSDR, 1987).
  - birth defects in mice (e.g., cleft palates and kidney abnormalities) (U.S. EPA, 1985b)

Other Toxicological Effects:

- Major observed toxic effect on humans is chloracne (U.S. EPA, 1985b).

- Human exposure through herbicides and other TCDD-contaminated chemicals can also cause altered liver function, porphyria, neurotoxicity, and hyperpigmentation (U.S. EPA, 1985b).

- Toxic effects to acutely exposed animals include extreme weight loss, liver and thymus damage, immunotoxicity and hepatotoxicity (IARC, 1977; U.S. EPA, 1985).

Toxicological Effects Indices:

- Cancer potency factor (CPF): 1.56×10^{5} $(mg/kg/day)^{-1}$. (U.S. EPA, 1986a).

- Reference Dose (RfD): 1×10^{-6} µg/kg/day (ATSDR, 1987).

- Oral LD_{50} values for animals range from 0.6 µg/kg in guinea pigs to 5,500 µg/kg in hamsters (U.S. EPA 1985c).

PHYSICAL/CHEMICAL PROPERTIES

	Value	Reference
Molecular Weight (g/mole):	321.97	Windholz, 1983
Physical State @ 20°C:	solid, colorless needles with no odor	Windholz, 1983
Melting Point (°C):	305	Schroy et al., 1985
Boiling Point (°C):	412.2	Schroy et al., 1985
Density (g/mL):	1.827 (est.)	Schroy et al., 1985
Acid Dissociation Constant, pK_a:	N/A	
Water Solubility, S (mg/L):	1.93×10^{-5} (22°C) 3.17×10^{-4} (25°C)	Marple et al., 1986 Schroy et al., 1985
Vapor Pressure, P (mm Hg):	1.4×10^{-9} (25°C)	Schroy et al., 1985
Henry's Law Constant, H @ 25°C (atm • m^3/mol):	2.1×10^{-6}	Schroy et al., 1985
Log (Octanol-Water Partition Coefficient), log K_{ow}:	6.15-7.28	U.S. EPA, 1985a
Soil Adsorption Coefficient, log K_{oc}:	6.0-7.39	U.S. EPA, 1985a
Fish Bioconcentration Factor, BCF:	best estimate, 5000	U.S. EPA, 1986a
	7900-9300, fathead minnows	U.S. EPA, 1985b

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ROUTING AND TRANSMITTAL SLIP

Date: 4/21/89

TO: (Name, office symbol, room number, building, Agency/Post)	Initials	Date
1. Ronnie Allmitton		
2. 89 APR 28 P3:34		
3.		
4. WATER RESOURCES		
5.		

	Action		File		Note and Return
	Approval		For Clearance		Per Conversation
	As Requested		For Correction		Prepare Reply
	Circulate		For Your Information		See Me
	Comment		Investigate		Signature
	Coordination		Justify		

REMARKS

Enclosed please find information on dioxin & FDA fish advisories.

Calculating a risk level from the EPA Water Quality Criteria you get:

10^{-6} risk = 0.07 parts per trillion

10^{-5} or risk = 0.7 ppt

10^{-4} or risk = 7.0 ppt

DO NOT use this form as a RECORD of approvals, concurrences, disposals, clearances, and similar actions

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Carl Young	Phone No. 214/655-2289

5041-102

GPO : 1987 O - 196-409

OPTIONAL FORM 41 (Rev. 7-76)
Prescribed by GSA
FPMR (41 CFR) 101-11.206

SL 106007

Table 1. Action Levels, Tolerances and ther Values for Poisonous or Deleterious Substances in Seafood[a]

Deleterious Substance		Level	Food Commodity[b]	Reference
Aldrin/Dieldrin[d]	0.30 ppm	Fish & Shellfish		CPG 7120.23-A[c]
Chlordane	0.30 ppm	Fish only		CPG 7120.23-C[c]
DDT, DDE, TDE	5.00 ppm	Fish only		CPG 7120.23-D[c]
Endrin	0.30 ppm	Fish & Shellfish		CPG 7120.23-F[c]
Heptachlor/Heptachlor Epoxide	0.30 ppm	Fish & Shellfish		CPG 7120.23-H[c]
Kepone	0.30 ppm	Fish & Shellfish		CPG 7120.23-I[c]
	0.40 ppm	Crabmeat		CPG 7120.23-I[c]
Mercury[e]	1.00	Fish & Shellfish		CPG 7108.07[c]
Mirex	0.10 ppm	Fish only		CPG 7120.23-K[c]
Paralytic Shellfish	80 mg/100g of meat	Fresh, frozen & canned clams mussels & oysters		CDPT 7108.20[c]
Polychlorinated Biphenyls (PCBs)	2.00	Fish & Shellfish		21 CFR 109.30
Ptychodiscus brevis toxin(s)	20 mouse units/100g meats	Shellfish		APHA Lab. Procedures (17)
Toxaphene	5.00 ppm	Fish only		CPG 7120.23-L[c]

Footnotes for Table 1, Appendix C

a) Levels for all deleterious substances listed except Ptychodiscus brevis toxin(s) are action levels are tolerances. The value listed for P.brevis toxin(s) represents a level deemed by the NSSP to be potentially unsafe for human consumption. The P.brevis toxin(s) value is not an FDA action level or tolerance.

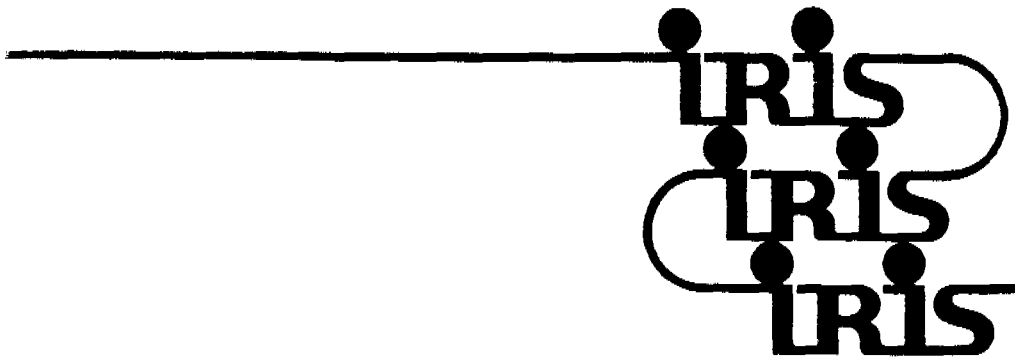
b) Unless otherwise specified, the aciton levels, tolerances and other values listed apply to bothe the raw and processed food commodity. Procedures for sample collection and analyses are specified in Section 443 of the FDA Inspectors Operation Manual; 40 CFR 180.1 (j); FDA Pesticide Analytical Manual (PAM) Volume I or II; AOAC Official Methods of Analysis; or APHA Laboratory Procedures for the Examination of Sea Water and Shellfish, Fifth Edition, 1984.

c) References designated as CPG represent the Compliance Policy Guides and all associated numbers as they appear in appropriate chapters of FDA's Compliance Policy Guides Manual. Copies of the Compliance Policy Guides (CPG) referenceds may be obtained from: FDA, Freedom of Information (HFI-35), 5600 Fishers Lane, Rockville, Maryland 20857. Phone (301)443-6310.

d) The action level for aldrin and dieldrin are for residues of the pesticides individually or in combination. However, in adding amounts of aldrin and dieldrin do not count aldrin or dieldrin found at the level below 0.3 ppm for fish.

e) Recommendations for legal action must clearly indicate the exact portion of the food used for analysis. The portion used for analysis must be prepared by the appropriate procedure outlined in the PAM, Vol I, Sections 141.12 and 141.22. The level applies to methyl mercury expressed as mercury (Hg) in excess of 1 ppm (edible portion only).

f) The final rule for PCBs in fish and shellfish, 21 CFR 109, was published on May 22, 1984 and became effective 90 days after that date. The level published represents a tolerance rather than an action level.

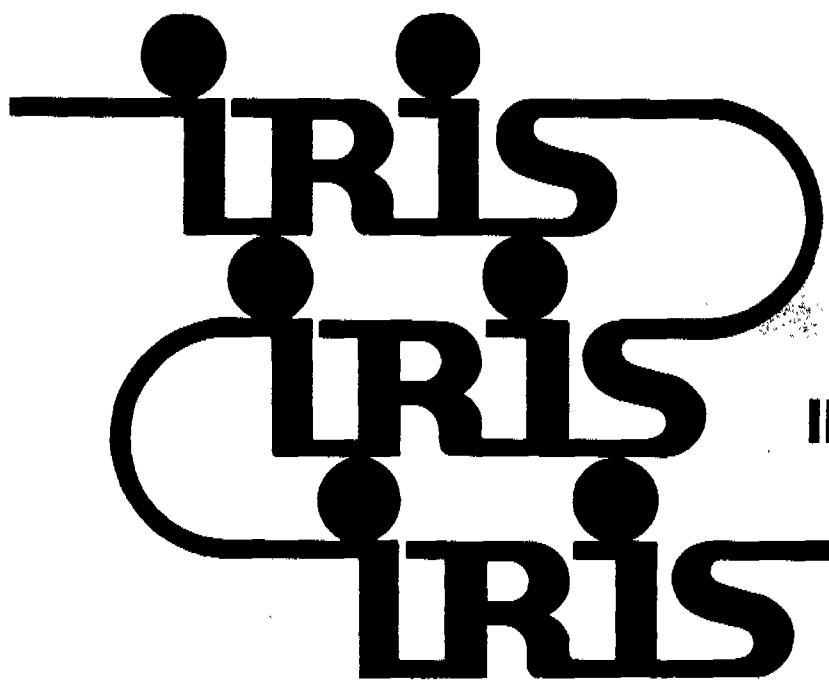


To arrange for training in IRIS, call the IRIS contact for the appropriate EPA Region.

EPA REGION I	Boston/Tom D'Avanzo (617) 565-3222 FTS 835-3222
EPA REGION II	New York/Marian Olson (212) 264-5682 FTS 264-5682
EPA REGION III	Philadelphia/Roy Smith (215) 597-9857 FTS 597-9857
EPA REGION IV	Atlanta/Gayle Alston (404) 347-4216 FTS 257-4216
EPA REGION V	Chicago/David Dolan (312) 886-9532 FTS 886-9532
EPA REGION VI	Dallas/Fred Reitman (214) 655-2235 FTS 255-2235
EPA REGION VII	Kansas City/Bob Fenemore (913) 236-2970 FTS 757-2970
EPA REGION VIII	Denver/Jim Baker (303) 293-1524 FTS 564-1524
EPA REGION IX	San Francisco/Arnold Den (415) 974-0906 FTS 454-0906
EPA REGION X	Seattle/Dave Tetta (206) 442-2138 FTS 399-2138 Dana DaVoli (206) 442-2135 FTS 399-2135

EPA

IRIS



INTEGRATED RISK INFORMATION SYSTEM

SL 106010

What is the Integrated Risk Information System?

The Integrated Risk Information System (IRIS) is the U.S. Environmental Protection Agency's (EPA) electronic on-line database of summary health risk assessment and regulatory information on chemical substances. The primary purpose of IRIS is to provide guidance risk values to EPA risk assessors and decision makers for use in EPA risk assessments. IRIS provides a basis for greater consistency in EPA risk management decisions. EPA staff and EPA contractors are expected to use the risk information in IRIS for those chemicals in the database.

The information contained in IRIS is intended for those without extensive training in toxicology, but with some knowledge of health science. IRIS is not an exhaustive toxicological database, but rather presents a summary of information on hazard and dose-response assessment. The database also includes reference citations and EPA contacts for further information.

H w is IRIS Different From Other Sources of Risk Assessment Information?

The information contained in IRIS, except as specifically noted, has been reviewed and agreed upon by intra-Agency review groups comprised of EPA scientists with extensive experience in risk assessment. Thus, the information in IRIS represents an expert Agency consensus. This expert consensus is one of the most valuable aspects of IRIS.

What Kind of Information is Included in IRIS?

The IRIS database includes the following sections:

1) chemical files which summarize data on each chemical,
2) alphabetical and CAS number listings of chemicals in IRIS,
3) list of revisions made to existing chemical files,
4) introduction to IRIS,
5) background documents on risk assessment methodologies,
6) glossary of terms used in IRIS,
7) user's guide and instructional case study, and
8) status of chemicals scheduled for the IRIS review process.

Each of the chemical files summarizes a hazard and dose-response assessment for noncarcinogenic effects and/or carcinogenic effects if an EPA consensus is available. The chemical files also provide summaries of Office of Drinking Water Health Advisories, EPA regulatory decisions (such as Water Quality Criteria, Clean Air Act regulations, Pesticide Registration Standards, and Reportable Quantities developed for Superfund), and supplementary information on acute toxicity data and physical-chemical properties data. Apart from the chemical files, background documents in the database describe the basic concepts and limitations of IRIS, as well as EPA's risk assessment procedures and assumptions used in developing this information.

How Can I Get Access to IRIS?

To obtain an IRIS account call Mike McLaughlin of DIALCOM, Inc. at (202) 488-0550 or write to: Mike McLaughlin, DIALCOM, Inc., 600 Maryland Avenue, S.W., Washington, D.C. 20024.

How Much Does IRIS Cost?

The user must pay DIALCOM, Inc. only for the cost of accessing IRIS. There is a $25.00 monthly minimum which is applied against a usage fee of $25.00 per hour. In addition to the usage fee, there is a $.05 charge per computer screen accessed. EPA does not charge for using IRIS.

Contacts for More Information

1) *Who do I call if I have a question about using IRIS or have a general question about the system?*
   Call IRIS User Support at (513) 569-7254 or FTS 684-7254.
2) *Who do I call if I have a scientific or technical question about the reference doses, carcinogen summaries, or drinking water health advisories?*
   Call the EPA contact listed at the end of the chemical file section in question.
3) *Who do I call if I have a policy question about IRIS?*
   Call Rick Picardi at (202) 382-7315 or FTS 382-7315.
4) *Who do I call to learn when a chemical, reference dose, or carcinogenicity section will be added to IRIS?*
   Call IRIS User Support at (513) 569-7254.

SL 106011